Painting the picture of
**WISCONSIN'S
HEALTH**

WISCONSIN DEPARTMENT
of HEALTH SERVICES

**Wisconsin's 2020
Statewide Health
Assessment**

DRAFT

TABLE OF CONTENTS

DRAFT

FOREWORD

At the time the Division of Public Health began undertaking data collection for the State Health Assessment, we had no idea about the coming novel viral pandemic. We also could not have predicted the societal upheaval resulting from a sudden, shared exposure of police brutality against Black/African Americans. The COVID-19 pandemic laid bare the health disparities that exist in our state, and the subsequent expansion of the Movement for Black Lives identified even more.

While this report is not about the impacts of COVID-19 on the state, the data we collected before the pandemic predicted where, and among whom, the impacts would be most severe. The declaration of racism as a public health crisis by a large number of Wisconsin organizations identifies opportunities for action.[1]

Even though the data reported here were collected prior to the COVID-19 pandemic, they remain valuable to guide understanding of the status of the health of the state, particularly among lower-resourced communities. Chronic conditions, such as diabetes, obesity, and heart disease, which impact the quality and length of life in their own right, have proven to lead to sudden death in the face of this new virus. Tobacco use, whether taken in via combustible cigarette or e-cigarettes, has also been shown to be associated with increased death and disability from COVID-19.

People living in poverty and rural settings had fewer access points for health care, including testing for SARS-CoV-2 (the virus that causes COVID-19) early on in the outbreak. Notably, the majority of the first wave of deaths from COVID-19 in Wisconsin were among Black/African American residents of Milwaukee, where reliance on public transportation and population density (two things that clearly contribute to viral transmission) are particularly high. Black, indigenous, and people of color (BIPOC) are also over-represented in service-level jobs, many of which were deemed essential during the pandemic, and often do not provide paid sick leave; people in these jobs had limited options to stay home to prevent disease spread. It also remains unclear what the long-term health impacts will be from COVID-19.

We are only beginning to learn about the effects of COVID-19 on the tissues it attacks, including the lungs, heart, placenta, and kidneys. We can surmise that the long-term complications will be felt disproportionally by those with fewer access points to health care, rehabilitation services, healthy foods, and safe home environments, which are described in this report. Further updates regarding COVID-19 outcomes will continue to be posted on our website.[2]

This crisis has, however, provided opportunities for system changes that can improve everyone's health. For example, with the limits on travel at the beginning of the pandemic, air quality was dramatically improved.[3] People took solace in pets during their time in isolation, leading to new understanding of the importance of animal care and rescue organizations in communities. The sudden need for telemedicine pushed insurers, including Medicaid, to approve reimbursement for these services. Additional opportunities are likely to arise as we understand more about the impacts the pandemic has had on our communities.

The 2020 version of Wisconsin's State Health Assessment paints the picture of what health looked like at a specific point in our state's history, prior to the onset of the pandemic. It is up to all of us to decide how to move forward with safeguarding public health now that we have seen the impacts a deadly outbreak, and the interwoven impact of structural racism, can bring.

– The State Health Assessment Implementation Team

EXECUTIVE SUMMARY

The mission of the Department of Health Services is to protect and promote the health and safety of the people of Wisconsin. To achieve this mission, the Division of Public Health works to both prevent diseases and conditions that could impair people's health and safety, and to mitigate the effects of these diseases and conditions when they do occur.

The purpose of this State Health Assessment is to paint a picture of Wisconsin's health by compiling and interpreting available data. Multiple methods were used to obtain these data between January and September 2019, including compiling national and state-level surveys and data sets; performing focused community conversations with multiple, diverse populations of interest (see Methods; representative quotes throughout); holding discussions with stakeholder organizations; and surveying partners engaged in public health efforts. The totality of these data sets and the levels of community engagement support a more complete picture of Wisconsin's health than relying on any single data set alone. For that reason, this is one of the most complete reports on the state of Wisconsinites' health.

FINDINGS

In order for residents of Wisconsin to achieve maximal health and well-being, the most fundamental need is supportive community environments. Supportive community environments are just as important to the people living in bustling downtown Milwaukee as they are to the people living in Wisconsin's beautiful Northwoods. In order for people to live their best lives, supportive communities need to contain the following assets:

- Social and community connections
- Infrastructure
- Healthy environmental surroundings
- Economic opportunities for all
- High quality health care and public health
- Policies that support equitable health outcomes and opportunities to be healthy

The data we collected consistently showed that when communities had assets in these categories, their communities - and therefore their residents - were stronger and healthier. When these assets were not available, people truly felt their absence, and experienced more challenges to their health as a result.

We found, consistently, that not everyone has the same opportunity to live their best lives and to be healthy. Generally, people with lower levels of education and lower incomes fared worse in most health-related outcomes. People who are Black/African American and Native American/American Indian typically experience some of the worst health disparities, a direct result of the legacy of policies that sought to reduce their collective power and influence over the past decades and centuries. People living with disabilities, and individuals who are LGBTQ+ also experience disproportionate challenges to their health and well-being. There are limited data available for these and other sub-populations within the state, thus the picture we paint is certainly missing needed shading and depth. Nonetheless, the resilience of these and other communities who have been marginalized also shone through, as communities told us about the supports they have built, and continue to build.

State-level statistics also mask the experiences of certain populations. This is aptly illustrated by examining the top 10 leading causes of death in 2018 for all residents by age, versus for all residents by race/ethnicity.

TOP TEN CAUSES OF DEATH BY AGE, 2018

Numbers in each cell indicate actual numbers of deaths per age and condition.

Rank	Infants < 1	1 to 4	5 to 14	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65+	All Ages
1	Congenital Malformations 78	Unintentional Injury 16	Unintentional Injury 21	Unintentional Injury 193	Unintentional Injury 435	Unintentional Injury 318	Cancer 617	Cancer 2,024	Heart Disease 10,094	**Heart Disease 12,053**
2	Short Gestation/Low Birth Weight 69	Congenital Malformations 9	Cancer 13	Suicide 102	Suicide 167	Cancer 170	Heart Disease 455	Heart Disease 1,274	Cancer 8,563	**Cