2017 WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

ADAMS COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
# ADAMS COUNTY
## 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>3.4%</td>
<td>Percent with blood lead ≥ 5 µg/dL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>10.2</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>53.9</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>69.5</td>
<td>Crude rate per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>30.9</td>
<td>Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>24.4</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>18.2</td>
<td>Rate of hospitalizations per 10,000 people*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Concentration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.7</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.2</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>74.5%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>3</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 3.8</td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>(PM 2.5)</td>
<td></td>
<td>Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^[Data are suppressed Data details on next page](#)
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013
Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE:** 7.9

- **Adams County:** 10.2

- **Above state value**

**CHILDHOOD LEAD POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

**STATEWIDE:** 6.4%

- **Adams County:** 3.4%

- **At or below state value**

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

HEAT STRESS

**RATE OF ER VISITS PER 100,000 PEOPLE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Adams County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>16.5</td>
<td>22.7</td>
</tr>
<tr>
<td>2010-2014</td>
<td>53.9</td>
<td>69.5</td>
</tr>
</tbody>
</table>

**LYME DISEASE**

**RATE OF CASES PER 100,000 PEOPLE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Adams County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>16.5</td>
<td>22.7</td>
</tr>
<tr>
<td>2010-2014</td>
<td>53.9</td>
<td>69.5</td>
</tr>
</tbody>
</table>

DIVE DEEPER INTO THE DATA: [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)
Wisconsin Environmental Public Health Tracking
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
HEALTH OUTCOMES

BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**RATE OF ER VISITS PER 10,000 PEOPLE**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Statewide Rate</th>
<th>Adams County Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>39.5</td>
<td>30.9</td>
</tr>
<tr>
<td>Melanoma</td>
<td>21.6</td>
<td>24.4</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>61.1</td>
<td>85.7</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>27.4</td>
<td>18.2</td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY ADAMS COUNTY

BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>0.7</th>
<th>2.2</th>
<th>74.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
<td>PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER</td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
WATER QUALITY ADAMS COUNTY

FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**  
(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**  
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

**ASTHMA EMERGENCY ROOM VISITS**  
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
**DATA DETAILS**

### HOME HAZARDS

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level $\geq 5$ µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

### CLIMATE

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

### HEALTH OUTCOMES

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM2.5) | Annual Average PM2.5 (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners
We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action
We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter
Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS
Iowa Environmental Public Health Tracking Program
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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

ASHLAND COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it! dhstracking@wi.gov 608-267-2488
## ASHLAND COUNTY

### DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

| Childhood Lead Poisoning | 4.8% | Percent with blood lead ≥ 5 µg/dL  
Wisconsin: 6.4% |
|--------------------------|------|----------------------------------|
| Carbon Monoxide Poisoning| 10.8 | Rate of ER visits per 100,000 people  
Wisconsin: 7.9 |

### CLIMATE

| Heat Stress | 29.7 | Rate of ER visits per 100,000 people  
Wisconsin: 16.5 |
|-------------|------|----------------------------------|
| Lyme Disease | 113.6 | Crude rate per 100,000 people  
Wisconsin: 22.7 |

### HEALTH OUTCOMES

| Asthma | 31.7 | Rate of ER visits per 10,000 people*  
Wisconsin: 39.5 |
|--------|------|----------------------------------|
| Melanoma | 13.1 | Rate of cases per 100,000 people  
Wisconsin: 21.6 |
| Heart Attack | 50.0 | Rate of hospitalizations per 10,000 people*  
Wisconsin: 27.4 |

### WATER QUALITY

| Arsenic | 1.0 | Average concentration in µg/L  
Wisconsin: 1.4 |
|---------|-----|----------------------------------|
| Nitrate | 0.3 | Average concentration in mg/L  
Wisconsin: 1.5 |

### AIR QUALITY

| Ozone | 0 | Annual days above standard  
Wisconsin: 3.8 |
|-------|---|----------------------------------|

| Particulate Matter (PM) 2.5 | 0 | Annual days above standard  
Wisconsin: 0.3 |

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Data are suppressed

Data details on next page

Wisconsin Environmental Public Health Tracking Program
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
### DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

#### HOME HAZARDS

- **Childhood Lead Poisoning:** Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.  
  Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2015

- **Carbon Monoxide (CO) Poisoning:** Age-adjusted rate of emergency room visits related to CO poisoning  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Years displayed: Averaged data from 2010-2014

#### CLIMATE

- **Lyme Disease:** Crude rate of confirmed Lyme disease cases  
  Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2015

- **Heat Stress:** Age-adjusted rate of emergency room visits related to heat stress  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Years displayed: Averaged data from 2010-2014

#### HEALTH OUTCOMES

- **Melanoma:** Age-adjusted rate of new cases reported by health care providers  
  Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Years displayed: 2009-2013

- **Asthma:** Age-adjusted rate of emergency room visits related to asthma  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2014

- **Heart Attack:** Age-adjusted rate of emergency room visits related to heart attack  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2014

#### WATER QUALITY

- **Arsenic and Nitrate:** Measured concentrations from active public water systems  
  Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
  Years displayed: Averaged data from 2013-2015

- **Fluoride:** Percent of population with access to fluoridated public water  
  Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2015

#### AIR QUALITY

- **Particulate Matter 2.5 (PM$_{2.5}$) and Ozone:** Monitored and modeled estimates of air quality readings  
  Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
  Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE:** 7.9

**ASHLAND COUNTY:** 10.8

- Above state value
- At or below state value
- Suppressed

**CHILDTOOD LEAD POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

**STATEWIDE:** 6.4%

**ASHLAND COUNTY:** 4.8%

**CARBON MONOXIDE**

**RATE OF ER VISITS PER 100,000 PEOPLE**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- Above state value
- At or below state value
- Suppressed

- 29.7
- 113.6

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE
STATEWIDE: 16.5

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE
STATEWIDE: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking.
LEYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LEYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

**RATE OF ER VISITS PER 10,000 PEOPLE**

- **STATEWIDE:** 39.5
- **ASHLAND COUNTY:** 31.7

**MELANOMA**

**RATE OF NEW CASES PER 100,000 PEOPLE**

- **STATEWIDE:** 21.6
- **ASHLAND COUNTY:** 13.1

**LUNG CANCER**

**RATE OF NEW CASES PER 100,000 PEOPLE**

- **STATEWIDE:** 61.1
- **ASHLAND COUNTY:** 71.4

**HEART ATTACK**

**RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE**

- **STATEWIDE:** 27.4
- **ASHLAND COUNTY:** 50.0

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**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>arsenic mean concentration (µg/L)</th>
<th>nitrate mean concentration (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashland County</td>
<td>Wisconsin Average</td>
</tr>
<tr>
<td>Above state value (with exception of fluoride where below state value is not preferred)</td>
<td>Above state value (with exception of fluoride where above state value is preferred)</td>
</tr>
</tbody>
</table>

Maximum contaminant level set by U.S. EPA

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM\textsubscript{2.5}) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM\textsubscript{2.5} has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM\textsubscript{2.5}, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
### DATA DETAILS

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
BARRON COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## BARRON COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>2.4%</td>
<td>Percent with blood lead ≥5 µg/dL</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>8.2</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>23.9</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>120.7</td>
<td>Crude rate per 100,000 people</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>44.7</td>
<td>Rate of ER visits per 10,000 people</td>
</tr>
<tr>
<td>Melanoma</td>
<td>18.0</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>31.9</td>
<td>Rate of hospitalizations per 10,000 people</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>2.9</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.2</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>40.5%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

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WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488

^ Data are suppressed
Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

RATE OF ER VISITS RELATED TO CO PER 100,000

STATEWIDE: 7.9

- **Above state value**
- **At or below state value**
- ^ Suppressed

**CHILDHOOD LEAD POISONING**

PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL

STATEWIDE: 6.4%

- **Above state value**
- **At or below state value**
- ^ Suppressed

**CARBON MONOXIDE**

RATE OF ER VISITS PER 100,000 PEOPLE

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal ([dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

---

**HEAT STRESS**

RATE OF ER VISITS PER 100,000 PEOPLE

- **23.9**
  - State value
  - Above state value

- **120.7**
  - Suppressed

--

**LYME DISEASE**

RATE OF CASES PER 100,000 PEOPLE

- **23.9**
  - State value
  - Above state value

- **120.7**
  - Suppressed
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**44.7**
**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**18.0**
**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**58.9**
**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**31.9**
**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

ARSENIC
Statewide: 1.4 µg/L
Average concentration: 2.9 µg/L

NITRATE
Statewide: 1.5 mg/L
Average concentration: 1.2 mg/L

FLUORIDE
Statewide: 88.6%
Percent of population with fluoridated public water: 40.5%

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!

dhstracking@wi.gov
608-267-2488
## Home Hazards

**Childhood Lead Poisoning**
- **Percent with blood lead ≥ 5 µg/dL**
  - BAYFIELD COUNTY: 1.4%
  - WISCONSIN: 6.4%

**Carbon Monoxide Poisoning**
- **Rate of ER visits per 100,000 people**
  - BAYFIELD COUNTY: 14.6
  - WISCONSIN: 7.9

## Health Outcomes

**Asthma**
- **Rate of ER visits per 10,000 people**
  - BAYFIELD COUNTY: 32.4
  - WISCONSIN: 39.5

**Melanoma**
- **Rate of cases per 100,000 people**
  - BAYFIELD COUNTY: 16.9
  - WISCONSIN: 21.6

**Heart Attack**
- **Rate of hospitalizations per 10,000 people**
  - BAYFIELD COUNTY: 29.6
  - WISCONSIN: 27.4

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

## Climate

**Heat Stress**
- **Rate of ER visits per 100,000 people**
  - BAYFIELD COUNTY: 12.8
  - WISCONSIN: 16.5

**Lyme Disease**
- **Crude rate per 100,000 people**
  - BAYFIELD COUNTY: 80.1
  - WISCONSIN: 22.7

## Water Quality

**Arsenic**
- **Average concentration in µg/L**
  - BAYFIELD COUNTY: 0.8
  - WISCONSIN: 1.4

**Nitrate**
- **Average concentration in mg/L**
  - BAYFIELD COUNTY: 0.3
  - WISCONSIN: 1.5

**Fluoride**
- **Percent of population with fluoridated public water**
  - BAYFIELD COUNTY: 0.0%
  - WISCONSIN: 88.6%

*Note that these data details are on the next page.

## Air Quality

**Ozone**
- **Annual days above standard**
  - BAYFIELD COUNTY: 0
  - WISCONSIN: 3.8

**Particulate Matter (PM) 2.5**
- **Annual days above standard**
  - BAYFIELD COUNTY: 0
  - WISCONSIN: 0.3

*Data are suppressed.

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**Wisconsin Environmental Public Health Tracking Program**
- Bureau of Environmental and Occupational Health
- Wisconsin Department of Health Services | Division of Public Health
- www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL. Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services. Year displayed: 2015

CLIMATE

HEALTH OUTCOMES
Asthma: Age-adjusted rate of emergency room visits related to asthma. Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack. Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems. Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources. Years displayed: Averaged data from 2013-2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings. Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention. Year displayed: 2012
**BACKGROUND**

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE**

**POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE:** 7.9

**BAYFIELD COUNTY**

14.6

**CARBON MONOXIDE POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

**STATEWIDE:** 6.4%

**BAYFIELD COUNTY**

1.4%

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
HEALTH OUTCOMES

BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

32.4

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

16.9

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

54.8

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

29.6

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occuring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**WATER QUALITY BAYFIELD COUNTY**

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occuring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE**

**MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

- **Arsenic**
  - Average concentration in public water (µg/L)
  - Statewide: 1.4
  - Bayfield County: 0.8
    - Above state value (with exception of fluoride where below state value is not preferred)
- **Nitrate**
  - Average concentration in public water (mg/L)
  - Statewide: 1.5
  - Bayfield County: 0.3
    - At or below state value (with exception of fluoride where above state value is preferred)
- **Fluoride**
  - Percent of population with fluoridated public water
  - Statewide: 88.6%
  - Bayfield County: 0.0%
    - Suppressed

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. https://www.cdc.gov/about/history/tengpha.htm*
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

*Dive deeper into the data: dhs.wisconsin.gov/epht

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person's lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**HEALTH OUTCOMES**

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017 WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

BROWN COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
**BROWN COUNTY**

**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

**Childhood Lead Poisoning**
- Percent with blood lead ≥5 µg/dL
  - Wisconsin: 6.4%

**Carbon Monoxide Poisoning**
- Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

### CLIMATE

**Heat Stress**
- Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

**Lyme Disease**
- Crude rate per 100,000 people
  - Wisconsin: 22.7

### HEALTH OUTCOMES

**Asthma**
- Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

**Melanoma**
- Rate of cases per 100,000 people
  - Wisconsin: 21.6

**Heart Attack**
- Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

### WATER QUALITY

**Arsenic**
- Average concentration in µg/L
  - Wisconsin: 1.4

**Nitrate**
- Average concentration in mg/L
  - Wisconsin: 1.5

**Fluoride**
- Percent of population with fluoridated public water
  - Wisconsin: 88.6%

### AIR QUALITY

**Ozone**
- Annual days above standard
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- Annual days above standard
  - Wisconsin: 0.3

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*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING

RATE OF ER VISITS RELATED TO CO PER 100,000
STATEWIDE: 7.9

CARBON MONOXIDE POISONING

PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL
STATEWIDE: 6.4%

CARBON MONOXIDE

Rate of ER visits per 100,000 people

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoses and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

Brown County
Wisconsin Average

2005-2009 2010-2014

19.0

11.6

HEAT STRESS

LYME DISEASE

STATEWIDE: 16.5
STATEWIDE: 22.7

Above state value
At or below state value
Suppressed
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

ARSENIC

- Average concentration in public water: 0.9 µg/L
- Statewide average: 1.4 µg/L
- Above state value (with exception of fluoride where below state value is not preferred)

NITRATE

- Average concentration in public water: 0.1 mg/L
- Statewide average: 1.5 mg/L
- At or below state value (with exception of fluoride where above state value is preferred)

FLUORIDE

- Percentage of population with fluoridated public water: 96.4%
- Statewide average: 88.6%
- Suppressed

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

OZONE
The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana. *

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell’s palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES**  
(continued)

**Heart Attack**  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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**WATER QUALITY**

**Arsenic**  |  Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate**  |  Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride**  |  Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

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**AIR QUALITY**

**Particulate Matter 2.5 (PM_{2.5})**  |  Annual Average PM_{2.5} (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 µg/m³.

**Ozone**  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
BUFFALO COUNTY
DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
6.4%  Percent with blood lead ≥5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
10.6  Rate of ER visits per 100,000 people
Wisconsin: 8.5

CLIMATE

Heat Stress
21.8  Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
83.4  Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
22.5  Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
19.7  Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
27.0  Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
0.3  Average concentration in µg/L
Wisconsin: 1.4

Nitrate
0.8  Average concentration in mg/L
Wisconsin: 1.5

Fluoride
63.2%  Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
0  Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0  Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where below state value is preferred)
Above state value (with exception of fluoride where above state value is preferred)
^ Data are suppressed
Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>Rate of ER Visits</th>
<th>PER 100,000</th>
<th>STATEWIDE: 8.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above state value</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td>At or below state value</td>
<td>6.4%</td>
<td></td>
</tr>
</tbody>
</table>

**CHILDHOOD LEAD POISONING**

<table>
<thead>
<tr>
<th>Percent of Tested Children</th>
<th>WITH BLOOD LEAD ≥5 μg/dL</th>
<th>STATEWIDE: 6.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above state value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At or below state value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CARBON MONOXIDE

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

**HEAT STRESS**
RATE OF ER VISITS PER 100,000 PEOPLE

- **Buffalo County**: Above state value
- **Wisconsin Average**: At or below state value

<table>
<thead>
<tr>
<th>Year</th>
<th>Buffalo County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-09</td>
<td>10.5</td>
<td>8.2</td>
</tr>
<tr>
<td>2010-14</td>
<td>15.5</td>
<td>13.2</td>
</tr>
</tbody>
</table>

**HEAT STRESS**
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
- RATE OF ER VISITS PER 10,000 PEOPLE
  - STATEWIDE: 39.5
  - BUFFALO COUNTY: 22.5
- RATE OF NEW CASES PER 100,000 PEOPLE
  - STATEWIDE: 21.6
  - BUFFALO COUNTY: 19.7

**LUNG CANCER**
- RATE OF NEW CASES PER 100,000 PEOPLE
  - STATEWIDE: 61.1
  - BUFFALO COUNTY: 52.4

**HEART ATTACK**
- RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
  - STATEWIDE: 27.4
  - BUFFALO COUNTY: 27.0

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
OVERVIEW OF WATER QUALITY IN BUFFALO COUNTY

BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration (µg/L)</th>
<th>Concentration (mg/L)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.3</td>
<td></td>
<td>Above state value (with exception of fluoride where below state value is not preferred)</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.8</td>
<td></td>
<td>At or below state value (with exception of fluoride where above state value is preferred)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>63.2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.\(^*\)

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The “2.5” in “particulate matter 2.5 (PM\textsubscript{2.5})” refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

---

**OZONE**

ANNUAL DAYS ABOVE STANDARD

STATEWIDE: 3.8

**PARTICULATE MATTER 2.5**

ANNUAL DAYS ABOVE STANDARD

STATEWIDE: 0.3

PARTICULATE MATTER 2.5

ANNUAL AVERAGE (µg/m\textsuperscript{3})

STATEWIDE: 9.1

---

**OZONE**

ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE ($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. This measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. These data were averaged over ten years for five counties in order to minimize supression.

CLIMATE

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017 WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

BURNETT COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
**BURNETT COUNTY**

**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

- **Childhood Lead Poisoning**
  - Percent with blood lead ≥ 5 µg/dL
  - 0.0%
  - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - Rate of ER visits per 100,000 people
  - 8.1
  - Wisconsin: 7.9

### CLIMATE

- **Heat Stress**
  - Rate of ER visits per 100,000 people
  - 17.7
  - Wisconsin: 16.5

- **Lyme Disease**
  - Crude rate per 100,000 people
  - 66.0
  - Wisconsin: 22.7

### HEALTH OUTCOMES

- **Asthma**
  - Rate of ER visits per 10,000 people*
  - 28.3
  - Wisconsin: 39.5

- **Melanoma**
  - Rate of cases per 100,000 people
  - 17.4
  - Wisconsin: 21.6

- **Heart Attack**
  - Rate of hospitalizations per 10,000 people*
  - 27.0
  - Wisconsin: 27.4

### WATER QUALITY

- **Arsenic**
  - Average concentration in µg/L
  - 2.1
  - Wisconsin: 1.4

- **Nitrate**
  - Average concentration in mg/L
  - 0.0
  - Wisconsin: 1.5

- **Fluoride**
  - Percent of population with fluoridated public water
  - 0.0%
  - Wisconsin: 88.6%

### AIR QUALITY

- **Ozone**
  - Annual days above standard
  - 0
  - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - Annual days above standard
  - 0
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where above state value is preferred)

Above state value (with exception of fluoride where below state value is not preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

17.7
STATEWIDE: 16.5

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

66.0
STATEWIDE: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
**LYME DISEASE**

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

**LYME DISEASE AT THE NATIONAL LEVEL**

**ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE**

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

### Rates

- **ASTHMA**
  - Rate of ER Visits per 10,000 People
  - **28.3**
  - **39.5** (Statewide)

- **MELANOMA**
  - Rate of New Cases per 100,000 People
  - **17.4**
  - **21.6** (Statewide)

- **LUNG CANCER**
  - Rate of New Cases per 100,000 People
  - **75.8**
  - **61.1** (Statewide)

- **HEART ATTACK**
  - Rate of Hospitalizations per 10,000 People
  - **27.0**
  - **27.4** (Statewide)

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. [https://www.cdc.gov/about/history/tengpha.htm](https://www.cdc.gov/about/history/tengpha.htm)
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*


OZONE

ANNUAL DAYS ABOVE STANDARD (2012)

<table>
<thead>
<tr>
<th>Days Above Standard</th>
<th>Burnett County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above state value</td>
<td>^</td>
</tr>
<tr>
<td>At or below state</td>
<td>At or below</td>
</tr>
<tr>
<td>suppressed</td>
<td>suppressed</td>
</tr>
</tbody>
</table>

OZONE

ANNUAL AVERAGE (µg/m$^3$)

<table>
<thead>
<tr>
<th>Burnett County</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.6</td>
</tr>
</tbody>
</table>

PARTICULATE MATTER 2.5

ANNUAL DAYS ABOVE STANDARD

STATEWIDE: 0.3

<table>
<thead>
<tr>
<th>Days Above Standard</th>
<th>Burnett County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above state value</td>
<td>^</td>
</tr>
<tr>
<td>At or below state</td>
<td>At or below</td>
</tr>
<tr>
<td>suppressed</td>
<td>suppressed</td>
</tr>
</tbody>
</table>

PARTICULATE MATTER 2.5

ANNUAL AVERAGE (µg/m$^3$)

STATEWIDE: 9.1
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard 
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard 
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard 
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard 
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**HEALTH OUTCOMES**

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard 
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard 
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

**Heart Attack**  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
---|---
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

**Arsenic**  |  Mean concentration of arsenic (µg/L) in public drinking water
---|---
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
**Years displayed:** Averaged data from 2013-2015
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate**  |  Mean concentration of nitrate (mg/L) in public drinking water
---|---
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
**Years displayed:** Averaged data from 2013-2015
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride**  |  Percent of population with access to fluoridated public drinking water
---|---
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

**Particulate Matter 2.5 (PM$_{2.5}$)**  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
---|---
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone**  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
---|---
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
**Year displayed:** 2012
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

CALUMET COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov 608-267-2488
## CALUMET COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>2.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>3.6</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>13.8</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>2.0</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>17.3</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>32.1</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>19.1</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average concentration</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.4</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>73.7%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual days above standard</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>7</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>2</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

Dive Deeper into the Data: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 5
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- Calumet County
- Wisconsin Average

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

STATEWIDE: 16.5

- Above state value
- At or below state value
- Suppressed

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

STATEWIDE: 22.7

- Above state value
- At or below state value
- Suppressed

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
**BACKGROUND**

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Calumet County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma Rate of ER Visits</td>
<td>17.3</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma Rate of New Cases</td>
<td>32.1</td>
<td>21.6</td>
</tr>
<tr>
<td>Lung Cancer Rate of New Cases</td>
<td>53.3</td>
<td>61.1</td>
</tr>
<tr>
<td>Heart Attack Rate of Hospitalizations</td>
<td>19.1</td>
<td>27.4</td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC
VARIES FROM 0 TO 10 µg/L
NITRATE
VARIES FROM 0 TO 10 mg/L

Maximum contaminant level set by U.S. EPA

Calumet County
Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER
Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

### ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM2.5) | Annual Average PM2.5 (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
CHIPPEWA COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
# CHIPPEWA COUNTY DASHBOARD

## 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>1.8%</td>
<td>Percent with blood lead ≥ 5 µg/dL Wisconsin: 6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>8.5</td>
<td>Rate of ER visits per 100,000 people Wisconsin: 7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>20.1</td>
<td>Rate of ER visits per 100,000 people Wisconsin: 16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>64.5</td>
<td>Crude rate per 100,000 people Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>15.4</td>
<td>Rate of ER visits per 10,000 people* Wisconsin: 39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>23.4</td>
<td>Rate of cases per 100,000 people Wisconsin: 21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>27.3</td>
<td>Rate of hospitalizations per 10,000 people* Wisconsin: 27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.4</td>
<td>Average concentration in µg/L Wisconsin: 1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>3.6</td>
<td>Average concentration in mg/L Wisconsin: 1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>15.5%</td>
<td>Percent of population with fluoridated public water Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>Annual days above standard Wisconsin: 3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

\(^{\text{A}}\) Above state value (with exception of fluoride where below state value is not preferred)

\(^{\text{B}}\) At or below state value (with exception of fluoride where above state value is preferred)

\(^{\text{C}}\) Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

Carbon monoxide poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacer, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Rate of ER Visits Per 100,000 People

<table>
<thead>
<tr>
<th>Year</th>
<th>Chippewa County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>11.2</td>
<td>10.8</td>
</tr>
<tr>
<td>2010-2014</td>
<td>14.0</td>
<td>13.5</td>
</tr>
</tbody>
</table>

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**15.4**

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

**23.4**

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 21.6

**66.1**

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 61.1

**27.3**

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

STATEWIDE: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>NITRATE</th>
<th>FLUORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4 µg/L</td>
<td>3.6 mg/L</td>
<td>15.5%</td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
Health Outcomes (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Water Quality

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

Air Quality

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKE THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
CLARK COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
<table>
<thead>
<tr>
<th>CLARK COUNTY</th>
<th>DASHBOARD</th>
<th>2017 ENVIRONMENTAL HEALTH PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HOME HAZARDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Childhood Lead Poisoning</strong></td>
<td>3.7%</td>
<td>Percent with blood lead ≥5 µg/dL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 6.4%</td>
</tr>
<tr>
<td><strong>Carbon Monoxide Poisoning</strong></td>
<td>8.3</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 7.9</td>
</tr>
<tr>
<td><strong>HEALTH OUTCOMES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Asthma</strong></td>
<td>17.2</td>
<td>Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 39.5</td>
</tr>
<tr>
<td><strong>Melanoma</strong></td>
<td>16.4</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 21.6</td>
</tr>
<tr>
<td><strong>Heart Attack</strong></td>
<td>41.8</td>
<td>Rate of hospitalizations per 10,000 people*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 27.4</td>
</tr>
<tr>
<td><strong>CLIMATE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heat Stress</strong></td>
<td>16.0</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 16.5</td>
</tr>
<tr>
<td><strong>Lyme Disease</strong></td>
<td>34.8</td>
<td>Crude rate per 100,000 people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 22.7</td>
</tr>
<tr>
<td><strong>WATER QUALITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Arsenic</strong></td>
<td>0.3</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 1.4</td>
</tr>
<tr>
<td><strong>Nitrate</strong></td>
<td>3.2</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 1.5</td>
</tr>
<tr>
<td><strong>Fluoride</strong></td>
<td>60.1%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 88.6%</td>
</tr>
<tr>
<td><strong>AIR QUALITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ozone</strong></td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 3.8</td>
</tr>
<tr>
<td><strong>Particulate Matter (PM) 2.5</strong></td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where above state value is preferred)

Above state value (with exception of fluoride where below state value is not preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Background**

**Carbon Monoxide Poisoning**

- **Rate of ER Visits**
  - Per 100,000 people
  - Statewide: 7.9
  - **Clark County**: 8.3
  - **Above state value**

- **Carbon Monoxide Poisoning**
  - Percent of tested children with blood lead \( \geq 5 \) µg/dL
  - Statewide: 6.4%
  - **Clark County**: 3.7%
  - **At or below state value**

**Carbon Monoxide**

- **Rate of ER Visits Per 100,000 People**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level. CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Clark County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HEAT STRESS
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Clark County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

CLARK COUNTY

HEALTH OUTCOMES
CLARK COUNTY

ASTHMA
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

<table>
<thead>
<tr>
<th><strong>ARSENIC</strong></th>
<th><strong>NITRATE</strong></th>
<th><strong>FLUORIDE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARSENIC</strong></td>
<td><strong>NITRATE</strong></td>
<td><strong>PERCENT OF POPULATION WITH</strong></td>
</tr>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)</td>
<td>FLUORIDATED PUBLIC WATER</td>
</tr>
<tr>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
<td>STATEWIDE: 88.6%</td>
</tr>
</tbody>
</table>

- **Above state value (with exception of fluoride where below state value is not preferred)**
- **At or below state value (with exception of fluoride where above state value is preferred)**
- **Suppressed**

**ARSENIC AND NITRATE**

**MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL  
**Source**: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed**: 2001-2015, data from 2015 displayed on dashboard  
**Data details**: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source**: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed**: 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details**: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source**: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed**: 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details**: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source**: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed**: 1991-2015, data from 2015 are displayed on the dashboard  
**Data details**: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source**: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed**: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details**: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source**: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed**: 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details**: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension
COLUMBIA COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
COLUMBIA COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
- 5.0%  Percent with blood lead ≥ 5 µg/dL
  - Wisconsin: 6.4%

Carbon Monoxide Poisoning
- 10.5  Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

HEALTH OUTCOMES

Asthma
- 39.4  Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

Melanoma
- 22.8  Rate of cases per 100,000 people
  - Wisconsin: 21.6

Heart Attack
- 28.3  Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

CLIMATE

Heat Stress
- 31.0  Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

Lyme Disease
- 75.8  Crude rate per 100,000 people
  - Wisconsin: 22.7

WATER QUALITY

Arsenic
- 1.6  Average concentration in µg/L
  - Wisconsin: 1.4

Nitrate
- 2.8  Average concentration in mg/L
  - Wisconsin: 1.5

Fluoride
- 78.3%  Percent of population with fluoridated public water
  - Wisconsin: 88.6%

AIR QUALITY

Ozone
- 2  Annual days above standard
  - Wisconsin: 3.8

Particulate Matter (PM) 2.5
- 0  Annual days above standard
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
At or below state value (with exception of fluoride where above state value is preferred)
^ Data are suppressed
Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
**BACKGROUND**

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

RATE OF ER VISITS RELATED TO CO PER 100,000

- **STATEWIDE:** 7.9

**CHILDHOOD LEAD POISONING**

PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL

- **STATEWIDE:** 6.4%

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Columbia County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-14</td>
<td></td>
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</tr>
</tbody>
</table>

HEAT STRESS
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

RATE OF ER VISITS PER 10,000 PEOPLE

- **ASTHMA**
  - RATE OF ER VISITS
  - PER 10,000 PEOPLE
  - STATEWIDE: 39.5
  - COLUMBIA COUNTY: 39.4

- **MELANOMA**
  - RATE OF NEW CASES
  - PER 100,000 PEOPLE
  - STATEWIDE: 21.6

- **LUNG CANCER**
  - RATE OF NEW CASES
  - PER 100,000 PEOPLE
  - STATEWIDE: 61.1

- **HEART ATTACK**
  - RATE OF HOSPITALIZATIONS
  - PER 10,000 PEOPLE
  - STATEWIDE: 27.4

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

- Arsenic mean concentration: 1.6 µg/L
  - Columbia County: (10 µg/L)
  - Wisconsin Average: (10 µg/L)

- Nitrate mean concentration: 2.8 mg/L
  - Statewide: 1.5 mg/L

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search “UW Stevens Point Well Water Viewer” in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The “2.5” in “particulate matter 2.5 (PM$_{2.5}$)” refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

**ANNUAL DAYS ABOVE STANDARD**

STATEWIDE: 3.8

**PARTICULATE MATTER 2.5**

**ANNUAL DAYS ABOVE STANDARD**

STATEWIDE: 0.3

**PARTICULATE MATTER 2.5**

**ANNUAL AVERAGE (µg/m$^3$)**

STATEWIDE: 9.1

*Above state value  At or below state value  ^ Suppressed

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 displayed on dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES** (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

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**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
CRAWFORD COUNTY
ENVIRONMENTAL HEALTH PROFILE

2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
CRAWFORD COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning

- 1.8% Percent with blood lead ≥5 µg/dL
  - Wisconsin: 6.4%

Carbon Monoxide Poisoning

- 6.2 Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

HEALTH OUTCOMES

Asthma

- 20.9 Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

Melanoma

- 21.6 Rate of cases per 100,000 people
  - Wisconsin: 21.6

Heart Attack

- 24.5 Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

CLIMATE

Heat Stress

- 35.5 Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

Lyme Disease

- 73.2 Crude rate per 100,000 people
  - Wisconsin: 22.7

WATER QUALITY

Arsenic

- 0.2 Average concentration in µg/L
  - Wisconsin: 1.4

Nitrate

- 1.6 Average concentration in mg/L
  - Wisconsin: 1.5

Fluoride

- 0.0% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

AIR QUALITY

Ozone

- 0 Annual days above standard
  - Wisconsin: 3.8

Particulate Matter (PM) 2.5

- 0 Annual days above standard
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

(1) Above state value (with exception of fluoride where below state value is not preferred)

(2) At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

CLIMATE  CRAWFORD COUNTY

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

- **ASTHMA**
  - RATE OF ER VISITS PER 10,000 PEOPLE
  - STATEWIDE: 39.5
  - Crawford County: 20.9
- **MELANOMA**
  - RATE OF NEW CASES PER 100,000 PEOPLE
  - STATEWIDE: 21.6
  - Crawford County: 21.6
- **LUNG CANCER**
  - RATE OF NEW CASES PER 100,000 PEOPLE
  - STATEWIDE: 61.1
  - Crawford County: 62.5
- **HEART ATTACK**
  - RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
  - STATEWIDE: 27.4
  - Crawford County: 24.5

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>NITRATE</th>
<th>FLUORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0.2</strong></td>
<td><strong>1.6</strong></td>
<td><strong>0.0%</strong></td>
</tr>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)</td>
<td>PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER</td>
</tr>
<tr>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
<td>STATEWIDE: 88.6%</td>
</tr>
</tbody>
</table>

- Above state value (with exception of fluoride where below state value is not preferred)
- At or below state value (with exception of fluoride where above state value is preferred)
- ^ Suppressed

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
<table>
<thead>
<tr>
<th>HOME HAZARDS</th>
<th>CLIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Childhood Lead Poisoning</strong></td>
<td><strong>Heat Stress</strong></td>
</tr>
<tr>
<td>✔ 0.9%</td>
<td>✔ 11.1</td>
</tr>
<tr>
<td>Percent with blood lead ≥5 µg/dL</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Wisconsin: 6.4%</td>
<td>Wisconsin: 16.5</td>
</tr>
<tr>
<td><strong>Carbon Monoxide Poisoning</strong></td>
<td><strong>Lyme Disease</strong></td>
</tr>
<tr>
<td>✔ 5.3</td>
<td>✔ 15.7</td>
</tr>
<tr>
<td>Rate of ER visits per 100,000 people</td>
<td>Crude rate per 100,000 people</td>
</tr>
<tr>
<td>Wisconsin: 7.9</td>
<td>Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEALTH OUTCOMES</th>
<th>WATER QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td><strong>Arsenic</strong></td>
</tr>
<tr>
<td>✔ 22.1</td>
<td>✔ 0.5</td>
</tr>
<tr>
<td>Rate of ER visits per 10,000 people*</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Wisconsin: 39.5</td>
<td>Wisconsin: 1.4</td>
</tr>
<tr>
<td><strong>Melanoma</strong></td>
<td><strong>Nitrate</strong></td>
</tr>
<tr>
<td>✔ 26.3</td>
<td>✔ 1.4</td>
</tr>
<tr>
<td>Rate of cases per 100,000 people</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Wisconsin: 21.6</td>
<td>Wisconsin: 1.5</td>
</tr>
<tr>
<td><strong>Heart Attack</strong></td>
<td><strong>Fluoride</strong></td>
</tr>
<tr>
<td>✔ 22.8</td>
<td>✔ 99.0%</td>
</tr>
<tr>
<td>Rate of hospitalizations per 10,000 people*</td>
<td>Percent of population with fluoridated public water</td>
</tr>
<tr>
<td>Wisconsin: 27.4</td>
<td>Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AIR QUALITY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone</strong></td>
<td><strong>Particulate Matter (PM) 2.5</strong></td>
</tr>
<tr>
<td>✔ 2</td>
<td>✔ 0</td>
</tr>
<tr>
<td>Annual days above standard</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Wisconsin: 3.8</td>
<td>Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**CARBON MONOXIDE POISONING**

RATE OF ER VISITS RELATED TO CO PER 100,000

**STATEWIDE:** 7.9

**DANE COUNTY**

- **Above state value**
- **At or below state value**
- **Suppressed**

**CHILDMHOOD LEAD POISONING**

PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL

**STATEWIDE:** 6.4%

**DANE COUNTY**

- **Above state value**
- **At or below state value**
- **Suppressed**

**CARBON MONOXIDE**

**CARBON MONOXIDE**

RATE OF ER VISITS PER 100,000 PEOPLE

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

### HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

### CLIMATE DANE COUNTY

**BACKGROUND**

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

### HEAT STRESS

**RATE OF ER VISITS PER 100,000 PEOPLE**

- **11.1**
  - **DANE COUNTY**
  - **Above state value**
- **15.7**
  - **LYME DISEASE**
  - **STATEWIDE: 22.7**
  - **At or below state value**

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

**DIVE DEEPER INTO THE DATA:** [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

#### Asthma

<table>
<thead>
<tr>
<th>Rate of ER Visits Per 10,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 39.5</td>
</tr>
<tr>
<td>Dane County: <strong>22.1</strong></td>
</tr>
</tbody>
</table>

#### Melanoma

<table>
<thead>
<tr>
<th>Rate of New Cases Per 100,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 21.6</td>
</tr>
<tr>
<td>Dane County: <strong>26.3</strong></td>
</tr>
</tbody>
</table>

#### Lung Cancer

<table>
<thead>
<tr>
<th>Rate of New Cases Per 100,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 61.1</td>
</tr>
<tr>
<td>Dane County: <strong>54.3</strong></td>
</tr>
</tbody>
</table>

#### Heart Attack

<table>
<thead>
<tr>
<th>Rate of Hospitalizations Per 10,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 27.4</td>
</tr>
<tr>
<td>Dane County: <strong>22.8</strong></td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search “UW Stevens Point Well Water Viewer” in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

Annual Days Above Standard (2012)

- **2**
  - OZONE
  - Annual Days Above Standard
  - Statewide: 3.8

- **0**
  - PARTICULATE MATTER 2.5
  - Annual Days Above Standard
  - Statewide: 0.3

- **9.5**
  - PARTICULATE MATTER 2.5
  - Annual Average ($\mu g/m^3$)
  - Statewide: 9.1

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

Annual Days Above Standard (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

15 | Wisconsin Environmental Public Health Tracking  
Continued on next page
**HEALTH OUTCOMES** (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
*Source:* Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
*Data details:* These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
*Source:* Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
*Years displayed:* Averaged data from 2013-2015  
*Data details:* Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
*Source:* Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
*Years displayed:* Averaged data from 2013-2015  
*Data details:* Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
*Source:* Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 2011-2015, data from 2015 displayed on dashboard  
*Data details:* Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
*Source:* National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
*Years displayed:* 2002-2012, data from 2012 are displayed on the dashboard  
*Data details:* These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
*Source:* National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
*Year displayed:* 2012  
*Data details:* This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

DODGE COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public's health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
### DODGE COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

#### HOME HAZARDS

**Childhood Lead Poisoning**
- 6.5% % Percent with blood lead ≥25 µg/dL
  - Wisconsin: 6.4%

**Carbon Monoxide Poisoning**
- 11.1 % Rate of ER visits per 100,000 people
  - Wisconsin: 7.9%

#### CLIMATE

**Heat Stress**
- 28.3 % Rate of ER visits per 100,000 people
  - Wisconsin: 16.5%

**Lyme Disease**
- 10.2 % Crude rate per 100,000 people
  - Wisconsin: 22.7%

#### HEALTH OUTCOMES

**Asthma**
- 35.8 % Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5%

**Melanoma**
- 20.9 % Rate of cases per 100,000 people
  - Wisconsin: 21.6%

**Heart Attack**
- 33.7 % Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4%

#### WATER QUALITY

**Arsenic**
- 4.2 µg/L Average concentration
  - Wisconsin: 1.4 µg/L

**Nitrate**
- 0.3 mg/L Average concentration
  - Wisconsin: 1.5 mg/L

**Fluoride**
- 69.6% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

#### AIR QUALITY

**Ozone**
- 6 Annual days above standard
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- 0 Annual days above standard
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

(1) Above state value (with exception of fluoride where below state value is not preferred)

(2) At or below state value (with exception of fluoride where above state value is preferred)

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**BACKGROUND**

**CARBON MONOXIDE POISONING**

**Rate of ER Visits Related to CO per 100,000**

**Statewide:** 7.9

**Dodge County**

*Above state value*

**CHILDHOOD LEAD POISONING**

**Percent of Tested Children with Blood Lead ≥5 µg/dL**

**Statewide:** 6.4%

**Dodge County**

*At or below state value*

*Suppressed*

**CARBON MONOXIDE**

**Rate of ER Visits per 100,000 People**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

### Asthma
- **Rate of ER Visits**
  - **Per 10,000 People**
  - **Statewide:** 39.5
  - **Dodge County:** 35.8

### Melanoma
- **Rate of New Cases**
  - **Per 100,000 People**
  - **Statewide:** 21.6
  - **Dodge County:** 20.9

### Lung Cancer
- **Rate of New Cases**
  - **Per 100,000 People**
  - **Statewide:** 61.1
  - **Dodge County:** 58.6

### Heart Attack
- **Rate of Hospitalizations**
  - **Per 10,000 People**
  - **Statewide:** 27.4
  - **Dodge County:** 33.7

ASTHMA
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th></th>
<th>(10 µg/L)</th>
<th>(10 mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

Maximum contaminant level set by U.S. EPA

Dodge County
Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. https://www.cdc.gov/about/history/tengpha.htm*
AIR QUALITY  DODGE COUNTY

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
(µg/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source:  Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  2001-2015, data from 2015 displayed on dashboard  
Data details:  Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source:  Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  2005-2014, data averaged from 2010-2014 displayed on dashboard  
Data details:  This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source:  Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  2005-2014, data averaged from 2010-2014 displayed on dashboard  
Data details:  These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

CLIMATE

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
Source:  Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  1991-2015, data from 2015 displayed on the dashboard  
Data details:  These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people  
Source:  Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details:  These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people  
Source:  Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed:  1999-2013, data from 2009-2013 displayed on the dashboard  
Data details:  Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

DOOR COUNTY ENVIRONMENTAL HEALTH PROFILE

2017
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know! dhstracking@wi.gov 608-267-2488

How have you used your county’s profile? Tell us about it! dhstracking@wi.gov 608-267-2488
## HOME HAZARDS

### Childhood Lead Poisoning
- **Rate:** 1.2%  
  - Percent with blood lead ≥ 5 µg/dL  
  - **Wisconsin:** 6.4%

### Carbon Monoxide Poisoning
- **Rate:** 11.1  
  - Rate of ER visits per 100,000 people  
  - **Wisconsin:** 7.9

## CLIMATE

### Heat Stress
- **Rate:** 13.6  
  - Rate of ER visits per 100,000 people  
  - **Wisconsin:** 16.5

### Lyme Disease
- **Rate:** 10.9  
  - Crude rate per 100,000 people  
  - **Wisconsin:** 22.7

## HEALTH OUTCOMES

### Asthma
- **Rate:** 33.4  
  - Rate of ER visits per 10,000 people*  
  - **Wisconsin:** 39.5

### Melanoma
- **Rate:** 39.7  
  - Rate of cases per 100,000 people  
  - **Wisconsin:** 21.6

### Heart Attack
- **Rate:** 26.8  
  - Rate of hospitalizations per 10,000 people*  
  - **Wisconsin:** 27.4

## WATER QUALITY

### Arsenic
- **Average concentration:** 0.4 µg/L  
  - **Wisconsin:** 1.4

### Nitrate
- **Average concentration:** 2.0 mg/L  
  - **Wisconsin:** 1.5

### Fluoride
- **Percent of population with fluoridated public water:** 88.5%  
  - **Wisconsin:** 88.6%

## AIR QUALITY

### Ozone
- **Days:** 14  
  - Annual days above standard  
  - **Wisconsin:** 3.8

### Particulate Matter (PM) 2.5
- **Days:** 1  
  - Annual days above standard  
  - **Wisconsin:** 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

1. Above state value (with exception of fluoride where below state value is not preferred)
2. At or below state value (with exception of fluoride where above state value is preferred)
3. Data are suppressed

---

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM  
Bureau of Environmental and Occupational Health  
Wisconsin Department of Health Services  |  Division of Public Health  
www.dhs.wisconsin.gov/epht  |  dhstracking@wi.gov  |  608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 5

Childhood Lead Poisoning
Rate of ER visits related to CO per 100,000

<table>
<thead>
<tr>
<th></th>
<th>Door County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATEWIDE: 7.9</td>
<td>Above state value</td>
<td>Above state value</td>
</tr>
<tr>
<td>STATEWIDE: 6.4%</td>
<td>At or below state value</td>
<td>At or below state value</td>
</tr>
</tbody>
</table>

Carbon monoxide poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

Carbon monoxide (CO) poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**BACKGROUND**

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

HEAT STRESS

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
**BACKGROUND**

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

### Asthma

RATE OF ER VISITS PER 10,000 PEOPLE

- **Statewide:** 39.5
- **Door County:** 33.4

### Melanoma

RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide:** 21.6
- **Door County:** 39.7

### Lung Cancer

RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide:** 61.1
- **Door County:** 53.8

### Heart Attack

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Statewide:** 27.4
- **Door County:** 26.8

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY DOOR COUNTY

BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th></th>
<th>Arsenic mean concentration (µg/L)</th>
<th>Nitrate mean concentration (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door County</td>
<td>0.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Wisconsin Average</td>
<td>1.4</td>
<td>1.5</td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay. *

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better. Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**  
(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**  
Rate per 10,000 people

**ASTHMA EMERGENCY ROOM VISITS**  
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM\textsubscript{2.5}) | Annual Average PM\textsubscript{2.5} (µg/m\textsuperscript{3}); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM\textsubscript{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM\textsubscript{2.5} concentration is 35 µg/m\textsuperscript{3}.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES

dhs.wisconsin.gov/epht
DOUGLAS COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it! dhstracking@wi.gov 608-267-2488
## DOUGLAS COUNTY DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate per 100,000 people</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>0.7%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>11.5</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate per 100,000 people</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>17.5</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>48.2</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate per 10,000 people*</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>43.7</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>16.8</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>34.9</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average Concentration</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>99.0%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days Above Standard</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

*Above state value (with exception of fluoride where below state value is preferred)

At or below state value (with exception of fluoride where above state value is preferred)

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) poisoning is a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DOUGLAS COUNTY
CLIMATE

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

- 17.5

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

- 48.2

STATEWIDE: 16.5
STATEWIDE: 22.7

Above state value
At or below state value
^ Suppressed
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

DOUGLAS COUNTY
HEALTH OUTCOMES

43.7

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 21.6

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

STATEWIDE: 27.4

58.1

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 61.1

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
**WATER QUALITY**

**DOUGLAS COUNTY**

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

- **1.3**
  - **ARSENIC**
  - AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
  - STATEWIDE: 1.4
- **0.3**
  - **NITRATE**
  - AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
  - STATEWIDE: 1.5
- **99.0%**
  - **FLUORIDE**
  - PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
  - STATEWIDE: 88.6%

**ARSENIC AND NITRATE**

**MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

- **(10 µg/L)**
- **(10 mg/L)**

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**
(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**
Rate per 10,000 people

**ASTHMA EMERGENCY ROOM VISITS**
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are not suppressed and are age-adjusted per 100,000 people. Annual average rate of confirmed lead poisoning cases per 100,000 people adjustment is conducted using the 2000 U.S. standard population.

Carbon Monoxide Poisoning | Annual average rate of confirmed carbon monoxide poisonings per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: Data are collected from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM₂.₅) | Annual Average PM₂.₅ (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM₂.₅ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM₂.₅ concentration is 35 µg/m³.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
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608-267-2488
HOME HAZARDS

Childhood Lead Poisoning
- 1.9% Percent with blood lead ≥ 5 µg/dL
- Wisconsin: 6.4%

Carbon Monoxide Poisoning
- 6.2 Rate of ER visits per 100,000 people
- Wisconsin: 7.9

CLIMATE

Heat Stress
- 20.4 Rate of ER visits per 100,000 people
- Wisconsin: 16.5

Lyme Disease
- 78.7 Crude rate per 100,000 people
- Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
- 23.9 Rate of ER visits per 10,000 people*
- Wisconsin: 39.5

Melanoma
- 15.5 Rate of cases per 100,000 people
- Wisconsin: 21.6

Heart Attack
- 21.2 Rate of hospitalizations per 10,000 people*
- Wisconsin: 27.4

WATER QUALITY

Arsenic
- 0.4 Average concentration in µg/L
- Wisconsin: 1.4

Nitrate
- 2.6 Average concentration in mg/L
- Wisconsin: 1.5

Fluoride
- 79.4% Percent of population with fluoridated public water
- Wisconsin: 88.6%

AIR QUALITY

Ozone
- 0 Annual days above standard
- Wisconsin: 3.8

Particulate Matter (PM) 2.5
- 0 Annual days above standard
- Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
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**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING

- **Rate of ER Visits Related to CO Per 100,000**
  - **Statewide:** 7.9
  - **Dunn County:** 6.2

- **Percent of Tested Children with Blood Lead ≥5 µg/dL**
  - **Statewide:** 6.4%
  - **Dunn County:** 1.9%

CARBON MONOXIDE

- **Rate of ER Visits Per 100,000 People**

  - Above state value
  - At or below state value
  - Suppressed

CARBON MONOXIDE POISONING

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

- **STATEWIDE:** 39.5
- **DUNN COUNTY:** 23.9

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 21.6
- **DUNN COUNTY:** 15.5

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 61.1
- **DUNN COUNTY:** 45.4

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE:** 27.4
- **DUNN COUNTY:** 21.2

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**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

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DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 9
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
Continued on next page
HEALTH OUTCOMES  (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
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EAU CLAIRE COUNTY ENVIRONMENTAL HEALTH PROFILE

2017
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EAU CLAIRE COUNTY
DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

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Childhood Lead Poisoning
0.7%  |  Percent with blood lead ≥5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
5.4  |  Rate of ER visits per 100,000 people
Wisconsin: 7.9

HEALTH OUTCOMES

Asthma
26.1  |  Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
25.8  |  Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
26.9  |  Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

CLIMATE

Heat Stress
10.0  |  Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
38.2  |  Crude rate per 100,000 people
Wisconsin: 22.7

WATER QUALITY

Arsenic
0.4  |  Average concentration in µg/L
Wisconsin: 1.4

Nitrate
2.3  |  Average concentration in mg/L
Wisconsin: 1.5

Fluoride
83.7%  |  Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
0  |  Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0  |  Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

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www.dhs.wisconsin.gov/epht  |  dhstracking@wi.gov  |  608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
**BACKGROUND**

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

---

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

STATEWIDE: 7.9

**0.7%**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

STATEWIDE: 6.4%

- Above state value
- At or below state value
- Suppressed

---

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **10.0**
  - Heat Stress Rate of ER Visits per 100,000 People
  - Statewide: 16.5

- **38.2**
  - Lyme Disease Rate of Cases per 100,000 People
  - Statewide: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)

Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**RATE OF ER VISITS PER 10,000 PEOPLE**

**STATEWIDE:**

- **ASTHMA**: 39.5
- **MELANOMA**: 21.6
- **LUNG CANCER**: 61.1
- **HEART ATTACK**: 27.4

**EAU CLAIRE COUNTY**

- **ASTHMA**: 26.1
- **MELANOMA**: 25.8
- **LUNG CANCER**: 57.4
- **HEART ATTACK**: 26.9

**RATE OF NEW CASES PER 100,000 PEOPLE**

**STATEWIDE:**

- **ASTHMA**: 21.6
- **LUNG CANCER**: 61.1

**EAU CLAIRE COUNTY**

- **ASTHMA**: 61.1

**BACKGROUND**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our **asthma disparities surveillance brief**, available in the resources section of our website.

**DIVE DEEPER INTO THE DATA:**

dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY EAU CLAIRE COUNTY

BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

<table>
<thead>
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<th></th>
<th>0.4</th>
<th>2.3</th>
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<tr>
<td>ARSENIC</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
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<tr>
<td>STATEWIDE: 1.4</td>
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<tr>
<td>NITRATE</td>
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<td></td>
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<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>STATEWIDE: 1.5</td>
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<td></td>
<td></td>
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<tr>
<td>FLUORIDE</td>
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<tr>
<td>PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER</td>
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<tr>
<td>STATEWIDE: 88.6%</td>
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</tbody>
</table>

ARSENIC AND NITRATE

MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

- Arsenic mean concentration (µg/L)
- Nitrate mean concentration (mg/L)

- Maximum contaminant level set by U.S. EPA
  - Eau Claire County
  - Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

**ANNUAL DAYS ABOVE STANDARD (2012)**

<table>
<thead>
<tr>
<th>Days Above Standard</th>
<th>Data</th>
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<td>0-5 days</td>
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</tr>
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<td>6-9 days</td>
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<td>10-14 days</td>
<td>9.3</td>
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<tr>
<td>15-18 days</td>
<td></td>
</tr>
<tr>
<td>19-23 days</td>
<td></td>
</tr>
</tbody>
</table>

**OZONE**

**ANNUAL DAYS ABOVE STANDARD**

- **STATEWIDE**: 3.8

**PARTICULATE MATTER 2.5**

- **ANNUAL DAYS ABOVE STANDARD**
  - **STATEWIDE**: 0.3

**PARTICULATE MATTER 2.5**

- **ANNUAL AVERAGE (µg/m$^3$)**
  - **STATEWIDE**: 9.1


Extended information on Ozone:

**OZONE**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people
Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with confirmed cases and does not include probable or estimated cases. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?  
Tell us about it! 
dhstracking@wi.gov  
608-267-2488
# FLORENCE COUNTY DASHBOARD
## 2017 ENVIRONMENTAL HEALTH PROFILE

## HOME HAZARDS
- **Childhood Lead Poisoning**
  - Percent with blood lead ≥ 5 µg/dL
    - 0.0%
    - Wisconsin: 6.4%
- **Carbon Monoxide Poisoning**
  - Rate of ER visits per 100,000 people
    - 0.0
    - Wisconsin: 7.9

## CLIMATE
- **Heat Stress**
  - Rate of ER visits per 100,000 people
    - 0.0
    - Wisconsin: 16.5
- **Lyme Disease**
  - Crude rate per 100,000 people
    - 22.4
    - Wisconsin: 22.7

## HEALTH OUTCOMES
- **Asthma**
  - Rate of ER visits per 10,000 people*
    - 0.0
    - Wisconsin: 39.5
- **Melanoma**
  - Rate of cases per 100,000 people
    - ^
    - Wisconsin: 21.6
- **Heart Attack**
  - Rate of hospitalizations per 10,000 people*
    - 15.0
    - Wisconsin: 27.4

## WATER QUALITY
- **Arsenic**
  - Average concentration in µg/L
    - 2.0
    - Wisconsin: 1.4
- **Nitrate**
  - Average concentration in mg/L
    - 0.6
    - Wisconsin: 1.5
- **Fluoride**
  - Percent of population with fluoridated public water
    - 100.0%
    - Wisconsin: 88.6%

## AIR QUALITY
- **Ozone**
  - Annual days above standard
    - 2
    - Wisconsin: 3.8
- **Particulate Matter (PM) 2.5**
  - Annual days above standard
    - 0
    - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Above state value (with exception of fluoride where below state value is not preferred)

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Background

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon Monoxide Poisoning

Rate of ER Visits Related to CO per 100,000

Statewide: 7.9

Carbon Monoxide Poisoning

Rate of ER Visits per 100,000 People

Florence County

Wisconsin Average

Carbon Monoxide Poisoning

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.

Maps courtesy of Centers for Disease Control and Prevention.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**RATES**

**STATEWIDE:**
- **Asthma** rate of ER visits per 10,000 people: 39.5
- **Melanoma** rate of new cases per 100,000 people: 61.1
- **Lung cancer** rate of new cases per 100,000 people: 21.6
- **Heart attack** rate of hospitalizations per 10,000 people: 27.4

**FLORENCE COUNTY**
- **Asthma** rate of ER visits per 10,000 people: 0.0
- **Melanoma** rate of new cases per 100,000 people: 66.6
- **Lung cancer** rate of new cases per 100,000 people: 15.0

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**HEALTH OUTCOMES**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
FOND DU LAC COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
**FOND DU LAC COUNTY**

**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

- **Childhood Lead Poisoning**
  - 6.2% Percent with blood lead ≥ 5 µg/dL
  - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - 3.9 Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

### HEALTH OUTCOMES

- **Asthma**
  - 22.5 Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

- **Melanoma**
  - 31.3 Rate of cases per 100,000 people
  - Wisconsin: 21.6

- **Heart Attack**
  - 29.9 Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

### CLIMATE

- **Heat Stress**
  - 20.2 Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

- **Lyme Disease**
  - 8.8 Crude rate per 100,000 people
  - Wisconsin: 22.7

### WATER QUALITY

- **Arsenic**
  - 1.2 Average concentration in µg/L
  - Wisconsin: 1.4

- **Nitrate**
  - 0.8 Average concentration in mg/L
  - Wisconsin: 1.5

- **Fluoride**
  - 88.9% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

### AIR QUALITY

- **Ozone**
  - 6 Annual days above standard
  - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - 0 Annual days above standard
  - Wisconsin: 0.3

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*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Above state value (with exception of fluoride where below state value is not preferred)

^ At or below state value (with exception of fluoride where above state value is preferred)

^ Data are suppressed

Data details on next page

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WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
# DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

## HOME HAZARDS

**Childhood Lead Poisoning:** Percent of children (less than six years of age) tested who had a blood lead level ≥ 5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**Carbon Monoxide (CO) Poisoning:** Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

## CLIMATE

**Lyme Disease:** Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**Heat Stress:** Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

## HEALTH OUTCOMES

**Melanoma:** Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

**Asthma:** Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**Heart Attack:** Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

## WATER QUALITY

**Arsenic and Nitrate:** Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

**Fluoride:** Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

## AIR QUALITY

**Particulate Matter 2.5 (PM\textsubscript{2.5}) and Ozone:** Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>Rate of ER Visits Related to CO Related to per 100,000</th>
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<td><strong>3.9</strong></td>
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**Statewide:** 7.9

**Fond du Lac County:**

- **Above state value:**
- **At or below state value:**
- **Suppressed**

**CARBON MONOXIDE**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
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LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM_{2.5})" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m³)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

OZONE
The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. For counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES** (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (μg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM_{2.5})** | Annual Average PM_{2.5} (μg/m^3); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 μg/m^3.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called *Ideas for Taking Action*. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to access *Ideas for Taking Action*.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht) and click the link to subscribe.

OUR STAFF

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES

dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
FOREST COUNTY
DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
- Percent with blood lead ≥ 5 µg/dL
  - Wisconsin: 6.4%
- Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

Carbon Monoxide Poisoning
- Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

CLIMATE

Heat Stress
- Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

Lyme Disease
- Crude rate per 100,000 people
  - Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
- Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

Melanoma
- Rate of cases per 100,000 people
  - Wisconsin: 21.6

Heart Attack
- Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

WATER QUALITY

Arsenic
- Average concentration in µg/L
  - Wisconsin: 1.4

Nitrate
- Average concentration in mg/L
  - Wisconsin: 1.5

Fluoride
- Percent of population with fluoridated public water
  - Wisconsin: 88.6%

AIR QUALITY

Ozone
- Annual days above standard
  - Wisconsin: 3.8

Particulate Matter (PM) 2.5
- Annual days above standard
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
At or below state value (with exception of fluoride where above state value is preferred)
^ Data are suppressed
Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **14.3**
  - Above state value

   - **STATEWIDE: 16.5**
   - **Suppressed**

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

- **55.2**
  - At or below state value

   - **STATEWIDE: 22.7**
   - **Suppressed**

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

- **Statewide**: 39.5
- **Forest County**: 26.1

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide**: 21.6
- **Forest County**: 10.4

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide**: 61.1
- **Forest County**: 94.5

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Statewide**: 27.4
- **Forest County**: 53.6

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

CLIMATE

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people

Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard

Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (μg/L) in public drinking water

Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources

Years displayed: Averaged data from 2013-2015

Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water

Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources

Years displayed: Averaged data from 2013-2015

Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water

Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 2011-2015, data from 2015 displayed on dashboard

Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency

Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention

Years displayed: 2002-2012, data from 2012 are displayed on the dashboard

Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency

Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention

Year displayed: 2012

Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## HOME HAZARDS

### Childhood Lead Poisoning
- **Rate:** 4.6%  
  - **Percent with blood lead ≥ 5 µg/dL**  
  - **Wisconsin:** 6.4%

### Carbon Monoxide Poisoning
- **Rate:** 8.9  
  - **Rate of ER visits per 100,000 people**  
  - **Wisconsin:** 7.9

## CLIMATE

### Heat Stress
- **Rate:** 30.7  
  - **Rate of ER visits per 100,000 people**  
  - **Wisconsin:** 16.5

### Lyme Disease
- **Rate:** 28.7  
  - **Crude rate per 100,000 people**  
  - **Wisconsin:** 22.7

## HEALTH OUTCOMES

### Asthma
- **Rate:** 31.3  
  - **Rate of ER visits per 10,000 people**  
  - **Wisconsin:** 39.5

### Melanoma
- **Rate:** 20.8  
  - **Rate of cases per 100,000 people**  
  - **Wisconsin:** 21.6

### Heart Attack
- **Rate:** 19.0  
  - **Rate of hospitalizations per 10,000 people**  
  - **Wisconsin:** 27.4

## WATER QUALITY

### Arsenic
- **Average concentration in µg/L**  
  - **Wisconsin:** 1.4

### Nitrate
- **Average concentration in mg/L**  
  - **Wisconsin:** 1.5

### Fluoride
- **Percent of population with fluoridated public water**  
  - **Wisconsin:** 88.6%

## AIR QUALITY

### Ozone
- **Annual days above standard**  
  - **Wisconsin:** 3.8

### Particulate Matter (PM) 2.5
- **Annual days above standard**  
  - **Wisconsin:** 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

1 Above state value (with exception of fluoride where below state value is not preferred)

2 At or below state value (with exception of fluoride where above state value is preferred)

3 Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
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Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
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CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
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Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
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Years displayed: 2009-2013
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Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
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Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
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Fluoride: Percent of population with access to fluoridated public water
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AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbox monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASTHMA
RATES OF ER VISITS PER 10,000 PEOPLE

- **Grant County**: 31.3
- **Wisconsin Average**: 39.5

MELANOMA
RATES OF NEW CASES PER 100,000 PEOPLE

- **Grant County**: 20.8
- **Wisconsin Average**: 21.6

LUNG CANCER
RATES OF NEW CASES PER 100,000 PEOPLE

- **Grant County**: 51.5
- **Wisconsin Average**: 61.1

HEART ATTACK
RATES OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Grant County**: 19.0
- **Wisconsin Average**: 27.4

---

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

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**DIVE DEEPER INTO THE DATA**: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Background

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

1.2
ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4
Above state value (with exception of fluoride where below state value is not preferred)

0.8
NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5
At or below state value (with exception of fluoride where above state value is preferred)

87.5%
FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

Arsenic and Nitrate in Public Drinking Water

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

Dive Deeper into the Data: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2001-2015, data from 2015 displayed on dashboard  
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard  
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people  
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard  
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard  
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Continued on next page
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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Iowa Environmental Public Health Tracking Program
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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? 
Tell us about it!
dhstracking@wi.gov
608-267-2488
**GREEN LAKE COUNTY**
**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate (per 100,000 people)</th>
<th>Wisconsin Rate (per 100,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>3.6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>14.8</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate (per 100,000 people)</th>
<th>Wisconsin Rate (per 100,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>19.3</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>31.8</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate (per 10,000 people)</th>
<th>Wisconsin Rate (per 100,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>26.1</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>26.2</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>35.7</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Concentration (µg/L)</th>
<th>Wisconsin Concentration (µg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>4.4</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>56.0%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Days Above Standard</th>
<th>Wisconsin Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>4</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

1. Above state value (with exception of fluoride where below state value is not preferred)
2. At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed. Data details on next page.
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM<sub>2.5</sub>) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Carbon Monoxide Poisoning**

**Rate of ER Visits Related to CO Per 100,000**

- **Statewide:** 7.9
- **Green Lake County:** 14.8

**Childhood Lead Poisoning**

**Percent of Tested Children With Blood Lead ≥5 µg/dL**

- **Statewide:** 6.4%
- **Green Lake County:** 3.6%

**Background**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned would be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **19.3**
  - **HEAT STRESS**
  - **RATE OF ER VISITS PER 100,000 PEOPLE**
  - **STATEWIDE: 16.5**

- **31.8**
  - **LYME DISEASE**
  - **RATE OF CASES PER 100,000 PEOPLE**
  - **STATEWIDE: 22.7**

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

**LYME DISEASE AT THE NATIONAL LEVEL**

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

### ASTHMA
- **Rate of ER Visits per 10,000 People**
  - **Green Lake County:** 26.1
  - **Wisconsin Average:** 39.5

### MELANOMA
- **Rate of New Cases per 100,000 People**
  - **Green Lake County:** 26.2
  - **Wisconsin Average:** 21.6

### LUNG CANCER
- **Rate of New Cases per 100,000 People**
  - **Green Lake County:** 53.7
  - **Wisconsin Average:** 61.1

### HEART ATTACK
- **Rate of Hospitalizations per 10,000 People**
  - **Green Lake County:** 35.7
  - **Wisconsin Average:** 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

ARSENIC AND NITRATE IN PUBLIC WATER (2013-2015)

- **ARSENIC**
  - AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
  - STATEWIDE: 1.4
  - Above state value (with exception of fluoride where below state value is not preferred)

- **NITRATE**
  - AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
  - STATEWIDE: 1.5
  - At or below state value (with exception of fluoride where above state value is preferred)

- **FLUORIDE**
  - PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
  - STATEWIDE: 88.6%
  - Suppressed
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search “UW Stevens Point Well Water Viewer” in your search engine.

OZONE ANNUAL DAYS ABOVE STANDARD (2012)

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 13

STATEWIDE: 3.8

OZONE ANNUAL AVERAGE (µg/m³)
STATEWIDE: 0.3

PARTICULATE MATTER 2.5 ANNUAL AVERAGE (µg/m³)
STATEWIDE: 9.1

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM_{2.5})" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m³)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*


OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 13
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM\(_{2.5}\)) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM\(_{2.5}\) has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM\(_{2.5}\), heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**
(µg/m\(^3\))

**HEART ATTACK HOSPITALIZATIONS**
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

**ASTHMA EMERGENCY ROOM VISITS**
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** These data are from emergency room visit records. The measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**HEALTH OUTCOMES**

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
GREEN COUNTY ENVIRONMENTAL HEALTH PROFILE

2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?  
Tell us about it!  
dhstracking@wi.gov  
608-267-2488
# Green County Dashboard | 2017 Environmental Health Profile

## Home Hazards

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>3.7%</td>
<td>Percent with blood lead ≥ 5 µg/dL</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>5.3</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
</tbody>
</table>

## Climate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>19.3</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>18.8</td>
<td>Crude rate per 100,000 people</td>
</tr>
</tbody>
</table>

## Health Outcomes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>30.7</td>
<td>Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td>Melanoma</td>
<td>18.5</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>26.0</td>
<td>Rate of hospitalizations per 10,000 people*</td>
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</tbody>
</table>

## Water Quality

<table>
<thead>
<tr>
<th>Substance</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.4</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.5</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>96.9%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

## Air Quality

<table>
<thead>
<tr>
<th>Substance</th>
<th>Days Above Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>4</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM_{2.5}) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

- **Rate of ER visits related to CO per 100,000 people**
  - **Statewide:** 7.9
  - **Green County:** 5.3

**CHILDHOOD LEAD POISONING**

- **Percent of tested children with blood lead ≥5 µg/dL**
  - **Statewide:** 6.4%
  - **Green County:** 3.7%

**BACKGROUND**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

30.7
ASTHMA
RATE OF ER VISITS
PER 10,000 PEOPLE
STATEWIDE: 39.5

18.5
MELANOMA
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 21.6

58.5
LUNG CANCER
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 61.1

26.0
HEART ATTACK
RATE OF HOSPITALIZATIONS
PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY  GREEN COUNTY

BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

0.4
ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

0.5
NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

96.9%
FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Maximum contaminant level set by U.S. EPA
- Green County
- Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER
Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

HEALTH OUTCOMES
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it!

dhstracking@wi.gov
608-267-2488
IOWA COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
0.0%  Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
16.3  Rate of ER visits per 100,000 people
Wisconsin: 7.9

HEALTH OUTCOMES

Asthma
29.9  Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
22.8  Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
28.9  Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

CLIMATE

Heat Stress
32.2  Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
29.4  Crude rate per 100,000 people
Wisconsin: 22.7

WATER QUALITY

Arsenic
0.6  Average concentration in µg/L
Wisconsin: 1.4

Nitrate
0.9  Average concentration in mg/L
Wisconsin: 1.5

Fluoride
73.3%  Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
3  Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0  Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
At or below state value (with exception of fluoride where above state value is preferred)
^ Data are suppressed
Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
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Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
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HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking  |  5

CHILDHOOD LEAD POISONING
PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥ 5 µg/dL
STATEWIDE: 6.4%

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING
RATE OF ER VISITS RELATED TO CO PER 100,000
STATEWIDE: 7.9

CARBON MONOXIDE
RATE OF ER VISITS PER 100,000 PEOPLE

Carbon monoxide (CO) poisoning is a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

BACKGROUND
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING
RATE OF ER VISITS RELATED TO CO PER 100,000
STATEWIDE: 7.9

CARBON MONOXIDE
RATE OF ER VISITS PER 100,000 PEOPLE

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

This data point is suppressed.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 9
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>NITRATE</th>
<th>FLUORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)</td>
<td>PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER</td>
</tr>
<tr>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
<td>STATEWIDE: 88.6%</td>
</tr>
</tbody>
</table>

- **ARSENIC**: 0.6
- **NITRATE**: 0.9
- **FLUORIDE**: 73.3%

### WATER QUALITY IOWA COUNTY

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

### ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

**PARTICULATE MATTER 2.5**
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

**PARTICULATE MATTER 2.5**
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES** (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
IRON COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov 608-267-2488
# IRON COUNTY DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

## HOME HAZARDS

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>0.0% Percent with blood lead ≥ 5 µg/dL</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>^= Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 7.9</td>
</tr>
</tbody>
</table>

## CLIMATE

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>^= Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>^= Crude rate per 100,000 people</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 22.7</td>
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## HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Rate/Measure</th>
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<tbody>
<tr>
<td>Asthma</td>
<td>^= Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>19.9 Rate of cases per 100,000 people</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>21.0 Rate of hospitalizations per 10,000 people*</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 27.4</td>
</tr>
</tbody>
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## WATER QUALITY

<table>
<thead>
<tr>
<th>Water Quality</th>
<th>Average concentration in µg/L</th>
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</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.0</td>
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<tr>
<td></td>
<td>Wisconsin: 1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.0% Percent of population with fluoridated public water</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 88.6%</td>
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</tbody>
</table>

## AIR QUALITY

<table>
<thead>
<tr>
<th>Air Quality</th>
<th>Annual days above standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Above state value (with exception of fluoride where below state value is not preferred)

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014; Note: Iron County suppressed even after aggregating 10 years of data.

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014; Note: Iron County suppressed even after aggregating 10 years of data.

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-09</td>
<td></td>
</tr>
<tr>
<td>2010-14</td>
<td></td>
</tr>
</tbody>
</table>

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASThma

RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

Iron County: 19.9

HEART ATTACK

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

STATEWIDE: 27.4

Iron County: 21.0

MELANOMA

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 21.6

Iron County: 79.3

LUNG CANCER

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 61.1

Iron County: 19.9

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

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BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

0

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

0

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

7.3

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. Note: Iron County suppressed even after aggregating 10 years of data.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. Note: Iron County suppressed even after aggregating 10 years of data.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more

CLIMATE

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

HEALTH OUTCOMES

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

**Heart Attack**  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people

**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard

**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

**Arsenic**  |  Mean concentration of arsenic (µg/L) in public drinking water

**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources

**Years displayed:** Averaged data from 2013-2015

**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate**  |  Mean concentration of nitrate (mg/L) in public drinking water

**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources

**Years displayed:** Averaged data from 2013-2015

**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride**  |  Percent of population with access to fluoridated public drinking water

**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2011-2015, data from 2015 displayed on dashboard

**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

**Particulate Matter 2.5 (PM\textsubscript{2.5})**  |  Annual Average PM\textsubscript{2.5} (µg/m\textsuperscript{3}); Annual number of days above standard set by the U.S. Environmental Protection Agency

**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention

**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard

**Data details:** These measures include monitored and modeled estimates of PM\textsubscript{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard (NAAQS) for a 24-hour average PM\textsubscript{2.5} concentration is 35 µg/m\textsuperscript{3}.

**Ozone**  |  Annual number of days above standard set by the U.S. Environmental Protection Agency

**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention

**Year displayed:** 2012

**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

Wisconsin Environmental Public Health Tracking Program

Jackson County Environmental Health Profile

Wisconsin Environmental Public Health Tracking Program
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
JACKSON COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
2.9% | Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
25.5 | Rate of ER visits per 100,000 people
Wisconsin: 7.9

CLIMATE

Heat Stress
42.0 | Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
24.3 | Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
40.7 | Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
11.1 | Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
28.3 | Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
0.3 | Average concentration in µg/L
Wisconsin: 1.4

Nitrate
0.7 | Average concentration in mg/L
Wisconsin: 1.5

Fluoride
40.5% | Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
0 | Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0 | Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
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Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
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Year displayed: 2015

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Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

**CLIMATE JACkSON COUNTRY**

**BACKGROUND**

**HEAT STRESS**

RATE OF ER VISITS PER 100,000 PEOPLE

- **42.0**
  - Above state value

- **24.3**
  - At or below state value

**LYMEx DISEASE**

RATE OF CASES PER 100,000 PEOPLE

- **STATEWIDE: 16.5**
  - At or below state value

- **STATEWIDE: 22.7**
  - Suppressed

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

- **ASTHMA**
  - RATE OF ER VISITS PER 10,000 PEOPLE
    - STATEWIDE: 39.5
    - JACKSON COUNTY: 40.7
    - Above state value

- **MELANOMA**
  - RATE OF NEW CASES PER 100,000 PEOPLE
    - STATEWIDE: 21.6
    - JACKSON COUNTY: 11.1
    - At or below state value

- **LUNG CANCER**
  - RATE OF NEW CASES PER 100,000 PEOPLE
    - STATEWIDE: 61.1
    - JACKSON COUNTY: 68.9
    - Above state value

- **HEART ATTACK**
  - RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
    - STATEWIDE: 27.4
    - JACKSON COUNTY: 28.3
    - At or below state value

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

0.3 ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

0.7 NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

40.5% FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Maximum contaminant level set by U.S. EPA

- Jackson County
- Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER
Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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15 | Wisconsin Environmental Public Health Tracking  
Continued on next page
**HEALTH OUTCOMES**

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
### Home Hazards

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate or Case Rate per 100,000 people</th>
<th>Wisconsin Rate or Case Rate per 100,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>4.7%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>8.1</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### Climate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits per 100,000 people</th>
<th>Wisconsin Rate of ER visits per 100,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>17.9</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>9.5</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### Health Outcomes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits per 10,000 people</th>
<th>Wisconsin Rate of ER visits per 10,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>36.0</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>17.7</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>24.0</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### Water Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average concentration in μg/L</th>
<th>Wisconsin Average concentration in μg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>2.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>91.5%</td>
<td>88.6%</td>
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</tbody>
</table>

### Air Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual days above standard</th>
<th>Wisconsin Annual days above standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>4</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING

**Rate of ER Visits Related to CO per 100,000**

<table>
<thead>
<tr>
<th>Year</th>
<th>Jefferson County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>8.1</td>
<td>7.2</td>
</tr>
<tr>
<td>2010-2014</td>
<td>7.4</td>
<td>7.2</td>
</tr>
</tbody>
</table>

**Statewide:** 7.9

**Childhood Lead Poisoning**

**Percentage of Tested Children with Blood Lead ≥5 µg/dL**

<table>
<thead>
<tr>
<th>Year</th>
<th>Jefferson County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>4.7%</td>
<td>4.1%</td>
</tr>
<tr>
<td>2010-2014</td>
<td>4.4%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

**Statewide:** 6.4%

*CARBON MONOXIDE POISONING*

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 5
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- Jefferson County
- Wisconsin Average

HEAT STRESS
RATE OF ER VISITS
PER 100,000 PEOPLE

STATEWIDE: 16.5

HEAT STRESS
RATE OF CASES
PER 100,000 PEOPLE

STATEWIDE: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
## Background

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

### Water Quality - Jefferson County

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Average Concentration</th>
<th>Percent of Population with Fluoridated Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>2.5 µg/L</td>
<td></td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.6 mg/L</td>
<td></td>
</tr>
<tr>
<td>Fluoride</td>
<td>91.5%</td>
<td></td>
</tr>
</tbody>
</table>

#### Arsenic and Nitrate in Public Drinking Water

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

### Diagram

- **Arsenic**: Statewide average is 1.4 µg/L, Jefferson County average is 2.5 µg/L.
- **Nitrate**: Statewide average is 1.5 mg/L, Jefferson County average is 1.6 mg/L.
- **Fluoride**: Statewide average is 88.6%, Jefferson County average is 91.5%.

---

**Dive Deeper into the Data**: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

---

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
(µg/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

CLIMATE

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell’s palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
## JUNEAU COUNTY

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>2.6%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>13.3</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>49.0</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>87.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>46.3</td>
</tr>
<tr>
<td>Melanoma</td>
<td>17.7</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>35.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.2</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.1</td>
</tr>
<tr>
<td>Fluoride</td>
<td>54.9%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Data are suppressed.

Data details on next page.
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

- **Childhood Lead Poisoning:** Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
  Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
  Year displayed: 2015

- **Carbon Monoxide (CO) Poisoning:** Age-adjusted rate of emergency room visits related to CO poisoning
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  Years displayed: Averaged data from 2010-2014

**CLIMATE**

- **Lyme Disease:** Crude rate of confirmed Lyme disease cases
  Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
  Year displayed: 2015

- **Heat Stress:** Age-adjusted rate of emergency room visits related to heat stress
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

- **Melanoma:** Age-adjusted rate of new cases reported by health care providers
  Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  Years displayed: 2009-2013

- **Asthma:** Age-adjusted rate of emergency room visits related to asthma
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  Year displayed: 2014

- **Heart Attack:** Age-adjusted rate of emergency room visits related to heart attack
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  Year displayed: 2014

**WATER QUALITY**

- **Arsenic and Nitrate:** Measured concentrations from active public water systems
  Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
  Years displayed: Averaged data from 2013-2015

- **Fluoride:** Percent of population with access to fluoridated public water
  Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
  Year displayed: 2015

**AIR QUALITY**

- **Particulate Matter 2.5 (PM$_{2.5}$) and Ozone:** Monitored and modeled estimates of air quality readings
  Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
  Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>RATE OF ER VISITS RELATED TO CO PER 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEWIDE:</strong> 7.9</td>
</tr>
</tbody>
</table>

**CHILDHOOD LEAD POISONING**

<table>
<thead>
<tr>
<th>PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEWIDE:</strong> 6.4%</td>
</tr>
</tbody>
</table>

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

46.3
ASTHMA
RATE OF ER VISITS
PER 10,000 PEOPLE
STATEWIDE: 39.5

17.7
MELANOMA
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 21.6

67.4
LUNG CANCER
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 61.1

35.4
HEART ATTACK
RATE OF HOSPITALIZATIONS
PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
**MELANOMA AND LUNG CANCER**

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

**HEART ATTACK**

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
Continued on next page
HEALTH OUTCOMES (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM_{2.5})** | Annual Average PM_{2.5} (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 µg/m³.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
KENOSHA COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

**HOME HAZARDS**

- **Childhood Lead Poisoning**
  - Rate: 5.3%  
  - Percent with blood lead ≥ 5 µg/dL
    - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - Rate: 3.9
  - Rate of ER visits per 100,000 people
    - Wisconsin: 7.9

**CLIMATE**

- **Heat Stress**
  - Rate: 14.3
  - Rate of ER visits per 100,000 people
    - Wisconsin: 16.5

- **Lyme Disease**
  - Rate: 3.0
  - Crude rate per 100,000 people
    - Wisconsin: 22.7

**HEALTH OUTCOMES**

- **Asthma**
  - Rate: 54.4
  - Rate of ER visits per 10,000 people*
    - Wisconsin: 39.5

- **Melanoma**
  - Rate: 13.8
  - Rate of cases per 100,000 people
    - Wisconsin: 21.6

- **Heart Attack**
  - Rate: 25.5
  - Rate of hospitalizations per 10,000 people*
    - Wisconsin: 27.4

**WATER QUALITY**

- **Arsenic**
  - Average concentration in µg/L
    - Wisconsin: 1.4

- **Nitrate**
  - Average concentration in mg/L
    - Wisconsin: 1.5

- **Fluoride**
  - Percent of population with fluoridated public water
    - Wisconsin: 88.6%

**AIR QUALITY**

- **Ozone**
  - Annual days above standard
    - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - Annual days above standard
    - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

*Data are suppressed. Data details on next page.
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
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**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
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Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
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Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Background**

**Carbon Monoxide (CO) Poisoning**

- **Rate of ER Visits Related to CO per 100,000**
  - Kenosha County: 3.9
  - Wisconsin Average: 5.3%

**Childhood Lead Poisoning**

- **Percent of Tested Children with Blood Lead ≥5 µg/dL**
  - Kenosha County: 3.9%
  - Wisconsin Average: 6.4%

**Carbon Monoxide**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
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There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

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Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
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HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **Kenosha County**
- **Wisconsin Average**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

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The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

WISCONSIN'S CLIMATE HAS BECOME GENERALLY WARMER AND WETTER IN RECENT DECADES, AND THESE CHANGES IN WEATHER PATTERNS CAN PROVIDE FAVORABLE CONDITIONS FOR TICKS. INCREASED TEMPERATURES WITH HIGHER HUMIDITY CAN ENHANCE TICK SURVIVAL. CLIMATIC SHIFTS CONTRIBUTE TOWARD THE EXPANDED GEOGRAPHIC DISTRIBUTION OF TICKS AS WELL AS A LONGER SEASON OF TICK ACTIVITY AND POTENTIAL FOR LYME DISEASE TRANSMISSION. OTHER FACTORS SUCH AS HOST POPULATIONS (E.G., DEER AND MICE), AWARENESS OF LYME DISEASE, AND LAND USE CHANGES ALSO IMPACT LYME DISEASE RATES.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

## Asthma
 RATE OF ER VISITS PER 10,000 PEOPLE

**Kenosha County**: 54.4
**Statewide**: 39.5

## Melanoma
 RATE OF NEW CASES PER 100,000 PEOPLE

**Kenosha County**: 13.8
**Statewide**: 21.6

## Lung Cancer
 RATE OF NEW CASES PER 100,000 PEOPLE

**Kenosha County**: 73.1
**Statewide**: 61.1

## Heart Attack
 RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

**Kenosha County**: 25.5
**Statewide**: 27.4

---

### Asthma

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

**BACKGROUND**

**ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Average Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>(10 µg/L)</td>
</tr>
<tr>
<td>Nitrate</td>
<td>(10 mg/L)</td>
</tr>
</tbody>
</table>

**FLUORIDE**

<table>
<thead>
<tr>
<th>Percent of Population with Fluoridated Public Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATEWIDE: 88.6%</td>
</tr>
</tbody>
</table>

**KENOSHA COUNTY WATER QUALITY**

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

**FLUORIDE**

PERCENT OF POPULATION WITH ACCESS TO FLUORIDATED PUBLIC WATER

<table>
<thead>
<tr>
<th>Year</th>
<th>Kenosha County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 2001-2015, data from 2015 displayed on dashboard

Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard

Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 996 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard

Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 1991-2015, data from 2015 are displayed on the dashboard

Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard

Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard

Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
### KEWAUNEE COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

#### HOME HAZARDS

<table>
<thead>
<tr>
<th>Disease</th>
<th>Rate/Measure</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>0.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>14.0</td>
<td>7.9</td>
</tr>
</tbody>
</table>

#### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>13.7</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>0.0</td>
<td>22.7</td>
</tr>
</tbody>
</table>

#### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>17.5</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>30.7</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>33.8</td>
<td>27.4</td>
</tr>
</tbody>
</table>

#### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average/Measure</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>100.0%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

#### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Days above standard</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>11</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

- **Above state value**

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

- **At or below state value**

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

- **Suppressed**

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

**ARSENIC IN PRIVATE WELLS**

**AVERAGE CONCENTRATION (µg/L)**

- None detected
- 0.1-4.9 µg/L
- 5-9.9 µg/L
- 10-14.9 µg/L
- 15-20.9 µg/L
- 21 and above µg/L

Above maximum contaminant level set by U.S. EPA

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. https://www.cdc.gov/about/history/tengpha.htm*
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
(µg/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

CLIMATE

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM2.5)  |  Annual Average PM2.5 (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES 
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
<table>
<thead>
<tr>
<th><strong>HOME HAZARDS</strong></th>
<th><strong>CLIMATE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Childhood Lead Poisoning</strong></td>
<td><strong>Heat Stress</strong></td>
</tr>
<tr>
<td>2.1%</td>
<td>14.8</td>
</tr>
<tr>
<td>Percent with blood lead ≥5 µg/dL</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Wisconsin: 6.4%</td>
<td>Wisconsin: 16.5</td>
</tr>
<tr>
<td><strong>Carbon Monoxide Poisoning</strong></td>
<td><strong>Lyme Disease</strong></td>
</tr>
<tr>
<td>3.7</td>
<td>32.2</td>
</tr>
<tr>
<td>Rate of ER visits per 100,000 people</td>
<td>Crude rate per 100,000 people</td>
</tr>
<tr>
<td>Wisconsin: 7.9</td>
<td>Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>HEALTH OUTCOMES</strong></th>
<th><strong>WATER QUALITY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td><strong>Arsenic</strong></td>
</tr>
<tr>
<td>18.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Rate of ER visits per 10,000 people*</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Wisconsin: 39.5</td>
<td>Wisconsin: 1.4</td>
</tr>
<tr>
<td><strong>Melanoma</strong></td>
<td><strong>Nitrate</strong></td>
</tr>
<tr>
<td>27.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Rate of cases per 100,000 people</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Wisconsin: 21.6</td>
<td>Wisconsin: 1.5</td>
</tr>
<tr>
<td><strong>Heart Attack</strong></td>
<td><strong>Fluoride</strong></td>
</tr>
<tr>
<td>21.6</td>
<td>94.9%</td>
</tr>
<tr>
<td>Rate of hospitalizations per 10,000 people*</td>
<td>Percent of population with fluoridated public water</td>
</tr>
<tr>
<td>Wisconsin: 27.4</td>
<td>Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AIR QUALITY</strong></th>
<th><strong>Particulate Matter (PM) 2.5</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone</strong></td>
<td>0</td>
</tr>
<tr>
<td>Annual days above standard</td>
<td>0</td>
</tr>
<tr>
<td>Wisconsin: 3.8</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Wisconsin: 0.3</td>
<td><strong>Data are suppressed</strong></td>
</tr>
<tr>
<td>^ Data details on next page</td>
<td>Above state value (with exception of fluoride where below state value is not preferred)</td>
</tr>
<tr>
<td>At or below state value (with exception of fluoride where above state value is preferred)</td>
<td>° Data are suppressed</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

**LA CROSSE COUNTY DASHBOARD**

**2017 ENVIRONMENTAL HEALTH PROFILE**

**WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM**

Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013
Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level. CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).

![Childhood Lead Poisoning Map](image-url)
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

La Crosse County
Wisconsin Average

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC

**0.6**

ARSENIC

AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)

STATEWIDE: 1.4

**At or below state value (with exception of fluoride where above state value is preferred)**

NITRATE

**1.2**

NITRATE

AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)

STATEWIDE: 1.5

**Suppressed**

FLUORIDE

**94.9%**

PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER

STATEWIDE: 88.6%
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**BACKGROUND**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES (continued)**

**Heart Attack**  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
*Source*: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed*: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
*Data details*: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic**  |  Mean concentration of arsenic (µg/L) in public drinking water  
*Source*: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
*Years displayed*: Averaged data from 2013-2015  
*Data details*: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate**  |  Mean concentration of nitrate (mg/L) in public drinking water  
*Source*: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
*Years displayed*: Averaged data from 2013-2015  
*Data details*: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride**  |  Percent of population with access to fluoridated public drinking water  
*Source*: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed*: 2011-2015, data from 2015 displayed on dashboard  
*Data details*: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)**  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
*Source*: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
*Years displayed*: 2002-2012, data from 2012 are displayed on the dashboard  
*Data details*: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone**  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
*Source*: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
*Year displayed*: 2012  
*Data details*: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

LAFAYETTE COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov 608-267-2488
# LAFAYETTE COUNTY DASHBOARD  
2017 ENVIRONMENTAL HEALTH PROFILE

## HOME HAZARDS

### Childhood Lead Poisoning
- **11.1%**  
  - Percent with blood lead ≥5 µg/dL  
  - Wisconsin: 6.4%

### Carbon Monoxide Poisoning
- **9.5**  
  - Rate of ER visits per 100,000 people  
  - Wisconsin: 8.5

## CLIMATE

### Heat Stress
- **28.9**  
  - Rate of ER visits per 100,000 people  
  - Wisconsin: 16.5

### Lyme Disease
- **11.9**  
  - Crude rate per 100,000 people  
  - Wisconsin: 22.7

## HEALTH OUTCOMES

### Asthma
- **22.5**  
  - Rate of ER visits per 10,000 people*  
  - Wisconsin: 39.5

### Melanoma
- **20.2**  
  - Rate of cases per 100,000 people  
  - Wisconsin: 21.6

### Heart Attack
- **16.7**  
  - Rate of hospitalizations per 10,000 people*  
  - Wisconsin: 27.4

## WATER QUALITY

### Arsenic
- **5.2**  
  - Average concentration in µg/L  
  - Wisconsin: 1.4

### Nitrate
- **0.5**  
  - Average concentration in mg/L  
  - Wisconsin: 1.5

### Fluoride
- **74.7%**  
  - Percent of population with fluoridated public water  
  - Wisconsin: 88.6%

## AIR QUALITY

### Ozone
- **3**  
  - Annual days above standard  
  - Wisconsin: 3.8

### Particulate Matter (PM) 2.5
- **0**  
  - Annual days above standard  
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page

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WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/eph | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

- **Childhood Lead Poisoning:** Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
  Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2015

- **Carbon Monoxide (CO) Poisoning:** Age-adjusted rate of emergency room visits related to CO poisoning  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Years displayed: Averaged data from 2005-2014

**CLIMATE**

- **Lyme Disease:** Crude rate of confirmed Lyme disease cases  
  Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2015

- **Heat Stress:** Age-adjusted rate of emergency room visits related to heat stress  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

- **Melanoma:** Age-adjusted rate of new cases reported by health care providers  
  Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Years displayed: 2009-2013

- **Asthma:** Age-adjusted rate of emergency room visits related to asthma  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2014

- **Heart Attack:** Age-adjusted rate of emergency room visits related to heart attack  
  Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2014

**WATER QUALITY**

- **Arsenic and Nitrate:** Measured concentrations from active public water systems  
  Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
  Years displayed: Averaged data from 2013-2015

- **Fluoride:** Percent of population with access to fluoridated public water  
  Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
  Year displayed: 2015

**AIR QUALITY**

- **Particulate Matter 2.5 (PM$_{2.5}$) and Ozone:** Monitored and modeled estimates of air quality readings  
  Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
  Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>Statewide</th>
<th>Lafayette County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 8.5</td>
<td>Above state value</td>
</tr>
<tr>
<td>Above state value</td>
<td>Below state value</td>
</tr>
</tbody>
</table>

**CHILDHOOD LEAD POISONING**

<table>
<thead>
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<th>Statewide</th>
<th>Lafayette County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 6.4%</td>
<td>At or below state value</td>
</tr>
<tr>
<td>At or below state value</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

**BACKGROUND**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

28.9
HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE
STATEWIDE: 16.5

11.9
LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE
STATEWIDE: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF RESERVISITS PER 10,000 PEOPLE

- **STATEWIDE:** 39.5
- **LAFAYETTE COUNTY:** 22.5

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 21.6
- **LAFAYETTE COUNTY:** 20.2

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 61.1
- **LAFAYETTE COUNTY:** 47.5

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE:** 27.4
- **LAFAYETTE COUNTY:** 16.7

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY LAFAYETTE COUNTY

BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

5.2
ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

0.5
NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

74.7%
FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Levels of particulate matter are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 996 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. These data were averaged over ten years for five counties in order to minimize supression.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhswisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhswisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhswisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension
2017 WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

LANGLADE COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>1.2%</td>
<td>Percent with blood lead ≥5 µg/dL Wisconsin: 6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>8.6</td>
<td>Rate of ER visits per 100,000 people Wisconsin: 7.9</td>
</tr>
</tbody>
</table>

## CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>17.4</td>
<td>Rate of ER visits per 100,000 people Wisconsin: 16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>36.4</td>
<td>Crude rate per 100,000 people Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

## HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>45.8</td>
<td>Rate of ER visits per 10,000 people* Wisconsin: 39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>15.0</td>
<td>Rate of cases per 100,000 people Wisconsin: 21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>26.4</td>
<td>Rate of hospitalizations per 10,000 people* Wisconsin: 27.4</td>
</tr>
</tbody>
</table>

## WATER QUALITY

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.9</td>
<td>Average concentration in µg/L Wisconsin: 1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.8</td>
<td>Average concentration in mg/L Wisconsin: 1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>91.5%</td>
<td>Percent of population with fluoridated public water Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

## AIR QUALITY

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1</td>
<td>Annual days above standard Wisconsin: 3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Data details on next page

**Wisconsin Environmental Public Health Tracking Program**
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING
RATE OF ER VISITS RELATED TO CO PER 100,000
STATEWIDE: 7.9

CHILDHOOD LEAD POISONING
PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL
STATEWIDE: 6.4%

CARBON MONOXIDE
STATEWIDE: 8.6

CARBON MONOXIDE POISONING
Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

**HEAT STRESS**

**RATE OF ER VISITS PER 100,000 PEOPLE**

STATEWIDE: 16.5

**LYME DISEASE**

**RATE OF CASES PER 100,000 PEOPLE**

STATEWIDE: 22.7

Above state value

At or below state value

Suppressed
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**45.8**

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**15.0**

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**64.2**

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**26.4**

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM_{2.5})" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

ANNUAL DAYS ABOVE STANDARD

STATEWIDE: 3.8

**PARTICULATE MATTER 2.5**

ANNUAL DAYS ABOVE STANDARD

STATEWIDE: 0.3

ANNUAL AVERAGE (µg/m^3)

STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
**Data Details**

**Data Details**

**Home Hazards**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Climate**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES** (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on the dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM_{2.5})** | Annual Average PM_{2.5} (µg/m^3); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 µg/m^3.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
**TAKING THE NEXT STEP**

**Present to Stakeholders and Partners**

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to download the template.

**Plan Strategies for Taking Action**

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called *Ideas for Taking Action*. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to access *Ideas for Taking Action*.

**Join Our Quarterly Newsletter**

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht) and click the link to subscribe.

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**SPECIAL THANKS**

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

[ACCESS DATA AND RESOURCES](http://dhs.wisconsin.gov/epht)
2017
LINCOLN COUNTY ENVIRONMENTAL HEALTH PROFILE
WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!
**HOME HAZARDS**

- **Childhood Lead Poisoning**
  - 3.4%  
  - Percent with blood lead ≥5 µg/dL  
  - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - 12.6  
  - Rate of ER visits per 100,000 people  
  - Wisconsin: 7.9

**HEALTH OUTCOMES**

- **Asthma**
  - 28.8  
  - Rate of ER visits per 10,000 people*  
  - Wisconsin: 39.5

- **Melanoma**
  - 22.4  
  - Rate of cases per 100,000 people  
  - Wisconsin: 21.6

- **Heart Attack**
  - 39.2  
  - Rate of hospitalizations per 10,000 people*  
  - Wisconsin: 27.4

**CLIMATE**

- **Heat Stress**
  - 19.7  
  - Rate of ER visits per 100,000 people  
  - Wisconsin: 16.5

- **Lyme Disease**
  - 82.2  
  - Crude rate per 100,000 people  
  - Wisconsin: 22.7

**WATER QUALITY**

- **Arsenic**
  - 0.4  
  - Average concentration in µg/L  
  - Wisconsin: 1.4

- **Nitrate**
  - 2.3  
  - Average concentration in mg/L  
  - Wisconsin: 1.5

- **Fluoride**
  - 94.4%  
  - Percent of population with fluoridated public water  
  - Wisconsin: 88.6%

**AIR QUALITY**

- **Ozone**
  - 0  
  - Annual days above standard  
  - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - 0  
  - Annual days above standard  
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013
Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE:** 7.9

**LINCOLN COUNTY:** 12.6

Above state value

**CHILDHOOD LEAD POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

**STATEWIDE:** 6.4%

**LINCOLN COUNTY:** 3.4%

At or below state value

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
**BACKGROUND**

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

![Graph showing rates of ER visits, hospitalizations, and new cases per 10,000 people.](image)

**ASTHMA**

- **Rate of ER Visits per 10,000 People**
  - **Lincoln County**: 28.8
  - **Wisconsin Average**: 39.5

- **Melanoma**
  - **Rate of New Cases per 100,000 People**
  - **Lincoln County**: 22.4
  - **Wisconsin Average**: 21.6

- **Lung Cancer**
  - **Rate of New Cases per 100,000 People**
  - **Lincoln County**: 64.1
  - **Wisconsin Average**: 61.1

- **Heart Attack**
  - **Rate of Hospitalizations per 10,000 People**
  - **Lincoln County**: 39.2
  - **Wisconsin Average**: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

### BACKGROUND

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### ARSENIC AND NITRATE

**Mean Concentration Levels in Public Water (2013-2015)**

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>NITRATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>STATEWIDE: 1.4</td>
</tr>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)</td>
<td>STATEWIDE: 1.5</td>
</tr>
</tbody>
</table>

- **0.4** ARSENIC
- **2.3** NITRATE

**Above state value (with exception of fluoride where below state value is not preferred)**

**94.4%** FLUORIDE

PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER

STATEWIDE: 88.6%

### ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

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**Background**

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Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**Ozone**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov 608-267-2488
**MANITOWOC COUNTY**

**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>5.1%</td>
<td>Percent with blood lead ≥ 5 µg/dL</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>3.1%</td>
<td>Rate of ER visits per 100,000 people</td>
<td>7.9%</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>24.1</td>
<td>Rate of ER visits per 100,000 people</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>2.5</td>
<td>Crude rate per 100,000 people</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>45.0</td>
<td>Rate of ER visits per 10,000 people</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>29.4</td>
<td>Rate of cases per 100,000 people</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>29.4</td>
<td>Rate of hospitalizations per 10,000 people*</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.2</td>
<td>Average concentration in µg/L</td>
<td>1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.7</td>
<td>Average concentration in mg/L</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>86.1%</td>
<td>Percent of population with fluoridated public water</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>11</td>
<td>Annual days above standard</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>1</td>
<td>Annual days above standard</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

**WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM**

Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

### HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

### CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

### HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

### WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

### AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

2001

2015

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**Asthma**
- RATE OF ER VISITS PER 10,000 PEOPLE
  - STATEWIDE: 39.5
  - MANITOWOC COUNTY: 45.0

**Melanoma**
- RATE OF NEW CASES PER 100,000 PEOPLE
  - STATEWIDE: 21.6
  - MANITOWOC COUNTY: 29.4

**Lung Cancer**
- RATE OF NEW CASES PER 100,000 PEOPLE
  - STATEWIDE: 61.1
  - MANITOWOC COUNTY: 52.2

**Heart Attack**
- RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
  - STATEWIDE: 27.4
  - MANITOWOC COUNTY: 29.4

**Asthma**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

ARSENIC

**Average Concentration in Public Water**

- **Statewide**: 1.4 µg/L

**Manitowoc County**
- **Average Concentration**: 1.2 µg/L

**Notes**: Above state value (with exception of fluoride where below state value is not preferred)

**Nitrate**

- **Average Concentration in Public Water**: 1.5 mg/L

**Manitowoc County**
- **Average Concentration**: 2.7 mg/L

**Notes**: At or below state value (with exception of fluoride where above state value is preferred)

**Fluoride**

- **Percent of Population with Fluoridated Public Water**: 86.1%

**Statewide**: 88.6%

**Notes**: Suppressed

**Graph**

- **Y-axis**: 0 to 12
- **X-axis**: 0 to 12

- **Bar Graph**
  - Arsenic mean concentration (µg/L)
  - Nitrate mean concentration (mg/L)

**Legend**

- **Blue Bar**: Manitowoc County
- **Gray Bar**: Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA**: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

**ANNUAL DAYS ABOVE STANDARD (2012)**

<table>
<thead>
<tr>
<th>County</th>
<th>Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANITOWOC COUNTY</td>
<td></td>
</tr>
</tbody>
</table>

**OZONE**

**ANNUAL AVERAGE (µg/m$^3$)**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZONE</td>
<td>0.3</td>
</tr>
<tr>
<td>PARTICULATE MATTER 2.5</td>
<td>9.1</td>
</tr>
</tbody>
</table>

**PARTICULATE MATTER 2.5**

**ANNUAL DAYS ABOVE STANDARD**

<table>
<thead>
<tr>
<th>County</th>
<th>Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANITOWOC COUNTY</td>
<td></td>
</tr>
</tbody>
</table>

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
*Source:* Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 2001-2015, data from 2015 displayed on dashboard  
*Data details:* Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
*Source:* Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 2005-2014, data averaged from 2010-2014 displayed on dashboard  
*Data details:* This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
*Source:* Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 2005-2014, data from 2010-2014 are displayed on the dashboard  
*Data details:* These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
*Source:* Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 1991-2015, data from 2015 are displayed on the dashboard  
*Data details:* These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
*Source:* Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
*Data details:* These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
*Source:* Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
*Years displayed:* 1999-2013, data from 2009-2013 displayed on the dashboard  
*Data details:* Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**CLIMATE**

**HEALTH OUTCOMES**
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source:  Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed:  2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details:  These data are collected from inpatient hospital discharge records.  This measure includes cases with an ICD-9 code of 410.0-410.92.  Data for counties with fewer than five visits are suppressed to protect confidentiality.  However, data from counties with zero visits are not suppressed.  Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties.  See our portal data details for more information.  Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source:  Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed:  Averaged data from 2013-2015
Data details:  Arsenic concentrations in drinking water are based on samples taken from active public community water systems.  Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015).  Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source:  Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed:  Averaged data from 2013-2015
Data details:  Nitrate concentrations in drinking water are based on samples taken from active public community water systems.  Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015).  Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source:  Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed:  2011-2015, data from 2015 displayed on dashboard
Data details:  Data on fluoride in drinking water are based on samples taken from active public community water systems.  The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source:  National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed:  2002-2012, data from 2012 are displayed on the dashboard
Data details:  These measures include monitored and modeled estimates of PM$_{2.5}$ levels.  Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.  The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source:  National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed:  2012
Data details:  This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm.  This measure includes monitored and modeled estimates of ozone levels.  Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
## MARATHON COUNTY DASHBOARD
### 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS
- **Childhood Lead Poisoning**
  - Percent with blood lead ≥ 5 µg/dL
  - 2.3%
  - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - Rate of ER visits per 100,000 people
  - 8.2
  - Wisconsin: 7.9

### CLIMATE
- **Heat Stress**
  - Rate of ER visits per 100,000 people
  - 14.0
  - Wisconsin: 16.5

- **Lyme Disease**
  - Crude rate per 100,000 people
  - 49.3
  - Wisconsin: 22.7

### HEALTH OUTCOMES
- **Asthma**
  - Rate of ER visits per 10,000 people
  - 26.3
  - Wisconsin: 39.5

- **Melanoma**
  - Rate of cases per 100,000 people
  - 23.5
  - Wisconsin: 21.6

- **Heart Attack**
  - Rate of hospitalizations per 10,000 people
  - 21.3
  - Wisconsin: 27.4

### WATER QUALITY
- **Arsenic**
  - Average concentration in µg/L
  - 0.4
  - Wisconsin: 1.4

- **Nitrate**
  - Average concentration in mg/L
  - 3.7
  - Wisconsin: 1.5

- **Fluoride**
  - Percent of population with fluoridated public water
  - 92.2%
  - Wisconsin: 88.6%

### AIR QUALITY
- **Ozone**
  - Annual days above standard
  - 0
  - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - Annual days above standard
  - 0
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Above state value (with exception of fluoride where below state value is not preferred)

^ At or below state value (with exception of fluoride where above state value is preferred)

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013
Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrates: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE:** 7.9

**CARBON MONOXIDE POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

**STATEWIDE:** 6.4%

**CARBON MONOXIDE**

**RATE OF ER VISITS PER 100,000 PEOPLE**

Carbon monoxide (CO) poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

OVER THE PAST 60 YEARS, WISCONSIN HAS BECOME GENERALLY WARMER AND WETTER. CHANGES IN THE CLIMATE MAY LEAD TO MORE PRECIPITATION AND FLOODING, TEMPERATURE EXTREMES (VERY HOT AND VERY COLD DAYS), DROUGHT, AND MORE CARRIERS OF DISEASE (E.G., MOSQUITOES AND TICKS). EXTREME WEATHER CAN CONTRIBUTE TO MENTAL HEALTH PROBLEMS, WATER AND VECTORBORNE DISEASES, ALLERGIES, WATER AND FOOD INSECURITY, AND EVEN DEATH.

IN THIS SECTION, WE FOCUS ON HEAT STRESS AND LYME DISEASE, TWO CLIMATE-RELATED HEALTH OUTCOMES.

TO LEARN MORE ABOUT THE CLIMATE AND HEALTH CONNECTION AND WORK BEING DONE BY THE WISCONSIN CLIMATE AND HEALTH PROGRAM, VISIT DHS.WISCONSIN.GOV/CLIMATE.

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Marathon County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>10.0</td>
<td>8.0</td>
</tr>
<tr>
<td>2010-2014</td>
<td>14.0</td>
<td>12.0</td>
</tr>
</tbody>
</table>

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: DHS.WISCONSIN.GOV/EPHT

Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
HEALTH OUTCOMES  MARATHON COUNTY

BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

- **Marathon County**: 26.3
- **Statewide**: 39.5

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Marathon County**: 23.5
- **Statewide**: 21.6

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Marathon County**: 48.8
- **Statewide**: 61.1

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Marathon County**: 21.3
- **Statewide**: 27.4

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

*DIVE DEEPER INTO THE DATA:* dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE

ARSENIC

AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

0.4

Above state value (with exception of fluoride where below state value is not preferred)

NITRATE

AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

3.7

At or below state value (with exception of fluoride where above state value is preferred)

FLUORIDE

PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

92.2%

Above state value (with exception of fluoride where below state value is not preferred)

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 ($\text{PM}_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. $\text{PM}_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of $\text{PM}_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Health Outcomes

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

MARINETTE COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
**Marinette County Dashboard | 2017 Environmental Health Profile**

### Home Hazards

- **Childhood Lead Poisoning**
  - %: 4.6%
  - Wisconsin: 6.4%
- **Carbon Monoxide Poisoning**
  - Rate of ER visits per 100,000 people: 11.4
  - Wisconsin: 7.9

### Climate

- **Heat Stress**
  - Wisconsin: 29.1
- **Lyme Disease**
  - Wisconsin: 29.4

### Health Outcomes

- **Asthma**
  - Rate of ER visits per 10,000 people*: 58.9
  - Wisconsin: 39.5
- **Melanoma**
  - Rate of cases per 100,000 people: 25.8
  - Wisconsin: 21.6
- **Heart Attack**
  - Rate of hospitalizations per 10,000 people*: 54.9
  - Wisconsin: 27.4

### Water Quality

- **Arsenic**
  - Average concentration in µg/L: 4.1
  - Wisconsin: 1.4
- **Nitrate**
  - Average concentration in mg/L: 3.3
  - Wisconsin: 1.5
- **Fluoride**
  - Percent of population with fluoridated public water: 80.9%
  - Wisconsin: 88.6%

### Air Quality

- **Ozone**
  - Annual days above standard: 9
  - Wisconsin: 3.8
- **Particulate Matter (PM) 2.5**
  - Annual days above standard: 0
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed.

Data details on next page.
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
HOME HAZARDS

BACKGROUND
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING
RATE OF ER VISITS RELATED TO CO PER 100,000
STATEWIDE: 7.9

CARBON MONOXIDE POISONING
PERCENT OF TESTED CHILDREN WITH BLOOD LEAD \geq 5 \mu g/dL
STATEWIDE: 6.4%

CARBON MONOXIDE
RATE OF ER VISITS PER 100,000 PEOPLE

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **Marinette County**: Above state value
- **Wisconsin Average**: At or below state value

<table>
<thead>
<tr>
<th>Year</th>
<th>Heat Stress Rate (per 100,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>25.1</td>
</tr>
<tr>
<td>2010-2014</td>
<td>28.3</td>
</tr>
</tbody>
</table>

HEAT STRESS
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.

Maps courtesy of Centers for Disease Control and Prevention.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
- **RATE OF ER VISITS PER 10,000 PEOPLE**
  - STATEWIDE: 39.5
  - MARINETTE COUNTY: 58.9

**MELANOMA**
- **RATE OF NEW CASES PER 100,000 PEOPLE**
  - STATEWIDE: 21.6
  - MARINETTE COUNTY: 25.8

**LUNG CANCER**
- **RATE OF NEW CASES PER 100,000 PEOPLE**
  - STATEWIDE: 61.1
  - MARINETTE COUNTY: 72.3

**HEART ATTACK**
- **RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE**
  - STATEWIDE: 27.4
  - MARINETTE COUNTY: 54.9

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Background

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

### ARSENIC AND NITRATE

#### Mean Concentration Levels in Public Water (2013-2015)

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Mean Concentration (µg/L)</th>
<th>Maximum Contaminant Level set by U.S. EPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>4.1</td>
<td>10 µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>3.3</td>
<td>10 mg/L</td>
</tr>
</tbody>
</table>

#### Analysis

- **Marinette County**
- **Wisconsin Average**

### ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. https://www.cdc.gov/about/history/tengpha.htm*
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**  
(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**  
Rate per 10,000 people  
Note the years displayed here are different than those on page 10.

**ASTHMA EMERGENCY ROOM VISITS**  
Rate per 10,000 people  
Note the years displayed here are different than those on page 9.
**DATA DETAILS**

### HOME HAZARDS

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level $\geq$ 5 $\mu$g/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

### CLIMATE

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than six visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM₂.₅) | Annual Average PM₂.₅ (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM₂.₅ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM₂.₅ concentration is 35 µg/m³.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
How to Use Environmental Public Health Tracking Data

Community Health Assessments
Tracking data can help flesh out your community health assessment and help meet state requirements.

Community Health Improvement Plans
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

Research
Tracking data can be used to explore answers to environmental health research questions.

Media Stories
Strengthen your interview or article with facts and figures from Tracking and our resources.

Social Media
Localize your posts with data from your community.

Accreditation
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

Grant Proposals
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

Education and Outreach
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

Policy Development
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
**HOME HAZARDS**

Childhood Lead Poisoning
- 1.9% Percent with blood lead ≥ 5 µg/dL
  - Wisconsin: 6.4%

Carbon Monoxide Poisoning
- 10.4 Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

**CLIMATE**

Heat Stress
- 32.1 Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

Lyme Disease
- 86.2 Crude rate per 100,000 people
  - Wisconsin: 22.7

**HEALTH OUTCOMES**

Asthma
- 40.1 Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

Melanoma
- 19.0 Rate of cases per 100,000 people
  - Wisconsin: 21.6

Heart Attack
- 35.3 Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

**WATER QUALITY**

Arsenic
- 2.4 Average concentration in µg/L
  - Wisconsin: 1.4

Nitrate
- 3.5 Average concentration in mg/L
  - Wisconsin: 1.5

Fluoride
- 0.0% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

**AIR QUALITY**

Ozone
- 4 Annual days above standard
  - Wisconsin: 3.8

Particulate Matter (PM) 2.5
- 0 Annual days above standard
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where above state value is preferred)

Above state value (with exception of fluoride where below state value is not preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems.
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings.
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Background
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon Monoxide Poisoning

Rate of ER visits related to CO per 100,000

Statewide: 7.9

Marquette County: 10.4

Above state value

Childhood Lead Poisoning

Percent of tested children with blood lead ≥5 μg/dL

Statewide: 6.4%

Marquette County: 1.9%

At or below state value

Carbon Monoxide

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

Dive Deeper into the Data: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Rate</th>
<th>Statewide Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td><strong>40.1</strong></td>
<td><strong>39.5</strong></td>
</tr>
<tr>
<td>Rate of ER visits per 10,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Melanoma</strong></td>
<td><strong>19.0</strong></td>
<td><strong>21.6</strong></td>
</tr>
<tr>
<td>Rate of new cases per 100,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lung Cancer</strong></td>
<td><strong>76.3</strong></td>
<td><strong>61.1</strong></td>
</tr>
<tr>
<td>Rate of new cases per 100,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heart Attack</strong></td>
<td><strong>35.3</strong></td>
<td><strong>27.4</strong></td>
</tr>
<tr>
<td>Rate of hospitalizations per 10,000 people</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
**MELANOMA AND LUNG CANCER**

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht).

**MELANOMA**

**RATE OF NEW CASES PER 100,000 PEOPLE**

**LUNG CANCER**

**RATE OF NEW CASES PER 100,000 PEOPLE**

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**HEART ATTACK**

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.

**HEART ATTACK**

**RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE**
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE

ARSENIC

AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

NITRATE

AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

FLUORIDE

PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.* Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L). The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink. The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells. County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level. The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

CLIMATE

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Continued on next page
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source:  Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on dashboard  
Data details:  These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water  
Source:  Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed:  Averaged data from 2013-2015  
Data details:  Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water  
Source:  Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed:  Averaged data from 2013-2015  
Data details:  Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water  
Source:  Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed:  2011-2015, data from 2015 displayed on dashboard  
Data details:  Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source:  National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed:  2002-2012, data from 2012 are displayed on the dashboard  
Data details:  These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 25 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source:  National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed:  2012  
Data details:  This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
MENOMINEE COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public's health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it! dhstracking@wi.gov 608-267-2488
## MENOMINEE COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage or Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>4.0% Percent with blood lead ≥5 µg/dL</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>70.0 Rate of ER visits per 100,000 people</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate or Crude Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>64.4 Rate of ER visits per 100,000 people</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>87.5 Crude rate per 100,000 people</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate or Crude Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>105.5 Rate of ER visits per 10,000 people*</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>39.5 Rate of cases per 100,000 people</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>75.4 Rate of hospitalizations per 10,000 people*</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Concentration or Percent</th>
<th>Wisconsin Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.4 Average concentration in µg/L</td>
<td>39.5</td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.5 Average concentration in mg/L</td>
<td>21.6</td>
</tr>
<tr>
<td>Fluoride</td>
<td>88.6% Percent of population with fluoridated public water</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual days above standard</th>
<th>Wisconsin Value</th>
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</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>2</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

1 Above state value (with exception of fluoride where below state value is not preferred)

2 At or below state value (with exception of fluoride where above state value is preferred)

3 Data are suppressed

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**WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM**
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE

RATE OF ER VISITS PER 100,000 PEOPLE

- **70.0** Above state value
- **4.0%** At or below state value

**CARBON MONOXIDE POISONING**

- RATE OF ER VISITS RELATED TO CO PER 100,000
  - STATEWIDE: 7.9

- PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL
  - STATEWIDE: 6.4%

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

**105.5**

Above state value

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 21.6

**81.3**

At or below state value

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 61.1

**75.4**

Suppressed

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

STATEWIDE: 27.4

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
**MELANOMA AND LUNG CANCER**

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

**MELANOMA**

**RATE OF NEW CASES PER 100,000 PEOPLE**

![Graph showing melanoma cases per 100,000 people from 1999-2013 with Wisconsin average and confidence interval.](image)

**LUNG CANCER**

**RATE OF NEW CASES PER 100,000 PEOPLE**

![Graph showing lung cancer cases per 100,000 people from 1999-2013 with Menominee County, Wisconsin average, and confidence interval.](image)

**HEART ATTACK**

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.

**HEART ATTACK**

**RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE**

![Graph showing heart attack hospitalizations per 10,000 people from 2004-2014 with Menominee County and Wisconsin average.](image)
**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

<table>
<thead>
<tr>
<th>Arsenic</th>
<th>Nitrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10 µg/L)</td>
<td>(10 mg/L)</td>
</tr>
</tbody>
</table>

Maximum contaminant level set by U.S. EPA

- **Arsenic**
  - Statewide: 1.4
  - Above state value

- **Nitrate**
  - Statewide: 1.5
  - At or below state value

- **Fluoride**
  - Percent of population with fluoridated public water
  - Statewide: 88.6%

*There is no mandatory reporting of these data because Menominee County is a sovereign nation.

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

**PARTICULATE MATTER 2.5**

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**
($\mu$g/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**
Rate per 10,000 people

**ASTHMA EMERGENCY ROOM VISITS**
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**DATA DETAILS**

**CLIMATE**

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM2.5) | Annual Average PM2.5 (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

MILWAUKEE COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
**HOME HAZARDS**

**Childhood Lead Poisoning**
- Percent with blood lead ≥5 µg/dL
  - Milwaukee: 9.6%
  - Wisconsin: 6.4%

**Carbon Monoxide Poisoning**
- Rate of ER visits per 100,000 people
  - Milwaukee: 8.5
  - Wisconsin: 7.9

**CLIMATE**

**Heat Stress**
- Rate of ER visits per 100,000 people
  - Milwaukee: 11.8
  - Wisconsin: 16.5

**Lyme Disease**
- Crude rate per 100,000 people
  - Milwaukee: 1.8
  - Wisconsin: 22.7

**HEALTH OUTCOMES**

**Asthma**
- Rate of ER visits per 10,000 people*
  - Milwaukee: 81.6
  - Wisconsin: 39.5

**Melanoma**
- Rate of cases per 100,000 people
  - Milwaukee: 13.7
  - Wisconsin: 21.6

**Heart Attack**
- Rate of hospitalizations per 10,000 people*
  - Milwaukee: 29.5
  - Wisconsin: 27.4

**WATER QUALITY**

**Arsenic**
- Average concentration in µg/L
  - Milwaukee: 0.7
  - Wisconsin: 1.4

**Nitrate**
- Average concentration in mg/L
  - Milwaukee: 0.1
  - Wisconsin: 1.5

**Fluoride**
- Percent of population with fluoridated public water
  - Milwaukee: 100.0%
  - Wisconsin: 88.6%

**AIR QUALITY**

**Ozone**
- Annual days above standard
  - Milwaukee: 22
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- Annual days above standard
  - Milwaukee: 1
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>Rate of ER Visits</th>
<th>Milwaukee County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.5</td>
<td>12</td>
<td>10</td>
</tr>
</tbody>
</table>

**CHILDHOOD LEAD POISONING**

<table>
<thead>
<tr>
<th>Percent of Tested Children</th>
<th>Milwaukee County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.6%</td>
<td>9.4%</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 5
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children. In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).

CHILDLHOOD LEAD POISONING
PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL

CHILDLHOOD LEAD POISONING
PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL

2015
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Milwaukee County</th>
<th>Statewide: 2004-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td><strong>81.6</strong></td>
<td><strong>39.5</strong></td>
</tr>
<tr>
<td>Rate of ER Visits</td>
<td>Above state value</td>
<td>At or below state value</td>
</tr>
<tr>
<td>Per 10,000 People</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Melanoma</strong></td>
<td><strong>13.7</strong></td>
<td><strong>21.6</strong></td>
</tr>
<tr>
<td>Rate of New Cases</td>
<td>Above state value</td>
<td>At or below state value</td>
</tr>
<tr>
<td>Per 100,000 People</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lung Cancer</strong></td>
<td><strong>71.1</strong></td>
<td><strong>61.1</strong></td>
</tr>
<tr>
<td>Rate of New Cases</td>
<td>Above state value</td>
<td>At or below state value</td>
</tr>
<tr>
<td>Per 100,000 People</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heart Attack</strong></td>
<td><strong>29.5</strong></td>
<td><strong>27.4</strong></td>
</tr>
<tr>
<td>Rate of Hospitalizations</td>
<td>Above state value</td>
<td>At or below state value</td>
</tr>
<tr>
<td>Per 10,000 People</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC WATER (2013-2015)

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

- **OZONE**
  - ANNUAL DAYS ABOVE STANDARD
  - STATEWIDE: 3.8

- **PARTICULATE MATTER 2.5**
  - ANNUAL DAYS ABOVE STANDARD
  - STATEWIDE: 0.3

- **PARTICULATE MATTER 2.5**
  - ANNUAL AVERAGE (µg/m$^3$)
  - STATEWIDE: 9.1

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Continued on next page
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES

dhs.wisconsin.gov/epht
WISCONSIN ENVIROMENTAL PUBLIC HEALTH TRACKING PROGRAM

MONROE COUNTY ENVIRONMENTAL HEALTH PROFILE

2017
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## MONROE COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

| **Childhood Lead Poisoning** | 2.8% | Percent with blood lead ≥5 µg/dL  
Wisconsin: 6.4% |
|-------------------------------|------|----------------------------------|
| **Carbon Monoxide Poisoning** | 10.2 | Rate of ER visits per 100,000 people  
Wisconsin: 7.9 |

### CLIMATE

| **Heat Stress** | 34.8 | Rate of ER visits per 100,000 people  
Wisconsin: 16.5 |
|-----------------|------|----------------------------------|
| **Lyme Disease** | 28.5 | Crude rate per 100,000 people  
Wisconsin: 22.7 |

### HEALTH OUTCOMES

| **Asthma** | 37.5 | Rate of ER visits per 10,000 people*  
Wisconsin: 39.5 |
|------------|------|----------------------------------|
| **Melanoma** | 24.1 | Rate of cases per 100,000 people  
Wisconsin: 21.6 |
| **Heart Attack** | 30.6 | Rate of hospitalizations per 10,000 people*  
Wisconsin: 27.4 |

### WATER QUALITY

| **Arsenic** | 0.3 | Average concentration in µg/L  
Wisconsin: 1.4 |
|-------------|-----|----------------------------------|
| **Nitrate** | 1.3 | Average concentration in mg/L  
Wisconsin: 1.5 |
| **Fluoride** | 32.4% | Percent of population with fluoridated public water  
Wisconsin: 88.6% |

### AIR QUALITY

| **Ozone** | 0 | Annual days above standard  
Wisconsin: 3.8 |
|------------|---|----------------------------------|
| **Particulate Matter (PM) 2.5** | 0 | Annual days above standard  
Wisconsin: 0.3 |

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.*

| **Data are suppressed**  
Data details on next page | **At or below state value (with exception of fluoride where above state value is preferred)**  
Above state value (with exception of fluoride where below state value is not preferred)
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

- **Childhood Lead Poisoning:** Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
  - Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
  - Year displayed: 2015

- **Carbon Monoxide (CO) Poisoning:** Age-adjusted rate of emergency room visits related to CO poisoning
  - Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  - Years displayed: Averaged data from 2010-2014

**CLIMATE**

- **Lyme Disease:** Crude rate of confirmed Lyme disease cases
  - Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
  - Year displayed: 2015

- **Heat Stress:** Age-adjusted rate of emergency room visits related to heat stress
  - Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  - Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

- **Melanoma:** Age-adjusted rate of new cases reported by health care providers
  - Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  - Years displayed: 2009-2013

- **Asthma:** Age-adjusted rate of emergency room visits related to asthma
  - Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  - Year displayed: 2014

- **Heart Attack:** Age-adjusted rate of emergency room visits related to heart attack
  - Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
  - Year displayed: 2014

**WATER QUALITY**

- **Arsenic and Nitrate:** Measured concentrations from active public water systems
  - Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
  - Years displayed: Averaged data from 2013-2015

- **Fluoride:** Percent of population with access to fluoridated public water
  - Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
  - Year displayed: 2015

**AIR QUALITY**

- **Particulate Matter 2.5 (PM2.5) and Ozone:** Monitored and modeled estimates of air quality readings
  - Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
  - Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE: 7.9**

- **Above state value**

**CHILDHOOD LEAD POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

**STATEWIDE: 6.4%**

- **At or below state value**

**CARBON MONOXIDE**

**RATE OF ER VISITS PER 100,000 PEOPLE**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

STATEWIDE: 16.5

STATEWIDE: 22.7

Above state value

At or below state value

Suppressed

Monroe County
Wisconsin Average

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information). The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**RATE OF ER VISITS PER 10,000 PEOPLE**

- **ASTHMA**
  - Monroe County: 37.5
  - Statewide: 39.5

- **MELANOMA**
  - Monroe County: 24.1
  - Statewide: 21.6

- **LUNG CANCER**
  - Monroe County: 77.3
  - Statewide: 61.1

- **HEART ATTACK**
  - Monroe County: 30.6
  - Statewide: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person's lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**

(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**

Rate per 10,000 people

*Note the years displayed here are different than those on page 10.*

**ASTHMA EMERGENCY ROOM VISITS**

Rate per 10,000 people

*Note the years displayed here are different than those on page 9.*
**DATA DETAILS**

### HOME HAZARDS

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E899.0, or E899.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

### CLIMATE

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

### HEALTH OUTCOMES

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/epht) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
OCONTO COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## OCONTO COUNTY DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Childhood Lead Poisoning</strong></td>
<td>2.6%</td>
<td>Percent with blood lead ≥ 5 µg/dL</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 6.4%</td>
<td></td>
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<tr>
<td><strong>Carbon Monoxide Poisoning</strong></td>
<td>7.6</td>
<td>Rate of ER visits per 100,000 people</td>
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<tr>
<td></td>
<td>Wisconsin: 7.9</td>
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</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>Heat Stress</strong></td>
<td>10.6</td>
<td>Rate of ER visits per 100,000 people</td>
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<tr>
<td></td>
<td>Wisconsin: 16.5</td>
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<tr>
<td><strong>Lyme Disease</strong></td>
<td>34.7</td>
<td>Crude rate per 100,000 people</td>
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<tr>
<td></td>
<td>Wisconsin: 22.7</td>
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### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td>27.8</td>
<td>Rate of ER visits per 10,000 people*</td>
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<tr>
<td></td>
<td>Wisconsin: 39.5</td>
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<td><strong>Melanoma</strong></td>
<td>24.2</td>
<td>Rate of cases per 100,000 people</td>
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<td>Wisconsin: 21.6</td>
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<tr>
<td><strong>Heart Attack</strong></td>
<td>26.8</td>
<td>Rate of hospitalizations per 10,000 people*</td>
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<td>Wisconsin: 27.4</td>
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### WATER QUALITY

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<th>Average Concentration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arsenic</strong></td>
<td>5.3 µg/L</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 1.4 µg/L</td>
<td></td>
</tr>
<tr>
<td><strong>Nitrate</strong></td>
<td>0.3 mg/L</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 1.5 mg/L</td>
<td></td>
</tr>
<tr>
<td><strong>Fluoride</strong></td>
<td>73.3%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 88.6%</td>
<td></td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone</strong></td>
<td>6</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 3.8</td>
<td></td>
</tr>
<tr>
<td><strong>Particulate Matter (PM) 2.5</strong></td>
<td>1</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td></td>
<td>Wisconsin: 0.3</td>
<td></td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

© Data are suppressed

Data details on next page.
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Carbon Monoxide Poisoning**

**Rate of ER Visits Related to CO per 100,000**

- **Statewide:** 7.9
- **Oconto County:** 7.6

**Carbon Monoxide Poisoning**

**Percent of Tested Children with Blood Lead ≥5 µg/dL**

- **Statewide:** 6.4%
- **Oconto County:** 2.6%

Above state value
At or below state value
Suppressed

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

**LYME DISEASE AT THE NATIONAL LEVEL**

**ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE**

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

- **STATEWIDE**: 39.5
- **Oconto County**: 27.8

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE**: 21.6
- **Oconto County**: 24.2

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE**: 61.1
- **Oconto County**: 76.5

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE**: 27.4
- **Oconto County**: 26.8

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. [https://www.cdc.gov/about/history/tengpha.htm](https://www.cdc.gov/about/history/tengpha.htm)
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**BACKGROUND**

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAking the next step

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called *Ideas for Taking Action*. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to access *Ideas for Taking Action*.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht) and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

Access Data and Resources  
[dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
### HOME HAZARDS

**Childhood Lead Poisoning**
- 0.8% | Percent with blood lead ≥25 µg/dL
  - Wisconsin: 6.4%

**Carbon Monoxide Poisoning**
- 4.2 | Rate of ER visits per 100,000 people
  - Wisconsin: 7.9%

### CLIMATE

**Heat Stress**
- 15.8 | Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

**Lyme Disease**
- 75.9 | Crude rate per 100,000 people
  - Wisconsin: 22.7

### HEALTH OUTCOMES

**Asthma**
- 33.0 | Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

**Melanoma**
- 14.0 | Rate of cases per 100,000 people
  - Wisconsin: 21.6

**Heart Attack**
- 25.8 | Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

### WATER QUALITY

**Arsenic**
- 1.0 | Average concentration in µg/L
  - Wisconsin: 1.4

**Nitrate**
- 1.8 | Average concentration in mg/L
  - Wisconsin: 1.5

**Fluoride**
- 67.1% | Percent of population with fluoridated public water
  - Wisconsin: 88.6%

### AIR QUALITY

**Ozone**
- 0 | Annual days above standard
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- 0 | Annual days above standard
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**
- **RATE OF ER VISITS RELATED TO CO PER 100,000**
  - **STATEWIDE:** 7.9
  - **ONEIDA COUNTY:** 4.2

**CHILDHOOD LEAD POISONING**
- **PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**
  - **STATEWIDE:** 6.4%
  - **ONEIDA COUNTY:** 0.8%

**CARBON MONOXIDE POISONING**
Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

### Heat Stress

Rate of ER Visits Per 100,000 People

- **Oneida County:** 15.8
- **Wisconsin Average:** 16.5

### Lyme Disease

Rate of Cases Per 100,000 People

- **Oneida County:** 75.9
- **Wisconsin Average:** 22.7

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Wisconsin Average</th>
<th>Oneida County</th>
<th>Rate of ER Visits Per 10,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASHTHMA</td>
<td>39.5</td>
<td>33.0</td>
<td>Above state value</td>
</tr>
<tr>
<td>MELANOMA</td>
<td>21.6</td>
<td>14.0</td>
<td>At or below state value</td>
</tr>
<tr>
<td>LUNG CANCER</td>
<td>61.1</td>
<td>78.2</td>
<td>Above state value</td>
</tr>
<tr>
<td>HEART ATTACK</td>
<td>27.4</td>
<td>25.8</td>
<td>Above state value</td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**1.0**

**ARSENIC**

AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)

STATEWIDE: 1.4

Above state value (with exception of fluoride where below state value is not preferred)

**1.8**

**NITRATE**

AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)

STATEWIDE: 1.5

At or below state value (with exception of fluoride where above state value is preferred)

**67.1%**

**FLUORIDE**

PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER

STATEWIDE: 88.6%

^ Suppressed

**ARSENIC AND NITRATE**

MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Maximum contaminant level set by U.S. EPA

- Oneida County
- Wisconsin Average

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

<table>
<thead>
<tr>
<th>ANNUAL DAYS ABOVE STANDARD</th>
<th>STATEWIDE: 3.8</th>
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</thead>
<tbody>
<tr>
<td>0</td>
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</table>

**PARTICULATE MATTER 2.5**

<table>
<thead>
<tr>
<th>ANNUAL DAYS ABOVE STANDARD</th>
<th>STATEWIDE: 0.3</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANNUAL AVERAGE ($\mu g/m^3$)</th>
<th>STATEWIDE: 9.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.7</td>
<td></td>
</tr>
</tbody>
</table>

Background

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
---|---
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2001-2015, data from 2015 displayed on dashboard

**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people
---|---
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard

**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people
---|---
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard

**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people
---|---
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard

**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people
---|---
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard

**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people
---|---
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard

**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM2.5)  |  Annual Average PM2.5 (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
# OUTAGAMIE COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

## HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits per 10,000 people</th>
<th>Rate of ER visits per 100,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>3.1%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>7.5</td>
<td>7.9</td>
</tr>
</tbody>
</table>

## CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits per 100,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>14.8</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>6.0</td>
</tr>
</tbody>
</table>

## HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of hospitalizations per 10,000 people*</th>
<th>Rate of cases per 100,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>25.9</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>35.1</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>24.1</td>
<td>27.4</td>
</tr>
</tbody>
</table>

## WATER QUALITY

<table>
<thead>
<tr>
<th>Substance</th>
<th>Average concentration in µg/L</th>
<th>Percent of population with fluoridated public water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.9</td>
<td>39.5</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.2</td>
<td>21.6</td>
</tr>
<tr>
<td>Fluoride</td>
<td>88.6%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

## AIR QUALITY

<table>
<thead>
<tr>
<th>Substance</th>
<th>Annual days above standard</th>
<th>Annual days above standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Data are suppressed.
HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
**BACKGROUND**

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>Rate of ER Visits Related to CO per 100,000</th>
<th>Statewide: 7.9</th>
</tr>
</thead>
</table>

**CHILDHOOD LEAD POISONING**

<table>
<thead>
<tr>
<th>Percent of Tested Children with Blood Lead ≥5 µg/dL</th>
<th>Statewide: 6.4%</th>
</tr>
</thead>
</table>

Above state value
At or below state value
^ Suppressed

**CARBON MONOXIDE**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

**HOME HAZARDS OUTAGAMIE COUNTY**
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- Outagamie County
- Wisconsin Average

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

Rate of ER visits per 10,000 people

- **Outagamie County**: 25.9
- **Wisconsin Average**: 39.5

**MELANOMA**

Rate of new cases per 100,000 people

- **Outagamie County**: 35.1
- **Wisconsin Average**: 21.6

**LUNG CANCER**

Rate of new cases per 100,000 people

- **Outagamie County**: 54.8
- **Wisconsin Average**: 61.1

**HEART ATTACK**

Rate of hospitalizations per 10,000 people

- **Outagamie County**: 24.1
- **Wisconsin Average**: 27.4

---

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Mean Concentration</th>
<th>Statewide Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.9 µg/L</td>
<td>1.4 µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.2 mg/L</td>
<td>1.5 mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>88.6%</td>
<td></td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

**OZONE**
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

**PARTICULATE MATTER 2.5**
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

**PARTICULATE MATTER 2.5**
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE

(µg/m$^3$)

HEART ATTACK HOSPITALIZATIONS

Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS

Rate per 10,000 people

Note the years displayed here are different than those on page 9.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM<sub>2.5</sub>) | Annual Average PM<sub>2.5</sub> (µg/m<sup>3</sup>); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM<sub>2.5</sub> levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM<sub>2.5</sub> concentration is 35 µg/m<sup>3</sup>.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

OZAUKEE COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!

dhstracking@wi.gov
608-267-2488
### Home Hazards

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>Percent with blood lead ≥5 µg/dL&lt;br&gt;Wisconsin: 6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>Rate of ER visits per 100,000 people&lt;br&gt;Wisconsin: 7.9</td>
</tr>
</tbody>
</table>

### Climate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>Rate of ER visits per 100,000 people&lt;br&gt;Wisconsin: 16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>Crude rate per 100,000 people&lt;br&gt;Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

### Health Outcomes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>Rate of ER visits per 10,000 people*&lt;br&gt;Wisconsin: 39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Rate of cases per 100,000 people&lt;br&gt;Wisconsin: 21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>Rate of hospitalizations per 10,000 people*&lt;br&gt;Wisconsin: 27.4</td>
</tr>
</tbody>
</table>

### Water Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>Average concentration in µg/L&lt;br&gt;Wisconsin: 1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>Average concentration in mg/L&lt;br&gt;Wisconsin: 1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>Percent of population with fluoridated public water&lt;br&gt;Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

### Air Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>Annual days above standard&lt;br&gt;Wisconsin: 3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>Annual days above standard&lt;br&gt;Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

* Above state value (with exception of fluoride where below state value is not preferred)

* At or below state value (with exception of fluoride where above state value is preferred)

### Data Suppression

Data details on next page.
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥ 5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Background

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Carbon Monoxide Poisoning**

**Rate of ER Visits Related to CO per 100,000**

- **Statewide:** 7.9

**Childhood Lead Poisoning**

**Percent of Tested Children with Blood Lead ≥5 µg/dL**

- **Statewide:** 6.4%

**Carbon Monoxide**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.

Maps courtesy of Centers for Disease Control and Prevention.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

20.9
ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

26.0
MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

49.4
LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

24.0
HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

ASTHMA
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

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HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen. Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

3.2
ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

0.1
NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

92.6%
FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 ($PM_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. $PM_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of $PM_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL

**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2001-2015, data from 2015 displayed on dashboard

**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people

**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard

**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people

**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard

**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people

**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard

**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people

**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard

**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people

**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard

**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES (continued)**

**Heart Attack**  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic**  |  Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate**  |  Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride**  |  Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM2.5)**  |  Annual Average PM2.5 (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.

**Ozone**  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

PEPIN COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!

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PEPIN COUNTY
DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
3.0%  |  Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
∧  |  Rate of ER visits per 100,000 people
Wisconsin: 7.9

CLIMATE

Heat Stress
21.5  |  Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
54.9  |  Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
40.3  |  Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
16.9  |  Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
27.1  |  Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
0.7  |  Average concentration in µg/L
Wisconsin: 1.4

Nitrate
2.6  |  Average concentration in mg/L
Wisconsin: 1.5

Fluoride
0.0%  |  Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
0  |  Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0  |  Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
At or below state value (with exception of fluoride where above state value is preferred)
Data are suppressed
Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services  |  Division of Public Health
www.dhs.wisconsin.gov/epht  |  dhstracking@wi.gov  |  608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrates: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

STATEWIDE: 7.9

3.0%

**CHILDHOOD LEAD POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

STATEWIDE: 6.4%

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

- **Wisconsin Average:** 39.5
- **Statewide:** 39.5
- **Pepin County:** 40.3
- **Above state value**

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Wisconsin Average:** 21.6
- **Statewide:** 21.6
- **Pepin County:** 16.9
- **At or below state value**

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Wisconsin Average:** 61.1
- **Statewide:** 61.1
- **Pepin County:** 53.3
- **Above state value**

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Wisconsin Average:** 27.4
- **Statewide:** 27.4
- **Pepin County:** 27.1
- **At or below state value**

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER
Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK
A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>NITRATE</th>
<th>FLUORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)</td>
<td>PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER</td>
</tr>
<tr>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
<td>STATEWIDE: 88.6%</td>
</tr>
</tbody>
</table>

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Suppressed

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

Note the years displayed here are different than those on page 10.

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2001-2015, data from 2015 displayed on dashboard  
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard  
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people  
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard  
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1991-2013, data from 2009-2013 displayed on the dashboard  
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!

dhstracking@wi.gov
608-267-2488
PIERCE COUNTY
DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
- 0.0%  |  Percent with blood lead ≥5 µg/dL
- Wisconsin: 6.4%

Carbon Monoxide Poisoning
- 3.2  |  Rate of ER visits per 100,000 people
- Wisconsin: 8.5

CLIMATE

Heat Stress
- 14.9  |  Rate of ER visits per 100,000 people
- Wisconsin: 16.5

Lyme Disease
- 51.4  |  Crude rate per 100,000 people
- Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
- 29.8  |  Rate of ER visits per 10,000 people*
- Wisconsin: 39.5

Melanoma
- 16.3  |  Rate of cases per 100,000 people
- Wisconsin: 21.6

Heart Attack
- 29.6  |  Rate of hospitalizations per 10,000 people*
- Wisconsin: 27.4

WATER QUALITY

Arsenic
- 0.8  |  Average concentration in µg/L
- Wisconsin: 1.4

Nitrate
- 1.8  |  Average concentration in mg/L
- Wisconsin: 1.5

Fluoride
- 92.7%  |  Percent of population with fluoridated public water
- Wisconsin: 88.6%

AIR QUALITY

Ozone
- 0  |  Annual days above standard
- Wisconsin: 3.8

Particulate Matter (PM) 2.5
- 0  |  Annual days above standard
- Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services  |  Division of Public Health
www.dhs.wisconsin.gov/epht  |  dhstracking@wi.gov  |  608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

STATEWIDE: 8.5

**Above state value**

**Pierce County**

**Wisconsin Average**

**CHILDHOOD LEAD POISONING**

**PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL**

STATEWIDE: 6.4%

**At or below state value**

**Suppressed**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>2005-2009</th>
<th>2010-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pierce County</td>
<td>14.9</td>
<td>51.4</td>
</tr>
</tbody>
</table>

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.

Maps courtesy of Centers for Disease Control and Prevention.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

29.8
ASTHMA
RATE OF ER VISITS
PER 10,000 PEOPLE
STATEWIDE: 39.5

16.3
MELANOMA
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 21.6

37.6
LUNG CANCER
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 61.1

29.6
HEART ATTACK
RATE OF HOSPITALIZATIONS
PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

ASTHMA
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY  PIERCE COUNTY

BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE**

**MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

<table>
<thead>
<tr>
<th></th>
<th><strong>0.8</strong></th>
<th><strong>1.8</strong></th>
<th><strong>92.7%</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARSENIC</strong></td>
<td>AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)</td>
<td>STATEWIDE: 1.4</td>
<td><strong>NITRATE</strong></td>
</tr>
<tr>
<td></td>
<td>Above state value (with exception of fluoride where below state value is not preferred)</td>
<td>At or below state value (with exception of fluoride where above state value is preferred)</td>
<td>^ Suppressed</td>
</tr>
</tbody>
</table>

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*


DIVE DEEPER INTO THE DATA: chs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 13
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. These data were averaged over ten years for five counties in order to minimize suppression.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

LYME DISEASE

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES (continued)**

**Heart Attack**  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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**WATER QUALITY**

**Arsenic**  |  Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate**  |  Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride**  |  Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

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**AIR QUALITY**

**Particulate Matter 2.5 (PM_{2.5})**  |  Annual Average PM_{2.5} (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 µg/m³.

**Ozone**  |  Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES  
dhs.wisconsin.gov/epht
2017

POLK COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
How to Use Environmental Public Health Tracking Data

Community Health Assessments
Tracking data can help flesh out your community health assessment and help meet state requirements.

Community Health Improvement Plans
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

Research
Tracking data can be used to explore answers to environmental health research questions.

Media Stories
Strengthen your interview or article with facts and figures from Tracking and our resources.

Social Media
Localize your posts with data from your community.

Accreditation
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

Grant Proposals
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

Education and Outreach
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

Policy Development
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
Childhood Lead Poisoning
2.2% Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
10.4 Rate of ER visits per 100,000 people
Wisconsin: 7.9

Heat Stress
27.1 Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
69.1 Crude rate per 100,000 people
Wisconsin: 22.7

Asthma
32.1 Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
13.3 Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
31.4 Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

Arsenic
1.1 Average concentration in µg/L
Wisconsin: 1.4

Nitrate
1.3 Average concentration in mg/L
Wisconsin: 1.5

Fluoride
64.2% Percent of population with fluoridated public water
Wisconsin: 88.6%

Ozone
0 Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0 Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level. CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).

![Graph showing the percentage of tested children with blood lead ≥5 µg/dL over the years, with a decline trend.]
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

- **STATEWIDE:** 39.5
- **POLK COUNTY:** 32.1

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 21.6
- **POLK COUNTY:** 13.3

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 61.1
- **POLK COUNTY:** 52.2

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE:** 27.4
- **POLK COUNTY:** 31.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY  POLK COUNTY

BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

1.1
ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

1.3
NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

64.2%
FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Maximum contaminant level set by U.S. EPA

Polk County
Wisconsin Average

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

AIR QUALITY

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The “2.5” in “particulate matter 2.5 (PM$_{2.5}$)” refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*


OZONE

ANNUAL DAYS ABOVE STANDARD (2012)

- **0**
  - OZONE
  - ANNUAL DAYS ABOVE STANDARD
  - STATEWIDE: 3.8

- **0**
  - PARTICULATE MATTER 2.5
  - ANNUAL DAYS ABOVE STANDARD
  - STATEWIDE: 0.3

- **9.3**
  - PARTICULATE MATTER 2.5
  - ANNUAL AVERAGE (µg/m$^3$)
  - STATEWIDE: 9.1

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 13
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
PORTAGE COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!
**PORTAGE COUNTY**

**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

- **Childhood Lead Poisoning**
  - 1.3% Percent with blood lead ≥ 5 μg/dL
  - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - 6.7 Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

### CLIMATE

- **Heat Stress**
  - 21.5 Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

- **Lyme Disease**
  - 56.8 Crude rate per 100,000 people
  - Wisconsin: 22.7

### HEALTH OUTCOMES

- **Asthma**
  - 22.3 Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

- **Melanoma**
  - 23.2 Rate of cases per 100,000 people
  - Wisconsin: 21.6

- **Heart Attack**
  - 38.1 Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

### WATER QUALITY

- **Arsenic**
  - 0.7 Average concentration in μg/L
  - Wisconsin: 1.4

- **Nitrate**
  - 4.9 Average concentration in mg/L
  - Wisconsin: 1.5

- **Fluoride**
  - 94.3% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

### AIR QUALITY

- **Ozone**
  - 0 Annual days above standard
  - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - 0 Annual days above standard
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page

**WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM**

Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/eph | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**
- Rate of ER visits related to CO per 100,000 people
- Statewide: 7.9

**CHILDHOOD LEAD POISONING**
- Percent of tested children with blood lead ≥5 µg/dL
- Statewide: 6.4%

**CARBON MONOXIDE**
- Rate of ER visits per 100,000 people

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Rate of ER Visits Per 100,000 People

- **Portage County**
- **Wisconsin Average**

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

LYME DISEASE

Rate of Cases Per 100,000 People

- **Portage County**: 21.5
- **Statewide**: 22.7

**HEAT STRESS**

**LYME DISEASE**

**DIVE DEEPER INTO THE DATA**: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

---

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

<table>
<thead>
<tr>
<th>Rate</th>
<th>Portage County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>22.3</strong></td>
<td><strong>23.2</strong></td>
<td><strong>54.3</strong></td>
</tr>
<tr>
<td>RATE OF ER VISITS PER 10,000 PEOPLE</td>
<td>STATEWIDE: 39.5</td>
<td>STATEWIDE: 21.6</td>
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</table>

**MELANOMA**

- **2004**: 50
- **2005**: 45
- **2006**: 40
- **2007**: 35
- **2008**: 30
- **2009**: 25
- **2010**: 20
- **2011**: 15
- **2012**: 10
- **2013**: 5
- **2014**: 0

**LUNG CANCER**

- **2004**: 40
- **2005**: 35
- **2006**: 30
- **2007**: 25
- **2008**: 20
- **2009**: 15
- **2010**: 10
- **2011**: 5
- **2012**: 0

**HEART ATTACK**

- **2004**: 30
- **2005**: 25
- **2006**: 20
- **2007**: 15
- **2008**: 10
- **2009**: 5
- **2010**: 0

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
**DATA DETAILS**

### HOME HAZARDS

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

### CLIMATE

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
Health Outcomes (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Water Quality

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

Air Quality

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners
We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action
We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter
Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES  
dhs.wisconsin.gov/epht
2017

PRICE COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it!

dhstracking@wi.gov
608-267-2488
<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits per 100,000 people</th>
<th>Rate of ER visits per 10,000 people*</th>
<th>Rate of hospitalizations per 10,000 people</th>
<th>Rate of cases per 100,000 people</th>
<th>Average concentration in µg/L</th>
<th>Percent of population with fluoridated public water</th>
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</thead>
<tbody>
<tr>
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<td>%</td>
<td>%</td>
<td>%</td>
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<td>8.7</td>
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<td>%</td>
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<td>38.9</td>
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<td>%</td>
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<td>70.1%</td>
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</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Home Hazards:

Background

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon Monoxide Poisoning

Rate of ER visits per 100,000 people (2005-2014)

- Price County: 8.7
- Wisconsin Average: 6.4

Childhood Lead Poisoning

Percent of tested children with blood lead ≥5 μg/dL

- Price County: 0.0%
- Wisconsin Average: 6.4%

Carbon Monoxide

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

13.2
STATEWIDE: 16.5

183.2
STATEWIDE: 22.7

BACKGROUND
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

HEAT STRESS
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
**BACKGROUND**

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

- **Asthma**, **Melanoma**, **Lung Cancer**, **Heart Attack**

  **STATEWIDE**:
  - Asthma: 39.5
  - Melanoma: 61.1
  - Lung Cancer: 21.6
  - Heart Attack: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 9
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th></th>
<th>STATEWIDE: 1.4</th>
<th>STATEWIDE: 1.5</th>
<th>STATEWIDE: 88.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Concentration</td>
<td>1.2 (µg/L)</td>
<td>1.4 (mg/L)</td>
<td>81.9%</td>
</tr>
<tr>
<td>Above state value (with exception of fluoride where below state value is not preferred)</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>At or below state value (with exception of fluoride where above state value is preferred)</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
**FLOURIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. https://www.cdc.gov/about/history/tengpha.htm*
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbone Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. These data were averaged over ten years for five counties in order to minimize suppression.

CLIMATE

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
RACINE COUNTY DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

**HOME HAZARDS**

**Childhood Lead Poisoning**
- Percent with blood lead ≥ 5 µg/dL
  - 7.3%
  - Wisconsin: 6.4%

**Carbon Monoxide Poisoning**
- Rate of ER visits per 100,000 people
  - 9.3
  - Wisconsin: 7.9

**CLIMATE**

**Heat Stress**
- Rate of ER visits per 100,000 people
  - 16.6
  - Wisconsin: 16.5

**Lyme Disease**
- Crude rate per 100,000 people
  - 3.1
  - Wisconsin: 22.7

**HEALTH OUTCOMES**

**Asthma**
- Rate of ER visits per 10,000 people*
  - 45.9
  - Wisconsin: 39.5

**Melanoma**
- Rate of cases per 100,000 people
  - 14.4
  - Wisconsin: 21.6

**Heart Attack**
- Rate of hospitalizations per 10,000 people*
  - 28.6
  - Wisconsin: 27.4

**WATER QUALITY**

**Arsenic**
- Average concentration in µg/L
  - 3.7
  - Wisconsin: 1.4

**Nitrate**
- Average concentration in mg/L
  - 0.2
  - Wisconsin: 1.5

**Fluoride**
- Percent of population with fluoridated public water
  - 89.7%
  - Wisconsin: 88.6%

**AIR QUALITY**

**Ozone**
- Annual days above standard
  - 20
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- Annual days above standard
  - 1
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
HOME HAZARDS

BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING

- RATE OF ER VISITS RELATED TO CO PER 100,000
  - STATEWIDE: 7.9
- PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL
  - STATEWIDE: 6.4%

CARBON MONOXIDE

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 5
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Rate of ER Visits per 100,000 People

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

- **Wisconsin Average**: 39.5
- Racine County: 45.9

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE

- **Wisconsin Average**: 21.6
- Racine County: 14.4

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE

- **Wisconsin Average**: 61.1
- Racine County: 69.5

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Wisconsin Average**: 27.4
- Racine County: 28.6

**ASTHMA**
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

---

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**BACKGROUND**

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

---

**OZONE**

**ANNUAL DAYS ABOVE STANDARD (2012)**

- **RACINE COUNTY**
- **OZONE**
  - STATEWIDE: 3.8
  - ANNUAL DAYS ABOVE STANDARD: 20
- **PARTICULATE MATTER 2.5**
  - STATEWIDE: 0.3
  - ANNUAL DAYS ABOVE STANDARD: 1
  - STATEWIDE: 9.1

---

**OZONE**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

---

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E866.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell’s palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

RICHLAND COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
# RICHLAND COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

## HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>4.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>10.3</td>
<td>7.9</td>
</tr>
</tbody>
</table>

## CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>24.8</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>171.5</td>
<td>22.7</td>
</tr>
</tbody>
</table>

## HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>26.0</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>12.2</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>26.2</td>
<td>27.4</td>
</tr>
</tbody>
</table>

## WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average Concentration</th>
<th>Wisconsin Average Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.4 µg/L</td>
<td>1.4 µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.1 mg/L</td>
<td>1.5 mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>85.8%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

## AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days above Standard</th>
<th>Wisconsin Annual Days above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

**At or below state value (with exception of fluoride where above state value is preferred)**

**Above state value (with exception of fluoride where below state value is not preferred)**

**Data are suppressed**

Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL. Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services. Year displayed: 2015


CLIMATE


HEALTH OUTCOMES


Asthma: Age-adjusted rate of emergency room visits related to asthma. Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack. Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems. Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources. Years displayed: Averaged data from 2013-2015


AIR QUALITY

Particulate Matter 2.5 (PM_{2.5}) and Ozone: Monitored and modeled estimates of air quality readings. Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention. Year displayed: 2012
BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING

<table>
<thead>
<tr>
<th>Rate of ER Visits Related to CO per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide: 7.9</td>
</tr>
</tbody>
</table>

CARBON MONOXIDE

Rate of ER Visits Per 100,000 People

CARBON MONOXIDE POISONING

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**RATE OF ER VISITS PER 10,000 PEOPLE**

<table>
<thead>
<tr>
<th></th>
<th>Richland County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASTHMA</strong></td>
<td>26.0</td>
<td>39.5</td>
</tr>
<tr>
<td><strong>MELANOMA</strong></td>
<td>12.2</td>
<td>21.6</td>
</tr>
<tr>
<td><strong>LUNG CANCER</strong></td>
<td>57.8</td>
<td>61.1</td>
</tr>
<tr>
<td><strong>HEART ATTACK</strong></td>
<td>26.2</td>
<td>27.4</td>
</tr>
</tbody>
</table>

| Above state value | At or below state value | Suppressed |

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
WATER QUALITY

BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE**

<table>
<thead>
<tr>
<th></th>
<th>Average Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARSENIC</strong></td>
<td><strong>NITRATE</strong></td>
</tr>
<tr>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
</tr>
</tbody>
</table>

- **Arsenic**: Mean concentration (µg/L)
- **Nitrate**: Mean concentration (mg/L)

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**FLUORIDE**

- **Percent of Population with Fluoridated Public Water**
  - STATEWIDE: 88.6%
  - **Richland County**: 85.8%

**DIVE DEEPER INTO THE DATA**

dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

FLUORIDE PERCENT OF POPULATION WITH ACCESS TO FLUORIDATED PUBLIC WATER

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it! dhstracking@wi.gov 608-267-2488
## ROCK COUNTY

**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>7.3%</td>
<td>Wisconsin: 6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>11.4</td>
<td>Wisconsin: 7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>20.3</td>
<td>Wisconsin: 16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>4.3</td>
<td>Wisconsin: 22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>60.8</td>
<td>Wisconsin: 39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>20.6</td>
<td>Wisconsin: 21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>34.8</td>
<td>Wisconsin: 27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average concentration</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.2</td>
<td>Wisconsin: 1.4</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.3</td>
<td>Wisconsin: 1.5</td>
</tr>
<tr>
<td>Fluoride</td>
<td>97.0%</td>
<td>Wisconsin: 88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual days above standard</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>6</td>
<td>Wisconsin: 3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>2</td>
<td>Wisconsin: 0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

<table>
<thead>
<tr>
<th>Rate of ER Visits Related to CO per 100,000</th>
<th>Statewide: 7.9</th>
</tr>
</thead>
</table>

**CHILDHOOD LEAD POISONING**

<table>
<thead>
<tr>
<th>Percent of Tested Children with Blood Lead ≥5 µg/dL</th>
<th>Statewide: 6.4%</th>
</tr>
</thead>
</table>

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 7
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

- **Statewide:** 39.5
- **Rock County:** 60.8

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide:** 21.6
- **Rock County:** 20.6

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide:** 61.1
- **Rock County:** 74.9

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Statewide:** 27.4
- **Rock County:** 34.8

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well. Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**1.2**
**ARSENIC**
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4
Above state value (with exception of fluoride where below state value is not preferred)

**2.3**
**NITRATE**
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5
At or below state value (with exception of fluoride where above state value is preferred)

**97.0%**
**FLUORIDE**
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

**ARSENIC AND NITRATE**
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM\textsubscript{2.5})" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*


DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 13
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
\( (\mu g/m^3) \)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES** (continued)

### Water Quality

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

### Nitrate

Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

### Fluoride

Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**Air Quality**

### Particulate Matter 2.5 (PM$_{2.5}$)

| Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtrack) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

### Ozone

Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES  
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know! dhstracking@wi.gov 608-267-2488
## RUSK COUNTY
### DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>4.8%</td>
<td>Percent with blood lead ≥5 µg/dL</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>23.8</td>
<td>Rate of ER visits per 100,000 people</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>18.1</td>
<td>Rate of ER visits per 100,000 people</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>106.2</td>
<td>Crude rate per 100,000 people</td>
<td>22.7</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>49.2</td>
<td>Rate of ER visits per 10,000 people*</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>20.2</td>
<td>Rate of cases per 100,000 people</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>19.2</td>
<td>Rate of hospitalizations per 10,000 people*</td>
<td>27.4</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average Concentration</th>
<th>Description</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.3 µg/L</td>
<td>Average concentration</td>
<td>1.4 µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.3 mg/L</td>
<td>Average concentration</td>
<td>1.5 mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>65.1%</td>
<td>Percent of population with fluoridated public water</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days Above Standard</th>
<th>Description</th>
<th>Wisconsin Annual Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>Annual days above standard</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page.
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**Rate of ER Visits Related to CO Per 100,000**

**Statewide:** 7.9

**Rusk County:** 23.8

- Above state value
- At or below state value
- Suppressed

**CHILDHOOD LEAD POISONING**

**Percent of Tested Children with Blood Lead ≥5 µg/dL**

**Statewide:** 6.4%

**Rusk County:** 4.8%

- Above state value
- At or below state value
- Suppressed

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

---

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASTHMA

Rate of ER visits per 10,000 people

STATEWIDE: 39.5

RUSK COUNTY: 49.2

Melanoma

Rate of new cases per 100,000 people

STATEWIDE: 21.6

RUSK COUNTY: 20.2

Lung cancer

Rate of new cases per 100,000 people

STATEWIDE: 61.1

RUSK COUNTY: 76.0

Heart attack

Rate of hospitalizations per 10,000 people

STATEWIDE: 27.4

RUSK COUNTY: 19.2

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 13

BACKGROUND
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

Above state value  At or below state value  ^ Suppressed

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE 
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
CONTINUED ON NEXT PAGE
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
SAUK COUNTY
ENVIRONMENTAL
HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

2017
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
SAUK COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
1.4% | Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
14.2 | Rate of ER visits per 100,000 people
Wisconsin: 7.9

CLIMATE

Heat Stress
28.9 | Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
42.4 | Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
31.4 | Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
14.3 | Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
28.3 | Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
0.4 | Average concentration in µg/L
Wisconsin: 1.4

Nitrate
2.1 | Average concentration in mg/L
Wisconsin: 1.5

Fluoride
94.5% | Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
3 | Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
0 | Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed
Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
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Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

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To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **Sauk County**: 28.9
- **Statewide**: 16.5

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

- **Sauk County**: 42.4
- **Statewide**: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

<table>
<thead>
<tr>
<th>Statewide</th>
<th>Sauk County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.5</td>
<td>31.4</td>
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</tr>
</tbody>
</table>

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

<table>
<thead>
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<th>Statewide</th>
<th>Sauk County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.6</td>
<td>14.3</td>
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</tbody>
</table>

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

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<tr>
<th>Statewide</th>
<th>Sauk County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.1</td>
<td>57.3</td>
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</table>

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

<table>
<thead>
<tr>
<th>Statewide</th>
<th>Sauk County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
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<tr>
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**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
**MELANOMA AND LUNG CANCER**

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

**HEART ATTACK**

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Public Water (µg/L)</th>
<th>Average Concentration</th>
<th>Maximum Contaminant Level Set by U.S. EPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.4</td>
<td>Statewide: 1.4</td>
<td>At or below state value (with exception of fluoride where above state value is preferred)</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.1</td>
<td>Statewide: 1.5</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

AIR QUALITY  SAUK COUNTY

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**  
(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**  
Rate per 10,000 people  
Note the years displayed here are different than those on page 10.

**ASTHMA EMERGENCY ROOM VISITS**  
Rate per 10,000 people  
Note the years displayed here are different than those on page 9.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM_{2.5}) | Annual Average PM_{2.5} (µg/m³); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 µg/m³.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
SAWYER COUNTY ENVIRONMENTAL HEALTH PROFILE

2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

---

How have you used your county's profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>1.9%</td>
<td>Percent with blood lead ≥ 5 µg/dL</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>8.5</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>26.3</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>73.3</td>
<td>Crude rate per 100,000 people</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>83.0</td>
<td>Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td>Melanoma</td>
<td>26.2</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>31.0</td>
<td>Rate of hospitalizations per 10,000 people*</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average Concentration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.1 µg/L</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.5 mg/L</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>65.3%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days Above Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
</tbody>
</table>

*Note: these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Data are suppressed
Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2005-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhswisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Sawyer County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>9.2</td>
<td>5.5</td>
</tr>
<tr>
<td>2010-2014</td>
<td>26.3</td>
<td>16.5</td>
</tr>
</tbody>
</table>

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Sawyer County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>73.3</td>
<td>22.7</td>
</tr>
</tbody>
</table>

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhswisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

83.0

26.2

67.4

31.0

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

HEART ATTACK
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
**MELANOMA AND LUNG CANCER**

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

**HEART ATTACK**

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**1.1**

ARSENIC

AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)

STATEWIDE: 1.4

Above state value (with exception of fluoride where below state value is not preferred)

**0.5**

NITRATE

AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)

STATEWIDE: 1.5

At or below state value (with exception of fluoride where above state value is preferred)

**65.3%**

FLUORIDE

PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER

STATEWIDE: 88.6%

\(^\text{Suppressed}\)

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

Annual Days Above Standard (2012)

- **Statewide**: 3.8

<table>
<thead>
<tr>
<th>Days Above Standard</th>
<th>Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 days</td>
<td>0</td>
</tr>
<tr>
<td>6-9 days</td>
<td>0</td>
</tr>
<tr>
<td>10-14 days</td>
<td>0</td>
</tr>
<tr>
<td>15-18 days</td>
<td>7.9</td>
</tr>
<tr>
<td>19-23 days</td>
<td>^</td>
</tr>
</tbody>
</table>

**PARTICULATE MATTER 2.5**

Annual Days Above Standard

- **Statewide**: 0.3

<table>
<thead>
<tr>
<th>Days Above Standard</th>
<th>Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 days</td>
<td>0</td>
</tr>
<tr>
<td>6-9 days</td>
<td>0</td>
</tr>
<tr>
<td>10-14 days</td>
<td>0</td>
</tr>
<tr>
<td>15-18 days</td>
<td>0</td>
</tr>
<tr>
<td>19-23 days</td>
<td>^</td>
</tr>
</tbody>
</table>

**PARTICULATE MATTER 2.5**

Annual Average ($\mu g/m^3$)

- **Statewide**: 9.1

<table>
<thead>
<tr>
<th>Average</th>
<th>Counties</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>At or below state value</td>
<td>0</td>
</tr>
<tr>
<td>Suppressed</td>
<td>7.9</td>
</tr>
</tbody>
</table>

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

### HOME HAZARDS

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** Averaged data from 2005-2014  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.  

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. These data were averaged over ten years for five counties in order to minimize suppression.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

### CLIMATE

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population. These data were averaged over ten years for five counties in order to minimize suppression.

### HEALTH OUTCOMES

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM_{2.5}) | Annual Average PM_{2.5} (µg/m^3); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM_{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM_{2.5} concentration is 35 µg/m^3.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
## SHAWANO COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

**Childhood Lead Poisoning**
- Percent with blood lead ≥ 5 µg/dL
  - Wisconsin: 6.4%
- Rate of ER visits per 100,000 people
  - Wisconsin: 7.9%

**Carbon Monoxide Poisoning**
- Rate of ER visits per 100,000 people
  - Wisconsin: 25.2%

### CLIMATE

**Heat Stress**
- Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

**Lyme Disease**
- Crude rate per 100,000 people
  - Wisconsin: 22.7

### HEALTH OUTCOMES

**Asthma**
- Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

**Melanoma**
- Rate of cases per 100,000 people
  - Wisconsin: 21.6

**Heart Attack**
- Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

### WATER QUALITY

**Arsenic**
- Average concentration in µg/L
  - Wisconsin: 1.4

**Nitrate**
- Average concentration in mg/L
  - Wisconsin: 1.5

**Fluoride**
- Percent of population with fluoridated public water
  - Wisconsin: 88.6%

### AIR QUALITY

**Ozone**
- Annual days above standard
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- Annual days above standard
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where below state value is not preferred)

Above state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013
Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program. Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level. CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

25.2

STATEWIDE: 16.5

36.3

STATEWIDE: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

- **STATEWIDE:** 39.5
- **SHAWANO COUNTY:** 46.0

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 21.6
- **SHAWANO COUNTY:** 23.4

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 61.1
- **SHAWANO COUNTY:** 55.0

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE:** 27.4
- **SHAWANO COUNTY:** 32.8

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

**DIVE DEEPER INTO THE DATA:** [dhs.wisconsin.gov/epht](dhs.wisconsin.gov/epht)

Wisconsin Environmental Public Health Tracking
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

MELANOMA
RATE OF NEW CASES PER 100,000 PEOPLE

LUNG CANCER
RATE OF NEW CASES PER 100,000 PEOPLE

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th></th>
<th>Arsenic Mean Concentration (µg/L)</th>
<th>Nitrate Mean Concentration (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(10 µg/L)</td>
<td>(10 mg/L)</td>
</tr>
</tbody>
</table>

**Shawano County**

**Wisconsin Average**

**Maximum contaminant level set by U.S. EPA**

**Shawano County**: 4.9 µg/L
**Wisconsin Average**: 1.7 mg/L

**FLUORIDE**
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

**Shawano County**: 11.2%

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

OZONE

ANNUAL DAYS ABOVE STANDARD (2012)

<table>
<thead>
<tr>
<th>County</th>
<th>Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shawano</td>
<td>3</td>
</tr>
</tbody>
</table>

OZONE

ANNUAL AVERAGE (µg/m$^3$)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Statewide</th>
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</thead>
<tbody>
<tr>
<td>PM$_{2.5}$</td>
<td>0.3</td>
</tr>
<tr>
<td>Ozone</td>
<td>3.8</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>9.1</td>
</tr>
</tbody>
</table>

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person's lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES (continued)**

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

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**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

SHEBOYGAN COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
### SHEBOYGAN COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

#### HOME HAZARDS
- **Childhood Lead Poisoning**
  - Percent with blood lead ≥25μg/dL
  - Wisconsin: 6.4%
- **Carbon Monoxide Poisoning**
  - Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

#### HEALTH OUTCOMES
- **Asthma**
  - Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5
- **Melanoma**
  - Rate of cases per 100,000 people
  - Wisconsin: 21.6
- **Heart Attack**
  - Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

#### CLIMATE
- **Heat Stress**
  - Rate of ER visits per 100,000 people
  - Wisconsin: 16.5
- **Lyme Disease**
  - Crude rate per 100,000 people
  - Wisconsin: 22.7

#### WATER QUALITY
- **Arsenic**
  - Average concentration in μg/L
  - Wisconsin: 1.4
- **Nitrate**
  - Average concentration in mg/L
  - Wisconsin: 1.5
- **Fluoride**
  - Percent of population with fluoridated public water
  - Wisconsin: 88.6%

#### AIR QUALITY
- **Ozone**
  - Annual days above standard
  - Wisconsin: 3.8
- **Particulate Matter (PM) 2.5**
  - Annual days above standard
  - Wisconsin: 0.3

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*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Data are suppressed

Data details on next page
HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems.
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings.
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
HEAT STRESS OVER THE PAST 60 YEARS, WISCONSIN HAS BECOME GENERALLY WARMER AND WETTER. CHANGES IN THE CLIMATE MAY LEAD TO MORE PRECIPITATION AND FLOODING, TEMPERATURE EXTREMES (VERY HOT AND VERY COLD DAYS), DROUGHT, AND MORE CARRIERS OF DISEASE (E.G., MOSQUITOES AND Ticks). EXTREME WEATHER CAN CONTRIBUTE TO MENTAL HEALTH PROBLEMS, WATER AND VECTORBORNE DISEASES, ALLERGIES, WATER AND FOOD INSECURITY, AND EVEN DEATH.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Sheboygan County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>12</td>
<td>10</td>
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<tr>
<td>2010-2014</td>
<td>15</td>
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</table>

HEAT STRESS
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE

- **Statewide:** 39.5
- **Sheboygan County:** 27.5
- **At or below state value**

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide:** 21.6
- **Sheboygan County:** 23.9
- **Above state value**

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE

- **Statewide:** 61.1
- **Sheboygan County:** 60.7
- **Above state value**

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **Statewide:** 27.4
- **Sheboygan County:** 23.8
- **At or below state value**

---

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief](#), available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

- **Arsenic**
  - Average concentration: 1.2 µg/L
  - Statewide average: 1.4 µg/L
  - Above state value (with exception of fluoride where below state value is not preferred)

- **Nitrate**
  - Average concentration: 0.6 mg/L
  - Statewide average: 1.5 mg/L
  - At or below state value (with exception of fluoride where above state value is preferred)

- **Fluoride**
  - Percent of population with fluoridated public water: 82.9%
  - Statewide average: 88.6%
  - Suppressed

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

Annual days above standard (2012)

<table>
<thead>
<tr>
<th>County</th>
<th>Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEBOYGAN COUNTY</td>
<td>23</td>
</tr>
</tbody>
</table>

**PARTICULATE MATTER 2.5**

Annual days above standard

<table>
<thead>
<tr>
<th>County</th>
<th>Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEBOYGAN COUNTY</td>
<td>1</td>
</tr>
</tbody>
</table>

Annual average (µg/m$^3$)

<table>
<thead>
<tr>
<th>County</th>
<th>Average Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEBOYGAN COUNTY</td>
<td>9.6</td>
</tr>
</tbody>
</table>

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning**  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2001-2015, data from 2015 displayed on dashboard  
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard  
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress**  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data averaged from 2010-2014 are displayed on dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease**  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard  
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**HEALTH OUTCOMES**

**Asthma**  |  Age-adjusted rate of emergency room visits per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer**  |  Annual average rate of new cases, age-adjusted per 100,000 people  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard  
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES (continued)**

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

2017

ST. CROIX COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
ST. CROIX COUNTY
DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
- 0.0%  Percent with blood lead ≥ 5 µg/dL
- Wisconsin: 6.4%

Carbon Monoxide Poisoning
- 5.0  Rate of ER visits per 100,000 people
- Wisconsin: 7.9

HEALTH OUTCOMES

Asthma
- 19.8  Rate of ER visits per 10,000 people*
- Wisconsin: 39.5

Melanoma
- 11.0  Rate of cases per 100,000 people
- Wisconsin: 21.6

Heart Attack
- 24.2  Rate of hospitalizations per 10,000 people*
- Wisconsin: 27.4

CLIMATE

Heat Stress
- 16.6  Rate of ER visits per 100,000 people
- Wisconsin: 16.5

Lyme Disease
- 54.9  Crude rate per 100,000 people
- Wisconsin: 22.7

WATER QUALITY

Arsenic
- 1.2  Average concentration in µg/L
- Wisconsin: 1.4

Nitrate
- 3.3  Average concentration in mg/L
- Wisconsin: 1.5

Fluoride
- 75.3%  Percent of population with fluoridated public water
- Wisconsin: 88.6%

AIR QUALITY

Ozone
- 0  Annual days above standard
- Wisconsin: 3.8

Particulate Matter (PM) 2.5
- 0  Annual days above standard
- Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

^ Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed
Data details on next page
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems.
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM2.5) and Ozone: Monitored and modeled estimates of air quality readings.
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

**HEAT STRESS**

Rate of ER Visits per 100,000 People

- **St.Croix County**: 16.6
- **Wisconsin Average**: 16.5
- **Statewide**: 16.5

**LYME DISEASE**

Rate of Cases per 100,000 People

- **St.Croix County**: 54.9
- **Wisconsin Average**: 22.7
- **Statewide**: 22.7

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**19.8**

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

**11.0**

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

**45.5**

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

**24.2**

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
WATER QUALITY ST. CROIX COUNTY

**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. [https://www.cdc.gov/about/history/tengpha.htm](https://www.cdc.gov/about/history/tengpha.htm)
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
Data Details

Home Hazards

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Health Outcomes

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
TAYLOR COUNTY
DASHBOARD  | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
- 3.2% Percent with blood lead ≥5 µg/dL
  - Wisconsin: 6.4%

Carbon Monoxide Poisoning
- 10.7 Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

CLIMATE

Heat Stress
- 9.7 Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

Lyme Disease
- 58.7 Crude rate per 100,000 people
  - Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
- 23.3 Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

Melanoma
- 14.0 Rate of cases per 100,000 people
  - Wisconsin: 21.6

Heart Attack
- 17.8 Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

WATER QUALITY

Arsenic
- 1.5 Average concentration in µg/L
  - Wisconsin: 1.4

Nitrate
- 0.7 Average concentration in mg/L
  - Wisconsin: 1.5

Fluoride
- 0.0% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

AIR QUALITY

Ozone
- 0 Annual days above standard
  - Wisconsin: 3.8

Particulate Matter (PM) 2.5
- 0 Annual days above standard
  - Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015
Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013
Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014
Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

**LYME DISEASE**

Rate of cases per 100,000 people

Statewide: 22.7

**HEAT STRESS**

Rate of ER visits per 100,000 people

Statewide: 16.5

Taylor County

Wisconsin Average

* DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

23.3
ASTHMA
RATE OF ER VISITS
PER 10,000 PEOPLE
STATEWIDE: 39.5

14.0
MELANOMA
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 21.6

47.4
LUNG CANCER
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 61.1

17.8
HEART ATTACK
RATE OF HOSPITALIZATIONS
PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA
RATE OF ER VISITS PER 10,000 PEOPLE

ASTHMA
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

**ARSENIC**

- Average concentration in public water (µg/L)
  - Statewide: 1.4
  - **1.5**
  - Above state value (with exception of fluoride where below state value is not preferred)

**NITRATE**

- Average concentration in public water (mg/L)
  - Statewide: 1.5
  - **0.7**
  - At or below state value (with exception of fluoride where above state value is preferred)

**FLUORIDE**

- Percent of population with fluoridated public water
  - Statewide: 88.6%
  - **0.0%**
  - Suppressed

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**BACKGROUND**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*


---

**OZONE**

**ANNUAL DAYS ABOVE STANDARD (2012)**

- **TAYLOR COUNTY**
  - 0 days

**PARTICULATE MATTER 2.5**

- **ANNUAL DAYS ABOVE STANDARD**
  - TAYLOR COUNTY: 0 days
- **ANNUAL AVERAGE (µg/m$^3$)**
  - STATEWIDE: 0.3
  - 8.4

---

**DIVE DEEPER INTO THE DATA:** [dhs.wisconsin.gov/epht](dhs.wisconsin.gov/epht)
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
($\mu$g/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2001-2015, data from 2015 displayed on dashboard  
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard  
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 996 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people  
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard  
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, meningoencephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard  
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/ephtprofiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/ephtprofiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
TREMPEALEAU COUNTY
ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov 608-267-2488
# TREMPEALEAU COUNTY

## DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>1.6%</td>
<td>Percent with blood lead ≥5 µg/dL</td>
<td>6.4%</td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>24.5</td>
<td>Rate of ER visits per 100,000 people</td>
<td>7.9</td>
<td></td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>22.6</td>
<td>Rate of ER visits per 100,000 people</td>
<td>16.5</td>
<td></td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>13.5</td>
<td>Crude rate per 100,000 people</td>
<td>22.7</td>
<td></td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>16.7</td>
<td>Rate of ER visits per 10,000 people*</td>
<td>39.5</td>
<td></td>
</tr>
<tr>
<td>Melanoma</td>
<td>23.2</td>
<td>Rate of cases per 100,000 people</td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td>Heart Attack</td>
<td>29.2</td>
<td>Rate of hospitalizations per 10,000 people*</td>
<td>27.4</td>
<td></td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.3</td>
<td>Average concentration in µg/L</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.3</td>
<td>Average concentration in mg/L</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Fluoride</td>
<td>61.6%</td>
<td>Percent of population with fluoridated public water</td>
<td>88.6%</td>
<td></td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
<th>Wisconsin</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>Annual days above standard</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM)</td>
<td>0</td>
<td>Annual days above standard</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

1. Above state value (with exception of fluoride where below state value is not preferred)
2. At or below state value (with exception of fluoride where above state value is preferred)
3. Data are suppressed

**Wisconsin Environmental Public Health Tracking Program**
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Background**

**CARBON MONOXIDE POISONING**

- **Rate of ER visits related to CO per 100,000 people**
  - **Statewide**: 7.9
  - **Trempealeau County**

**Childhood Lead Poisoning**

- **Percent of tested children with blood lead ≥5 µg/dL**
  - **Statewide**: 6.4%
  - **Trempealeau County**: 1.6%

Carbon monoxide (CO) poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacer, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

**Carbon Monoxide**

- **Rate of ER visits per 100,000 people**
  - **Trempealeau County**: 24.5
  - **Wisconsin Average**: 1.6

---

**DIVE DEEPER INTO THE DATA:** dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking  |  5
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

16.7
ASTHMA
RATE OF ER VISITS
PER 10,000 PEOPLE
STATEWIDE: 39.5

23.2
MELANOMA
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 21.6

57.8
LUNG CANCER
RATE OF NEW CASES
PER 100,000 PEOPLE
STATEWIDE: 61.1

29.2
HEART ATTACK
RATE OF HOSPITALIZATIONS
PER 10,000 PEOPLE
STATEWIDE: 27.4

ASTHMA

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water pumped into your home, school, or workplace comes from either a public water system or a private well.

Two key contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE

MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

![Graph showing arsenic and nitrate levels](image)

ARSENIC

<table>
<thead>
<tr>
<th>Average Concentration</th>
<th>Statewide: 1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>µg/L</td>
<td>0.3</td>
</tr>
</tbody>
</table>

NITRATE

<table>
<thead>
<tr>
<th>Average Concentration</th>
<th>Statewide: 1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>mg/L</td>
<td>1.3</td>
</tr>
</tbody>
</table>

FLUORIDE

<table>
<thead>
<tr>
<th>Percent of Population with Fluoridated Public Water</th>
<th>Statewide: 88.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>61.6%</td>
</tr>
</tbody>
</table>

TREMPEALEAU WATER QUALITY BACKGROUND

High nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND
Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person's lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

**HOME HAZARDS**

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 are displayed on dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atroventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0 or cause of injury code E992.9 code. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

15 | Wisconsin Environmental Public Health Tracking  
Continued on next page
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
2017

VERNON COUNTY environmental health profile

Wisconsin environmental public health tracking program
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
# VERNON COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

## HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>0.0%</td>
<td>Percent with blood lead ≥ 5 µg/dL</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>3.9%</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
</tbody>
</table>

## CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>26.8</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>91.8</td>
<td>Crude rate per 100,000 people</td>
</tr>
</tbody>
</table>

## HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>35.6</td>
<td>Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td>Melanoma</td>
<td>13.6</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>26.0</td>
<td>Rate of hospitalizations per 10,000 people*</td>
</tr>
</tbody>
</table>

## WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.5</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>1.0</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.0%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

## AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)  
At or below state value (with exception of fluoride where above state value is preferred)  
Data are suppressed  
Data details on next page
**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems.
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings.
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Background**

**CARBON MONOXIDE POISONING**

- **Rate of ER Visits Related to CO Per 100,000**
  - **Statewide:** 7.9
  - **Vernon County:** 3.9

**Childhood Lead Poisoning**

- **Percent of Tested Children with Blood Lead ≥5 µg/dL**
  - **Statewide:** 6.4%
  - **Vernon County:** 0.0%

**Carbon Monoxide Poisoning**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
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<tr>
<td>2005-2009</td>
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<tr>
<td>2010-2014</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Vernon County
Wisconsin Average

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**  
RATE OF ER VISITS PER 10,000 PEOPLE  
STATEWIDE: 39.5

**MELANOMA**  
RATE OF NEW CASES PER 100,000 PEOPLE  
STATEWIDE: 21.6

**LUNG CANCER**  
RATE OF NEW CASES PER 100,000 PEOPLE  
STATEWIDE: 61.1

**HEART ATTACK**  
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE  
STATEWIDE: 27.4

**ASTHMA**  
Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

**HEART ATTACK**

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water Quality Vernon County

Background

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

0.5
Arsenic average concentration in public water (µg/L)

Statewide: 1.4

Above state value (with exception of fluoride where below state value is not preferred)

1.0
Nitrate average concentration in public water (mg/L)

Statewide: 1.5

At or below state value (with exception of fluoride where above state value is preferred)

0.0%
Fluoride percent of population with fluoridated public water

Statewide: 88.6%

arsenic and nitrate mean concentration levels in public water (2013-2015)

Maximum contaminant level set by U.S. EPA

\( (10 \, \text{µg/L}) \quad (10 \, \text{mg/L})\)

Arsenic mean concentration (µg/L)  Nitrate mean concentration (mg/L)

Statewide values for arsenic and nitrate are 0.05 and 1.0 mg/L, respectively. Vernson County's arsenic and nitrate concentrations are below these state values.

arsenic and nitrate in public drinking water

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

Dive deeper into the data: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay. *

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

---

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

**Lead Poisoning** | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease** | Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

**Heat Stress** | Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

HEALTH OUTCOMES

**Asthma** | Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer** | Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**Health Outcomes (continued)**

<table>
<thead>
<tr>
<th><strong>HEART ATTACK</strong></th>
<th><strong>SOURCE</strong></th>
<th><strong>YEARS DISPLAYED</strong></th>
<th><strong>DATA DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heart Attack</strong></td>
<td>Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services</td>
<td>2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard</td>
<td>These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.</td>
</tr>
</tbody>
</table>

**Water Quality**

<table>
<thead>
<tr>
<th><strong>ARSENIC</strong></th>
<th><strong>SOURCE</strong></th>
<th><strong>YEARS DISPLAYED</strong></th>
<th><strong>DATA DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arsenic</strong></td>
<td>Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources</td>
<td>Averaged data from 2013-2015</td>
<td>Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NITRATE</strong></th>
<th><strong>SOURCE</strong></th>
<th><strong>YEARS DISPLAYED</strong></th>
<th><strong>DATA DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nitrate</strong></td>
<td>Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources</td>
<td>Averaged data from 2013-2015</td>
<td>Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>FLUORIDE</strong></th>
<th><strong>SOURCE</strong></th>
<th><strong>YEARS DISPLAYED</strong></th>
<th><strong>DATA DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluoride</strong></td>
<td>Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services</td>
<td>2011-2015, data from 2015 displayed on dashboard</td>
<td>Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.</td>
</tr>
</tbody>
</table>

**Air Quality**

<table>
<thead>
<tr>
<th><strong>PARTICULATE MATTER 2.5 (PM2.5)</strong></th>
<th><strong>SOURCE</strong></th>
<th><strong>YEARS DISPLAYED</strong></th>
<th><strong>DATA DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulate Matter 2.5 (PM2.5)</strong></td>
<td>National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention</td>
<td>2002-2012, data from 2012 are displayed on the dashboard</td>
<td>These measures include monitored and modeled estimates of PM2.5 levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM2.5 concentration is 35 µg/m³.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OZONE</strong></th>
<th><strong>SOURCE</strong></th>
<th><strong>YEAR DISPLAYED</strong></th>
<th><strong>DATA DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone</strong></td>
<td>National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention</td>
<td>2012</td>
<td>This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.</td>
</tr>
</tbody>
</table>
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
VILAS COUNTY
ENVIRONMENTAL
HEALTH PROFILE

2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile? Tell us about it! dhstracking@wi.gov 608-267-2488
## Home Hazards

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>0.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>17.5</td>
<td>7.9</td>
</tr>
</tbody>
</table>

## Climate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>24.7</td>
<td>16.5</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>51.4</td>
<td>22.7</td>
</tr>
</tbody>
</table>

## Health Outcomes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Wisconsin Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>41.2</td>
<td>39.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>10.7</td>
<td>21.6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>38.4</td>
<td>27.4</td>
</tr>
</tbody>
</table>

## Water Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average Concentration</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.1 µg/L</td>
<td>1.4 µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0.8 mg/L</td>
<td>1.5 mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>62.7%</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

## Air Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days Above Standard</th>
<th>Wisconsin Annual Days Above Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>0</td>
<td>3.8</td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems.
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings.
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
**CHILDHOOD LEAD POISONING**

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

**HEAT STRESS**
RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Vilas County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>5.5</td>
<td>4.5</td>
</tr>
<tr>
<td>2010-2014</td>
<td>24.7</td>
<td>16.5</td>
</tr>
</tbody>
</table>

**LYME DISEASE**
RATE OF CASES PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Vilas County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>51.4</td>
<td>22.7</td>
</tr>
</tbody>
</table>

**HEAT STRESS**
Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

<table>
<thead>
<tr>
<th>Rate</th>
<th>Vilas County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATE OF ER VISITS PER 10,000 PEOPLE</td>
<td>41.2</td>
<td>39.5</td>
</tr>
<tr>
<td>RATE OF NEW CASES PER 100,000 PEOPLE</td>
<td>10.7</td>
<td>21.6</td>
</tr>
<tr>
<td>RATE OF NEW CASES PER 100,000 PEOPLE</td>
<td>66.7</td>
<td>61.1</td>
</tr>
<tr>
<td>RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE</td>
<td>38.4</td>
<td>27.4</td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>Arsenic (µg/L)</th>
<th>Nitrate (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ( suppression)</td>
<td>1 ( suppression)</td>
</tr>
</tbody>
</table>

Maximum contaminant level set by U.S. EPA

WATER QUALITY VILAS COUNTY

BACKGROUND
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

1.1
ARSENIC
AVERAGE CONCENTRATION IN PUBLIC WATER (µg/L)
STATEWIDE: 1.4

0.8
NITRATE
AVERAGE CONCENTRATION IN PUBLIC WATER (mg/L)
STATEWIDE: 1.5

62.7%
FLUORIDE
PERCENT OF POPULATION WITH FLUORIDATED PUBLIC WATER
STATEWIDE: 88.6%

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

OZONE

ANNUAL DAYS ABOVE STANDARD (2012)

- **OZONE**
  - Statewide: 3.8
  - Annual days above standard:
    - 0

- **PARTICULATE MATTER 2.5**
  - Statewide: 0.3
  - Annual days above standard:
    - 0
  - Annual average (µg/m$^3$):
    - 7.2


DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 13
PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
**DATA DETAILS**

**HOME HAZARDS**

**Lead Poisoning |** Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
**Source:** Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2001-2015, data from 2015 displayed on dashboard  
**Data details:** Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

**Carbon Monoxide Poisoning |** Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data averaged from 2010-2014 displayed on dashboard  
**Data details:** This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Heat Stress |** Annual average rate of emergency room visits, age-adjusted per 100,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2005-2014, data from 2010-2014 are displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Lyme Disease |** Crude rate of confirmed Lyme disease cases per 100,000 people  
**Source:** Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1991-2015, data from 2015 are displayed on the dashboard  
**Data details:** These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

**CLIMATE**

**Asthma |** Age-adjusted rate of emergency room visits per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

**Melanoma and Lung Cancer |** Annual average rate of new cases, age-adjusted per 100,000 people  
**Source:** Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 1999-2013, data from 2009-2013 displayed on the dashboard  
**Data details:** Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
WALWORTH COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
WALWORTH COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
5.5% | Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
4.9 | Rate of ER visits per 100,000 people
Wisconsin: 7.9

CLIMATE

Heat Stress
16.6 | Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
9.7 | Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
32.5 | Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
26.0 | Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
30.2 | Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
2.5 | Average concentration in µg/L
Wisconsin: 1.4

Nitrate
0.6 | Average concentration in mg/L
Wisconsin: 1.5

Fluoride
61.4% | Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
5 | Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
2 | Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where below state value is not preferred)

Above state value (with exception of fluoride where above state value is preferred)

Data details on next page

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services | Division of Public Health
www.dhs.wisconsin.gov/epht | dhstracking@wi.gov | 608-267-2488
DASHBOARD DATA DETAILS

Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012

HOME HAZARDS
CLIMATE
HEALTH OUTCOMES
WATER QUALITY
AIR QUALITY
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Background**

**Carbon Monoxide**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

<table>
<thead>
<tr>
<th>Year</th>
<th>Walworth County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-2014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

STATEWIDE: 16.5

STATEWIDE: 22.7

Above state value
At or below state value
Suppressed
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**32.5**

**ASTHMA**
RATE OF ER VISITS PER 10,000 PEOPLE
STATEWIDE: 39.5

---

**26.0**

**MELANOMA**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 21.6

---

**64.0**

**LUNG CANCER**
RATE OF NEW CASES PER 100,000 PEOPLE
STATEWIDE: 61.1

---

**30.2**

**HEART ATTACK**
RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE
STATEWIDE: 27.4

---

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

---

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 9
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE
MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Maximum contaminant level set by U.S. EPA

- **Arsenic**
  - Walworth County: 1.6 µg/L
  - Wisconsin Average: 1.4 µg/L
- **Nitrate**
  - Walworth County: 0.6 mg/L
  - Wisconsin Average: 1.4 mg/L

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
Wisconsin Environmental Public Health Tracking | 11
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

---

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**OZONE**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
(µg/m$^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015  
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2011-2015, data from 2015 displayed on dashboard  
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard  
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012  
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
### Washburn County Dashboard - 2017 Environmental Health Profile

#### Home Hazards

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Childhood Lead Poisoning</strong></td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>Percent with blood lead ≥ 5 µg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 6.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carbon Monoxide Poisoning</strong></td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>Rate of ER visits per 100,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 7.9</td>
<td></td>
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</table>

#### Climate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heat Stress</strong></td>
<td>18.4</td>
<td></td>
</tr>
<tr>
<td>Rate of ER visits per 100,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 16.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lyme Disease</strong></td>
<td>257.2</td>
<td></td>
</tr>
<tr>
<td>Crude rate per 100,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 22.7</td>
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<td></td>
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</tbody>
</table>

#### Health Outcomes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td>43.1</td>
<td></td>
</tr>
<tr>
<td>Rate of ER visits per 10,000 people*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 39.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Melanoma</strong></td>
<td>9.5</td>
<td></td>
</tr>
<tr>
<td>Rate of cases per 100,000 people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 21.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heart Attack</strong></td>
<td>31.5</td>
<td></td>
</tr>
<tr>
<td>Rate of hospitalizations per 10,000 people*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 27.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Water Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Concentration</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arsenic</strong></td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Average concentration in µg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nitrate</strong></td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Average concentration in mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fluoride</strong></td>
<td>69.7%</td>
<td></td>
</tr>
<tr>
<td>Percent of population with fluoridated public water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 88.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Air Quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual Days Above Standard</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone</strong></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 3.8</td>
<td>Above state value (with exception of fluoride where below state value is not preferred)</td>
<td></td>
</tr>
<tr>
<td><strong>Particulate Matter (PM) 2.5</strong></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Wisconsin: 0.3</td>
<td>At or below state value (with exception of fluoride where above state value is preferred)</td>
<td></td>
</tr>
</tbody>
</table>

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

RATE OF ER VISITS PER 100,000 PEOPLE

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

HEAL THE ENVIRONMENT

STATEWIDE: 16.5

LYME DISEASE

RATE OF CASES PER 100,000 PEOPLE

STATEWIDE: 22.7

Above state value
At or below state value
Suppressed

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

**RATE OF ER VISITS PER 10,000 PEOPLE**

- **STATEWIDE:** 39.5
- **WASHBURN COUNTY:** 43.1

**MELANOMA**

**RATE OF NEW CASES PER 100,000 PEOPLE**

- **STATEWIDE:** 21.6
- **WASHBURN COUNTY:** 9.5

**LUNG CANCER**

**RATE OF NEW CASES PER 100,000 PEOPLE**

- **STATEWIDE:** 61.1
- **WASHBURN COUNTY:** 71.5

**HEART ATTACK**

**RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE**

- **STATEWIDE:** 27.4
- **WASHBURN COUNTY:** 31.5

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our [asthma disparities surveillance brief], available in the resources section of our website.

**DIVE DEEPER INTO THE DATA:** [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)

Wisconsin Environmental Public Health Tracking | 9
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE

MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

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**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person's lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5 ANNUAL AVERAGE
($\mu g/m^3$)

HEART ATTACK HOSPITALIZATIONS
Rate per 10,000 people

ASTHMA EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E890.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
WASHINGTON COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
WASHINGTON COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
4.4% | Percent with blood lead ≥5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
4.0 | Rate of ER visits per 100,000 people
Wisconsin: 7.9

CLIMATE

Heat Stress
9.9 | Rate of ER visits per 100,000 people
Wisconsin: 16.5

Lyme Disease
2.2 | Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
17.5 | Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
23.9 | Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
26.8 | Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
1.7 | Average concentration in µg/L
Wisconsin: 1.4

Nitrate
0.4 | Average concentration in mg/L
Wisconsin: 1.5

Fluoride
82.4% | Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
12 | Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
1 | Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)
At or below state value (with exception of fluoride where above state value is preferred)
Data are suppressed
Data details on next page
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Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
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Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
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Years displayed: 2009-2013

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Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
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Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATe OF ER VISITS RELATED TO CO PER 100,000**

**STATEWIDE:** 7.9

**WASHINGTON COUNTY**

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL. The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children. In most counties, the percentage of children poisoned below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).

WASHINGTON COUNTY

HOME HAZARDS

WASHINGTON COUNTY

CHILDHOOD LEAD POISONING

PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥ 5 µg/dL

2015

0.0% to <2.2%
2.2% to <4.4%
4.4% to <6.7%
6.7% to <8.9%
8.9% to 11%

Wisconsin Average

Washington County
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

- **Washington County**
- **Wisconsin Average**

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Washington County</th>
<th>Wisconsin Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2009</td>
<td>16.5</td>
<td>22.7</td>
</tr>
<tr>
<td>2010-2014</td>
<td>9.9</td>
<td>12.7</td>
</tr>
</tbody>
</table>

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL

One dot placed randomly within county of residence for each reported case

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

### Asthma

<table>
<thead>
<tr>
<th>Measure</th>
<th>Rate</th>
<th>Statewide</th>
<th>Washington County</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER Visits</td>
<td>17.5</td>
<td>39.5</td>
<td>17.5</td>
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<tr>
<td>New Cases</td>
<td>23.9</td>
<td>21.6</td>
<td>23.9</td>
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</tbody>
</table>

### Melanoma

<table>
<thead>
<tr>
<th>Measure</th>
<th>Rate</th>
<th>Statewide</th>
<th>Washington County</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Cases</td>
<td>57.3</td>
<td>61.1</td>
<td>57.3</td>
</tr>
</tbody>
</table>

### Lung Cancer

<table>
<thead>
<tr>
<th>Measure</th>
<th>Rate</th>
<th>Statewide</th>
<th>Washington County</th>
</tr>
</thead>
<tbody>
<tr>
<td>新 Cases</td>
<td>26.8</td>
<td>27.4</td>
<td>26.8</td>
</tr>
</tbody>
</table>

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

Ozone is illustrated in the map to the left. The fewer days above the standard, the better. Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

PARTICULATE MATTER 2.5
ANNUAL AVERAGE
(µg/m$^3$)

HEART ATTACK
HOSPITALIZATIONS
Rate per 10,000 people

Note the years displayed here are different than those on page 10.

ASTHMA
EMERGENCY ROOM VISITS
Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program

Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group

Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES  
dhs.wisconsin.gov/epht
2017

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

WAUKESHA COUNTY ENVIRONMENTAL HEALTH PROFILE
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile? Tell us about it!
dhstracking@wi.gov
608-267-2488
### HOME HAZARDS

- **Childhood Lead Poisoning**
  - 1.2% Percent with blood lead ≥ 5 µg/dL
  - Wisconsin: 6.4%

- **Carbon Monoxide Poisoning**
  - 6.4 Rate of ER visits per 100,000 people
  - Wisconsin: 7.9

### CLIMATE

- **Heat Stress**
  - 11.0 Rate of ER visits per 100,000 people
  - Wisconsin: 16.5

- **Lyme Disease**
  - 10.3 Crude rate per 100,000 people
  - Wisconsin: 22.7

### HEALTH OUTCOMES

- **Asthma**
  - 16.7 Rate of ER visits per 10,000 people*
  - Wisconsin: 39.5

- **Melanoma**
  - 25.1 Rate of cases per 100,000 people
  - Wisconsin: 21.6

- **Heart Attack**
  - 19.7 Rate of hospitalizations per 10,000 people*
  - Wisconsin: 27.4

### WATER QUALITY

- **Arsenic**
  - 2.2 Average concentration in µg/L
  - Wisconsin: 1.4

- **Nitrate**
  - 0.5 Average concentration in mg/L
  - Wisconsin: 1.5

- **Fluoride**
  - 80.5% Percent of population with fluoridated public water
  - Wisconsin: 88.6%

### AIR QUALITY

- **Ozone**
  - 2 Annual days above standard
  - Wisconsin: 3.8

- **Particulate Matter (PM) 2.5**
  - 1 Annual days above standard
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

[Data details on next page]

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**WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM**

Bureau of Environmental and Occupational Health

Wisconsin Department of Health Services  |  Division of Public Health

www.dhs.wisconsin.gov/epht  |  dhstracking@wi.gov  |  608-267-2488
HOME HAZARDS

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE

Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES

Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY

Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**CARBON MONOXIDE POISONING**

**RATE OF ER VISITS RELATED TO CO PER 100,000**

<table>
<thead>
<tr>
<th></th>
<th>Above state value</th>
<th>At or below state value</th>
<th>Suppressed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEWIDE:</strong> 7.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Waukesha County**

- **2005-2009:** 7.0
- **2010-2014:** 6.4

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE

STATEWIDE: 22.7

11.0

STATEWIDE: 16.5

10.3

Above state value
At or below state value
 Suspended
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

- **STATEWIDE:** 39.5
- **WAUKESHA COUNTY:** 16.7

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 21.6
- **WAUKESHA COUNTY:** 25.1

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 61.1
- **WAUKESHA COUNTY:** 54.7

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE:** 27.4
- **WAUKESHA COUNTY:** 19.7

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

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HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

**ARSENIC**

<table>
<thead>
<tr>
<th>Average Concentration in Public Water (µg/L)</th>
<th>Statewide: 1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEWIDE</strong>: 1.5</td>
<td></td>
</tr>
</tbody>
</table>

**NITRATE**

<table>
<thead>
<tr>
<th>Average Concentration in Public Water (mg/L)</th>
<th>Statewide: 1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEWIDE</strong>: 1.4</td>
<td></td>
</tr>
</tbody>
</table>

**FLUORIDE**

<table>
<thead>
<tr>
<th>Percent of Population with Fluoridated Public Water</th>
<th>Statewide: 88.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEWIDE</strong>: 88.6%</td>
<td></td>
</tr>
</tbody>
</table>

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA:** [dhs.wisconsin.gov/eph](http://dhs.wisconsin.gov/eph)
Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

**PARTICULATE MATTER 2.5**

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5**
**ANNUAL AVERAGE**
($\mu g/m^3$)

**HEART ATTACK**
**HOSPITALIZATIONS**
Rate per 10,000 people

**ASTHMA**
**EMERGENCY ROOM VISITS**
Rate per 10,000 people

*Note the years displayed here are different than those on page 10.*
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 μg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM\textsubscript{2.5}) | Annual Average PM\textsubscript{2.5} (µg/m\textsuperscript{3}); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM\textsubscript{2.5} levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM\textsubscript{2.5} concentration is 35 µg/m\textsuperscript{3}.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

WAUPACA COUNTY ENVIRONMENTAL HEALTH PROFILE

2017
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
WAUPACA COUNTY
DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

HOME HAZARDS

Childhood Lead Poisoning
1.3%  Percent with blood lead ≥ 5 µg/dL
Wisconsin: 6.4%

Carbon Monoxide Poisoning
8.8  Rate of ER visits per 100,000 people
Wisconsin: 7.9

CLIMATE

Heat Stress
22.2  Rate of ER visits per 100,000 people
Wisconsin: 16.5

LYME DISEASE

Lyme Disease
38.5  Crude rate per 100,000 people
Wisconsin: 22.7

HEALTH OUTCOMES

Asthma
45.5  Rate of ER visits per 10,000 people*
Wisconsin: 39.5

Melanoma
25.0  Rate of cases per 100,000 people
Wisconsin: 21.6

Heart Attack
21.1  Rate of hospitalizations per 10,000 people*
Wisconsin: 27.4

WATER QUALITY

Arsenic
3.2  Average concentration in µg/L
Wisconsin: 1.4

Nitrate
2.7  Average concentration in mg/L
Wisconsin: 1.5

Fluoride
67.7%  Percent of population with fluoridated public water
Wisconsin: 88.6%

AIR QUALITY

Ozone
3  Annual days above standard
Wisconsin: 3.8

Particulate Matter (PM) 2.5
1  Annual days above standard
Wisconsin: 0.3

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

At or below state value (with exception of fluoride where below state value is preferred)
Above state value (with exception of fluoride where above state value is preferred)

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

HOME HAZARDS
Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

CLIMATE
Lyme Disease: Crude rate of confirmed Lyme disease cases
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

HEALTH OUTCOMES
Melanoma: Age-adjusted rate of new cases reported by health care providers
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

WATER QUALITY
Arsenic and Nitrate: Measured concentrations from active public water systems
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

AIR QUALITY
Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death. In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**Carbon Monoxide Poisoning**

- **Rate of ER Visits Related to CO per 100,000**
  - **Statewide:** 7.9
  - **Waupaca County:** 8.8

- **Percent of Tested Children with Blood Lead ≥5 μg/dL**
  - **Statewide:** 6.4%
  - **Waupaca County:** 1.3%

**Carbon Monoxide**

- A toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

- CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (Ixodes scapularis) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**45.5**

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

**25.0**

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 21.6

**64.7**

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 61.1

**21.1**

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

STATEWIDE: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>3.2</td>
<td>Average concentration in public water (µg/L)</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.7</td>
<td>Average concentration in public water (mg/L)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>67.7%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

**BACKGROUND**

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood's ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water's fluoridation levels in a consumer confidence report, which you can request from your water utility.

**FLUORIDE**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.7%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

**STATEWIDE: 1.4**

**STATEWIDE: 1.5**

**STATEWIDE: 88.6%**

**Above state value (with exception of fluoride where below state value is not preferred)**

**At or below state value (with exception of fluoride where above state value is preferred)**

**Suppressed**
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

**Ozone**

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin’s eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person's lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

HEALTH OUTCOMES

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack  |  Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic  |  Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate  |  Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride  |  Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$)  |  Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone  |  Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP
Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## WAUSHARA COUNTY DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Lead Poisoning</td>
<td>2.1%</td>
<td>Percent with blood lead ≥5 µg/dL</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>10.9</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
</tbody>
</table>

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Stress</td>
<td>23.1</td>
<td>Rate of ER visits per 100,000 people</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>58.3</td>
<td>Crude rate per 100,000 people</td>
</tr>
</tbody>
</table>

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>25.4</td>
<td>Rate of ER visits per 10,000 people*</td>
</tr>
<tr>
<td>Melanoma</td>
<td>20.5</td>
<td>Rate of cases per 100,000 people</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>28.6</td>
<td>Rate of hospitalizations per 10,000 people*</td>
</tr>
</tbody>
</table>

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.1</td>
<td>Average concentration in µg/L</td>
</tr>
<tr>
<td>Nitrate</td>
<td>2.6</td>
<td>Average concentration in mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>40.8%</td>
<td>Percent of population with fluoridated public water</td>
</tr>
</tbody>
</table>

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>3</td>
<td>Annual days above standard</td>
</tr>
<tr>
<td>Particulate Matter (PM) 2.5</td>
<td>0</td>
<td>Annual days above standard</td>
</tr>
</tbody>
</table>

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

---

^ Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
**BACKGROUND**

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

---

**CARBON MONOXIDE POISONING**

- **Rate of ER Visits Related to CO per 100,000 People**
  - **Statewide:** 7.9

**CHILDHOOD LEAD POISONING**

- **Percent of Tested Children with Blood Lead ≥5 μg/dL**
  - **Statewide:** 6.4%

---

**CARBON MONOXIDE**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacer, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit [dhs.wisconsin.gov/climate](http://dhs.wisconsin.gov/climate).

**HEAT STRESS**

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

- **STATEWIDE:** 39.5
- **WAUSHARA COUNTY:** 25.4

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 21.6
- **WAUSHARA COUNTY:** 20.5

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

- **STATEWIDE:** 61.1
- **WAUSHARA COUNTY:** 72.0

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

- **STATEWIDE:** 27.4
- **WAUSHARA COUNTY:** 28.6

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

**DIVE DEEPER INTO THE DATA**: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking | 11
**FLUORIDE IN PUBLIC DRINKING WATER**

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

**ARSENIC AND NITRATE IN PRIVATE DRINKING WATER**

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point's Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

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*Centers for Disease Control and Prevention. Ten Great Public Health Achievements in the 20th Century. [https://www.cdc.gov/about/history/tengpha.htm](https://www.cdc.gov/about/history/tengpha.htm)
BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

**PARTICULATE MATTER 2.5**

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

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**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**  
(µg/m$^3$)

---

**HEART ATTACK HOSPITALIZATIONS**  
Rate per 10,000 people

*Note the years displayed here are different than those on page 10.*

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**ASTHMA EMERGENCY ROOM VISITS**  
Rate per 10,000 people

*Note the years displayed here are different than those on page 9.*
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 992.0 or cause of injury code E899.8, E899.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
**HEALTH OUTCOMES (continued)**

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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**WATER QUALITY**

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

---

**AIR QUALITY**

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhswisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhswisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhswisconsin.gov/epht and click the link to subscribe.

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SPECIAL THANKS

Iowa Environmental Public Health Tracking Program
Wisconsin Environmental Public Health Tracking Program’s Technical Advisory Group
Kevin Masarik, Center for Watershed Science and Education, University of Wisconsin-Extension

ACCESS DATA AND RESOURCES
dhswisconsin.gov/epht
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county's profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
**WINNEBAGO COUNTY**
**DASHBOARD | 2017 ENVIRONMENTAL HEALTH PROFILE**

### HOME HAZARDS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate or Percentage</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Childhood Lead Poisoning         | 3.7%               | Percent with blood lead ≥ 5 µg/dL  
Wisconsin: 6.4%                                                                |
| Carbon Monoxide Poisoning        | 8.7                | Rate of ER visits per 100,000 people                                |
Wisconsin: 7.9                                                                 |

### CLIMATE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits per 100,000 people</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Heat Stress | 16.4                                | Rate of ER visits per 100,000 people  
Wisconsin: 16.5                                                              |
| Lyme Disease | 4.1                                 | Crude rate per 100,000 people                                         |
Wisconsin: 22.7                                                                  |

### HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate of ER visits or hospitalizations per 10,000 people</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Asthma    | 27.2                                                    | Rate of ER visits per 10,000 people  
Wisconsin: 39.5                                                            |
| Melanoma  | 28.6                                                    | Rate of cases per 100,000 people                                      |
Wisconsin: 21.6                                                   |
| Heart Attack | 20.8                          | Rate of hospitalizations per 10,000 people  
Wisconsin: 27.4                                                        |

### WATER QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average concentration</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.4 µg/L</td>
<td>Average concentration in µg/L</td>
</tr>
</tbody>
</table>
Wisconsin: 1.4                                                          |
| Nitrate   | 0.3 mg/L               | Average concentration in mg/L                                         |
Wisconsin: 1.5                                                          |
| Fluoride  | 94.3%                  | Percent of population with fluoridated public water                 |
Wisconsin: 88.6%                                                        |

### AIR QUALITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Annual days above standard</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>5</td>
<td>Annual days above standard</td>
</tr>
</tbody>
</table>
Wisconsin: 3.8                                                       |
| Particulate Matter (PM 2.5) | 2                          | Annual days above standard                                           |
Wisconsin: 0.3                                                       |

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Above state value (with exception of fluoride where below state value is not preferred)

At or below state value (with exception of fluoride where above state value is preferred)

Data are suppressed

Data details on next page
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥ 5 µg/dL  
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases  
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers  
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack  
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems  
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water  
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings  
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
Year displayed: 2012
Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

**BACKGROUND**

**CARBON MONOXIDE POISONING**

Rate of ER visits related to CO per 100,000 people

**CHILDHOOD LEAD POISONING**

Percent of tested children with blood lead ≥5 µg/dL

| 8.7 | 3.7% |
| 8.7% | 3.7% |

**CARBON MONOXIDE POISONING**

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

LYME DISEASE

These rates are per 100,000 people.

STATEWIDE: 16.5

Above state value

STATEWIDE: 22.7

At or below state value

WINNEBAGO COUNTY

CLIMATE
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Maps courtesy of Centers for Disease Control and Prevention.

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND
Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**ASTHMA**

**RATE OF ER VISITS PER 10,000 PEOPLE**

- **STATEWIDE**: 39.5
- **WINNEBAGO COUNTY**: 27.2

**MELANOMA**

**RATE OF NEW CASES PER 100,000 PEOPLE**

- **STATEWIDE**: 21.6
- **WINNEBAGO COUNTY**: 28.6

**LUNG CANCER**

**RATE OF NEW CASES PER 100,000 PEOPLE**

- **STATEWIDE**: 61.1
- **WINNEBAGO COUNTY**: 62.2

**HEART ATTACK**

**RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE**

- **STATEWIDE**: 27.4
- **WINNEBAGO COUNTY**: 20.8

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
BACKGROUND

Water piped into your home, school, or workplace comes from either a public water system or a private well.

Two water contaminants of concern are arsenic and nitrate. Potential health effects of drinking water with high levels of arsenic include skin damage, circulatory system problems, and cancers (e.g., bladder and lung cancer). High nitrate levels may be linked with certain birth defects. Infants who consume drinking water with high nitrate levels are at risk of blue baby syndrome, a condition that limits the blood’s ability to carry oxygen.

Communities should also know their levels of fluoride, a mineral in water that is often naturally-occurring and offers protection against tooth decay. You can read about your water’s fluoridation levels in a consumer confidence report, which you can request from your water utility.

ARSENIC AND NITRATE

Mean Concentration Levels in Public Water (2013-2015)

<table>
<thead>
<tr>
<th></th>
<th>ARSENIC</th>
<th>NITRATE</th>
<th>FLUORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Concentration in Public Water</td>
<td>0.4 µg/L</td>
<td>0.3 mg/L</td>
<td>94.3%</td>
</tr>
<tr>
<td>Statewide:</td>
<td>1.4 µg/L</td>
<td>1.5 mg/L</td>
<td>88.6%</td>
</tr>
</tbody>
</table>

* Above state value (with exception of fluoride where below state value is not preferred)
* At or below state value (with exception of fluoride where above state value is preferred)

ARSENIC AND NITRATE IN PUBLIC DRINKING WATER

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/ephp
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services' recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

Five counties have average concentrations of arsenic above the 10 µg/L maximum contaminant level. For nitrate, all counties are below the 10 mg/L maximum contaminant level.

The data displayed represent samples collected from 1988 to March 2017. The maps include results of 14,699 arsenic samples and 73,517 nitrate samples. The number of samples collected varies from year to year; accordingly, some years are better represented than others.

To explore data for the other water contaminants, search "UW Stevens Point Well Water Viewer" in your search engine.

BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.
DATA DETAILS

HOME HAZARDS

Lead Poisoning  |  Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data averaged from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825 ,E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress  |  Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease  |  Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, eencephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

Asthma  |  Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than six visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer  |  Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
### HEALTH OUTCOMES (continued)

**Heart Attack** | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people  
**Source:** Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard  
**Data details:** These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

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### WATER QUALITY

**Arsenic** | Mean concentration of arsenic (µg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Nitrate** | Mean concentration of nitrate (mg/L) in public drinking water  
**Source:** Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources  
**Years displayed:** Averaged data from 2013-2015  
**Data details:** Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

**Fluoride** | Percent of population with access to fluoridated public drinking water  
**Source:** Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services  
**Years displayed:** 2011-2015, data from 2015 displayed on dashboard  
**Data details:** Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

---

### AIR QUALITY

**Particulate Matter 2.5 (PM$_{2.5}$)** | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Years displayed:** 2002-2012, data from 2012 are displayed on the dashboard  
**Data details:** These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

**Ozone** | Annual number of days above standard set by the U.S. Environmental Protection Agency  
**Source:** National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention  
**Year displayed:** 2012  
**Data details:** This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
TAKING THE NEXT STEP

Present to Stakeholders and Partners

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit dhs.wisconsin.gov/epht/profiles.htm to download the template.

Plan Strategies for Taking Action

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called Ideas for Taking Action. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit dhs.wisconsin.gov/epht/profiles.htm to access Ideas for Taking Action.

Join Our Quarterly Newsletter

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to dhs.wisconsin.gov/epht and click the link to subscribe.

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ACCESS DATA AND RESOURCES
dhs.wisconsin.gov/epht
WOOD COUNTY ENVIRONMENTAL HEALTH PROFILE

WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

2017
HOW TO USE ENVIRONMENTAL PUBLIC HEALTH TRACKING DATA

COMMUNITY HEALTH ASSESSMENTS
Tracking data can help flesh out your community health assessment and help meet state requirements.

COMMUNITY HEALTH IMPROVEMENT PLANS
Use Tracking data and Ideas for Taking Action to help prioritize environmental health and plan strategies for community improvement. Use the data to track progress in meeting your goals.

RESEARCH
Tracking data can be used to explore answers to environmental health research questions.

MEDIA STORIES
Strengthen your interview or article with facts and figures from Tracking and our resources.

SOCIAL MEDIA
Localize your posts with data from your community.

ACCREDITATION
The profiles can be used to address Public Health Accreditation Board standards; for example, Standard 1.3—Analyze public health data to identify trends in health problems, environmental public health hazards, and social and economic factors that affect the public’s health.

GRANT PROPOSALS
Tracking data and resources can help you and your team develop rationale for funding requests. These data can help justify existing programs and show where work needs to be done.

EDUCATION AND OUTREACH
When creating programs and outreach materials for your community, Tracking data can help you make your case and show the extent of the problem.

POLICY DEVELOPMENT
Tracking data and profiles contain measures that can be used to identify the need for a policy. Once a policy is in place, the data can be used as a baseline to track progress over time.

If you have questions about how to integrate the data into your work, let us know!

How have you used your county’s profile?
Tell us about it!
dhstracking@wi.gov
608-267-2488
## WOOD COUNTY DASHBOARD  |  2017 ENVIRONMENTAL HEALTH PROFILE

### HOME HAZARDS

**Childhood Lead Poisoning**
- 1.7%  
  - Percent with blood lead ≥ 5 µg/dL  
  - Wisconsin: 6.4%

**Carbon Monoxide Poisoning**
- 8.6  
  - Rate of ER visits per 100,000 people  
  - Wisconsin: 7.9%

### CLIMATE

**Heat Stress**
- 27.6  
  - Rate of ER visits per 100,000 people  
  - Wisconsin: 16.5

**Lyme Disease**
- 59.9  
  - Crude rate per 100,000 people  
  - Wisconsin: 22.7

### HEALTH OUTCOMES

**Asthma**
- 31.3  
  - Rate of ER visits per 10,000 people*  
  - Wisconsin: 39.5

**Melanoma**
- 19.2  
  - Rate of cases per 100,000 people  
  - Wisconsin: 21.6

**Heart Attack**
- 42.8  
  - Rate of hospitalizations per 10,000 people*  
  - Wisconsin: 27.4

### WATER QUALITY

**Arsenic**
- 1.1  
  - Average concentration in µg/L  
  - Wisconsin: 1.4

**Nitrate**
- 1.3  
  - Average concentration in mg/L  
  - Wisconsin: 1.5

**Fluoride**
- 96.9%  
  - Percent of population with fluoridated public water  
  - Wisconsin: 88.6%

### AIR QUALITY

**Ozone**
- 0  
  - Annual days above standard  
  - Wisconsin: 3.8

**Particulate Matter (PM) 2.5**
- 0  
  - Annual days above standard  
  - Wisconsin: 0.3

---

*Note these rates are per 10,000 people, while the others are per 100,000. To compare these measures to others, be sure to multiply the rates by 10.

Data are suppressed

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WISCONSIN ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM  
Bureau of Environmental and Occupational Health  
Wisconsin Department of Health Services  |  Division of Public Health  
www.dhs.wisconsin.gov/epht  |  dhstracking@wi.gov  |  608-267-2488
Below are the abbreviated references for the data presented in the dashboard. Note that some measures have more years of data available on the Wisconsin Tracking portal. For additional details on the data, see page 15. For more information about age-adjustment and other terms referenced in this profile, visit the Wisconsin Tracking Program’s Glossary of Terms or our Tracking 270 tutorial, both available on our website (dhs.wisconsin.gov/epht).

**HOME HAZARDS**

Childhood Lead Poisoning: Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL.
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Carbon Monoxide (CO) Poisoning: Age-adjusted rate of emergency room visits related to CO poisoning.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**CLIMATE**

Lyme Disease: Crude rate of confirmed Lyme disease cases.
Source: Wisconsin Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

Heat Stress: Age-adjusted rate of emergency room visits related to heat stress.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: Averaged data from 2010-2014

**HEALTH OUTCOMES**

Melanoma: Age-adjusted rate of new cases reported by health care providers.
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2009-2013

Asthma: Age-adjusted rate of emergency room visits related to asthma.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

Heart Attack: Age-adjusted rate of emergency room visits related to heart attack.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2014

**WATER QUALITY**

Arsenic and Nitrate: Measured concentrations from active public water systems.
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015

Fluoride: Percent of population with access to fluoridated public water.
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Year displayed: 2015

**AIR QUALITY**

Particulate Matter 2.5 (PM$_{2.5}$) and Ozone: Monitored and modeled estimates of air quality readings.
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
HOME HAZARDS
WOOD COUNTY

BACKGROUND

Lead and carbon monoxide (CO) poisoning are two home hazards monitored by the Wisconsin Environmental Public Health Tracking Program.

Carbon monoxide poisoning prevents oxygen from getting to the body, which can damage tissue and even cause death.

In children, lead poisoning slows growth and development, particularly in the brain. Lead poisoning is also associated with increased incarceration and poor academic outcomes.

CARBON MONOXIDE POISONING

<table>
<thead>
<tr>
<th>RATE OF ER VISITS RELATED TO CO PER 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATEWIDE: 7.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERCENT OF TESTED CHILDREN WITH BLOOD LEAD ≥5 µg/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATEWIDE: 6.4%</td>
</tr>
</tbody>
</table>

CARBON MONOXIDE POISONING

Carbon monoxide (CO) is a toxic gas that cannot be seen or smelled. CO is created whenever fuel or other materials are burned. Wisconsin state law requires that all homes have a carbon monoxide detector on every level.

CO poisoning is also a risk in indoor ice arenas or recreational facilities where fuel-powered equipment (e.g., ice resurfacers, cars, motorbikes, go carts, etc.) is used. These facilities are not required to have CO detectors.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht

Wisconsin Environmental Public Health Tracking
CHILDHOOD LEAD POISONING

There is no safe level of lead in the human body. Even very low levels of exposure can cause harmful health effects. Blood lead levels are measured in micrograms per deciliter (µg/dL). The Centers for Disease Control and Prevention defines lead poisoning at or above 5 µg/dL.

The percentage of children (less than six years of age) tested with a blood lead level greater than or equal to 5 µg/dL has declined over the past 14 years in most Wisconsin counties. This decline is due in part to prevention and outreach efforts that have happened throughout the state.

Together we have made great progress, but there is still work to be done to eliminate lead poisoning for all children.

In most counties, the percentage of children poisoned is below 5%. However, counties vary greatly in the number of children they have tested for lead poisoning. It should be noted that high rates may reflect fewer children tested. For example, if a county tested eight children and one was poisoned, the percentage poisoned will be quite high.

To explore your county rate and see how many children were tested, how many were poisoned, and view data at the census tract level, take a look at our data portal (dhs.wisconsin.gov/epht).
BACKGROUND

Over the past 60 years, Wisconsin has become generally warmer and wetter. Changes in the climate may lead to more precipitation and flooding, temperature extremes (very hot and very cold days), drought, and more carriers of disease (e.g., mosquitoes and ticks). Extreme weather can contribute to mental health problems, water and vectorborne diseases, allergies, water and food insecurity, and even death.

In this section, we focus on heat stress and Lyme disease, two climate-related health outcomes.

To learn more about the climate and health connection and work being done by the Wisconsin Climate and Health Program, visit dhs.wisconsin.gov/climate.

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE

27.6

HEAT STRESS
RATE OF ER VISITS PER 100,000 PEOPLE
STATEWIDE: 16.5

59.9

LYME DISEASE
RATE OF CASES PER 100,000 PEOPLE
STATEWIDE: 22.7

HEAT STRESS

Heat stress encompasses a range of conditions including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion.

Any individual can develop heat stress when involved in intense physical activity or when it is hot.

Certain populations, such as older adults who live alone or have limited social contacts, people who work or play outside, and people without access to air conditioning are at increased risk of heat-related injury.

To learn more about historical extreme heat—such as the number of days in which the heat index was at or above 90°F—visit our data portal.

DIVE DEEPER INTO THE DATA: dhs.wisconsin.gov/epht
LYME DISEASE

Lyme disease is spread by the bite of an infected black-legged tick (*Ixodes scapularis*) and is becoming more common in Wisconsin. Lyme disease was the fourth highest reported notifiable communicable disease in 2015.

The highest number of cases are typically reported in the northwestern region of Wisconsin, but in recent years cases have increased in the central and eastern regions.

The data in the crude rate include confirmed cases of Lyme disease—not probable or estimated cases. It should be noted that in 2008 and 2012, Wisconsin’s criteria for reporting Lyme were revised (see data details on page 15 for more information).

The new criteria in 2012 require reporting and follow-up only for cases with an erythema migrans (EM) rash. To compensate for this change, epidemiologists used a statistical method to estimate the true number of cases based on the number of total laboratory reports for each year since 2012. As such, rates of confirmed cases might appear to decrease since 2012, but this is likely due to the change in case definition, not from a reduced burden of Lyme disease.

Estimated and probable cases are available at the state-level on the Tracking portal. The crude rate of confirmed cases reported here is an underestimate of the true rate of Lyme disease.

LYME DISEASE AT THE NATIONAL LEVEL
ONE DOT PLACED RANDOMLY WITHIN COUNTY OF RESIDENCE FOR EACH REPORTED CASE

Wisconsin’s climate has become generally warmer and wetter in recent decades, and these changes in weather patterns can provide favorable conditions for ticks. Increased temperatures with higher humidity can enhance tick survival. Climatic shifts contribute toward the expanded geographic distribution of ticks as well as a longer season of tick activity and potential for Lyme disease transmission. Other factors such as host populations (e.g., deer and mice), awareness of Lyme disease, and land use changes also impact Lyme disease rates.
BACKGROUND

Asthma, melanoma (a type of skin cancer), lung cancer, and heart attack are four of the many health topics collected by the Wisconsin Environmental Public Health Tracking Program. Each of these measures is strongly linked to one or more environmental factors.

**31.3**

**ASTHMA**

RATE OF ER VISITS PER 10,000 PEOPLE

STATEWIDE: 39.5

**19.2**

**MELANOMA**

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 21.6

**57.4**

**LUNG CANCER**

RATE OF NEW CASES PER 100,000 PEOPLE

STATEWIDE: 61.1

**42.8**

**HEART ATTACK**

RATE OF HOSPITALIZATIONS PER 10,000 PEOPLE

STATEWIDE: 27.4

**ASTHMA**

Asthma is a disease that affects breathing and limits the ability to get oxygen to the lungs. Asthma symptoms often happen because a person came in contact with a trigger, such as outdoor air pollution.

The overall rate of asthma emergency room visits in Wisconsin has declined slightly since 2004. Rates at the county level are more variable.

In Wisconsin, asthma rates vary considerably by race and ethnicity. Read more about these differences in our asthma disparities surveillance brief, available in the resources section of our website.
MELANOMA AND LUNG CANCER

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other body parts. There are more than 100 different types of cancer. Melanoma is a cancer of the skin pigment cells and is the most deadly type of skin cancer. Lung cancer forms in the lung, usually in the cells lining the air passages, and is the leading cause of cancer deaths in the United States.

Both melanoma and lung cancer are strongly linked to environmental causes. Melanoma is linked to ultraviolet (UV) radiation, and lung cancer is related to radon and secondhand smoke. In addition to environmental exposures, lung cancer is also caused by smoking.

The rate of melanoma in Wisconsin is increasing over time, and nearly all Wisconsin counties are following the same upward trend. The Wisconsin rate of lung cancer has held relatively steady in recent years, with more variability by county.

Confidence intervals based on the county rate are on the charts below and are denoted with dotted gray lines. The closer the dotted lines are to the county line, the better (or more precise) the estimated county rate. For more information on interpreting confidence intervals, watch our Tracking 270 tutorial, available on the training tab of our website (dhs.wisconsin.gov/epht).

HEART ATTACK

A heart attack is a brief and severe health event in which the heart does not get enough oxygen because of a block in blood flow.

A number of studies have shown that high levels of air pollution can increase the number of hospital visits for heart attacks.

The overall rate of heart attack hospitalizations in Wisconsin has declined since 2004. Rates at the county level are more variable.
**ARSENIC AND NITRATE MEAN CONCENTRATION LEVELS IN PUBLIC WATER (2013-2015)**

<table>
<thead>
<tr>
<th>ARSENIC</th>
<th>NITRATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATEWIDE: 1.4</td>
<td>STATEWIDE: 1.5</td>
</tr>
</tbody>
</table>

- Above state value (with exception of fluoride where below state value is not preferred)
- At or below state value (with exception of fluoride where above state value is preferred)

**ARSENIC AND NITRATE IN PUBLIC DRINKING WATER**

Over half of Wisconsin households rely on public water for their water source. Public water is monitored and regulated by the Wisconsin Department of Natural Resources. All counties reported average arsenic and nitrate levels below the maximum contaminant levels set by the U.S. Environmental Protection Agency.
FLUORIDE IN PUBLIC DRINKING WATER

Community water fluoridation was selected as one of the 10 greatest public health achievements of the 20th century since it offers a low-cost, effective way of providing fluoride to a broad population to prevent tooth decay.*

Some water systems may not have enough natural fluoride to offer protection, so community water systems can add fluoride to bring the levels up to the U.S. Department of Health and Human Services’ recommended level of 0.7 milligrams per liter (mg/L).

The fluoride data in this profile are collected from public water systems. The data include the percentage of the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

ARSENIC AND NITRATE IN PRIVATE DRINKING WATER

About four in 10 Wisconsin homes get their water from private wells. Well owners are responsible for monitoring and testing their wells. All private wells should be tested regularly to ensure the water is safe to use and drink.

The University of Wisconsin-Stevens Point’s Center for Watershed Science created a mapping tool to improve access to private well water data. The well data are voluntarily submitted by homeowners and do not include water quality information for all known wells.

County-specific measures for arsenic and nitrate in private wells are displayed below.

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BACKGROUND

Air pollution means that there are particles or gases in the air that should not be there. Two pollutants of concern are fine particulate matter and ozone. Particulate matter describes very tiny particles that settle in our lungs after being inhaled. The "2.5" in "particulate matter 2.5 (PM$_{2.5}$)" refers to the size of the particles, which are smaller than the width of a human hair.

Ozone comes from vehicle emissions and industrial facilities. Both particulate matter and ozone can trigger health problems, especially in people with breathing conditions like asthma. Levels of these pollutants are measured by monitoring stations set up around the state. Counties without monitoring stations have estimated values.

OZONE
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 3.8

PARTICULATE MATTER 2.5
ANNUAL DAYS ABOVE STANDARD
STATEWIDE: 0.3

PARTICULATE MATTER 2.5
ANNUAL AVERAGE (µg/m$^3$)
STATEWIDE: 9.1

---

OZONE
ANNUAL DAYS ABOVE STANDARD (2012)

The map to the left illustrates the annual number of days in which ozone was above the standard set by the U.S. Environmental Protection Agency. The fewer days above the standard, the better.

Counties on Wisconsin's eastern edge tend to have more days above the standard. Scientists hypothesize cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes, even from as far as Illinois and Indiana.*

PARTICULATE MATTER 2.5

Particulate matter 2.5 (PM$_{2.5}$) is so tiny that it can settle in a person’s lungs or bloodstream after being inhaled. These particles are more common near busy roads and in areas with dusty industries. PM$_{2.5}$ has been linked to heart attacks and asthma attacks. Below are three charts showing how the annual average of PM$_{2.5}$, heart attack hospitalization rates, and asthma emergency room visits have fluctuated over the 2002-2012 time period (note the scales are different). In most Wisconsin counties, there has been a downward trend in all three measures over time.

**PARTICULATE MATTER 2.5 ANNUAL AVERAGE**

(µg/m$^3$)

**HEART ATTACK HOSPITALIZATIONS**

Rate per 10,000 people

Note the years displayed here are different than those on page 10.

**ASTHMA EMERGENCY ROOM VISITS**

Rate per 10,000 people

Note the years displayed here are different than those on page 9.
DATA DETAILS

HOME HAZARDS

Lead Poisoning | Percent of children (less than six years of age) tested who had a blood lead level ≥5 µg/dL
Source: Wisconsin Childhood Lead Poisoning Prevention Program, Bureau of Environmental and Occupational Health, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2001-2015, data from 2015 displayed on dashboard
Data details: Wisconsin blood lead testing data from children less than six years of age are reported to the Wisconsin Childhood Lead Poisoning Prevention Program. Data are de-duplicated such that they contain the most recent confirmatory (venous) test following an elevated screening (capillary) test. If no confirmatory test for the individual is available, the most recent screening test result is used.

Carbon Monoxide Poisoning | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 displayed on dashboard
Data details: This measure includes carbon monoxide poisonings that were unintentional (fire- or non-fire-related) and of unknown intent. These data are from emergency room visit records. The measure includes cases with an ICD-9 code of 986 or cause of injury code E868.2, E868.3, E868.8, E868.9, E982.0, E982.1, E818, E825, E838, E844, E867, E868, or E890-E899. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Heat Stress | Annual average rate of emergency room visits, age-adjusted per 100,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2005-2014, data from 2010-2014 are displayed on dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 992.0-992.9, or cause of injury code E900.0 or E900.9. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Lyme Disease | Crude rate of confirmed Lyme disease cases per 100,000 people
Source: Vectorborne Disease Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1991-2015, data from 2015 are displayed on the dashboard
Data details: These data are from the Wisconsin Electronic Disease Surveillance System (WEDSS). County-level data are based on the county of residence of the case; some infections may have been acquired during travel to other areas. The crude rate numerator includes only confirmed cases and does not include probable or estimated cases. Confirmed cases of Lyme disease include: 1) those with an erythema migrans (EM) rash that is greater than or equal to 5 cm in diameter and diagnosed by a medical professional or 2) those with at least one non-EM confirmatory sign or symptom indicating late manifestation of disease (arthritis, Bell's palsy or other cranial neuritis, encephalomyelitis, lymphocytic meningitis, radiculoneuropathy, or 2nd or 3rd degree atrioventricular block) that also has laboratory evidence of infection that meets criteria. In 2008, the national surveillance case definition for Lyme disease introduced probable cases. In 2012, the criteria for reporting Lyme disease changed so only cases with an EM rash required follow-up. Read the data details on our data portal for more information.

CLIMATE

HEALTH OUTCOMES

Asthma | Age-adjusted rate of emergency room visits per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 9), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from emergency room visit records. This measure includes cases with an ICD-9 code of 493. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.

Melanoma and Lung Cancer | Annual average rate of new cases, age-adjusted per 100,000 people
Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 1999-2013, data from 2009-2013 displayed on the dashboard
Data details: Rates are calculated from counts of new cancer cases reported to the Wisconsin Cancer Reporting System by health care providers in Wisconsin. Data for counties with fewer than six cases are suppressed to protect confidentiality. However, counties with zero cases are not suppressed. Direct age-adjustment is conducted using the 2000 U.S. standard population.
HEALTH OUTCOMES (continued)

Heart Attack | Age-adjusted rate of hospitalizations among persons age 35 and over per 10,000 people
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2004-2014 (page 10), 2002-2012 (page 14), data from 2014 displayed on the dashboard
Data details: These data are collected from inpatient hospital discharge records. This measure includes cases with an ICD-9 code of 410.0-410.92. Data for counties with fewer than five visits are suppressed to protect confidentiality. However, data from counties with zero visits are not suppressed. Our data do not include records from Wisconsin residents who seek care in border states and as such, are underrepresenting rates from border counties. See our portal data details for more information. Direct age-adjustment is conducted using the 2000 U.S. standard population.

WATER QUALITY

Arsenic | Mean concentration of arsenic (µg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Arsenic concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple arsenic mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Nitrate | Mean concentration of nitrate (mg/L) in public drinking water
Source: Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources
Years displayed: Averaged data from 2013-2015
Data details: Nitrate concentrations in drinking water are based on samples taken from active public community water systems. Because many counties did not have any samples for a given year, three years of data were aggregated (2013-2015). Some counties had multiple nitrate mean values (from different water systems), so the values were first averaged within a given county and then averaged across the years.

Fluoride | Percent of population with access to fluoridated public drinking water
Source: Wisconsin Oral Health Program, Division of Public Health, Wisconsin Department of Health Services
Years displayed: 2011-2015, data from 2015 displayed on dashboard
Data details: Data on fluoride in drinking water are based on samples taken from active public community water systems. The data represent the population on public drinking water that have access to fluoridated water, regardless of whether it is at the recommended level.

AIR QUALITY

Particulate Matter 2.5 (PM$_{2.5}$) | Annual Average PM$_{2.5}$ (µg/m$^3$); Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Years displayed: 2002-2012, data from 2012 are displayed on the dashboard
Data details: These measures include monitored and modeled estimates of PM$_{2.5}$ levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist. The data downloaded from the National Environmental Public Health Tracking portal (cdc.gov/ephtracking) for percent of days above standard were multiplied by 365 to get the annual number of days above U.S. Environmental Protection Agency standard. The U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) for a 24-hour average PM$_{2.5}$ concentration is 35 µg/m$^3$.

Ozone | Annual number of days above standard set by the U.S. Environmental Protection Agency
Source: National Environmental Public Health Tracking Network, Centers for Disease Control and Prevention
Year displayed: 2012
Data details: This measure is the annual number of days with maximum eight-hour average ozone concentration over the U.S. Environmental Protection Agency’s National Ambient Air Quality Standard (NAAQS) of 0.075 ppm. This measure includes monitored and modeled estimates of ozone levels. Modeled estimates are used to fill in gaps for days when monitoring does not occur or in counties where monitors do not exist.
**TAKING THE NEXT STEP**

**Present to Stakeholders and Partners**

We created a Profile Template Slide Deck as a guide for presentations. The slide deck is free to use and completely customizable. The notes section is full of ideas and considerations for tailoring your talk. Let us know if you need help making the slide deck work for you. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to download the template.

**Plan Strategies for Taking Action**

We know it’s a challenge to translate data into action. To help get you started, we created a short menu of potential strategies for addressing the topics in this profile, called *Ideas for Taking Action*. To help communities of all sizes and resource levels, we organized by the scope of the strategy, from addressing knowledge, attitudes and skills to addressing laws and policies. Visit [dhs.wisconsin.gov/epht/profiles.htm](http://dhs.wisconsin.gov/epht/profiles.htm) to access *Ideas for Taking Action*.

**Join Our Quarterly Newsletter**

Stay up-to-date on the latest Wisconsin Environmental Public Health Tracking news and resources by subscribing to our newsletter. Head to [dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht) and click the link to subscribe.

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**ACCESS DATA AND RESOURCES**

[dhs.wisconsin.gov/epht](http://dhs.wisconsin.gov/epht)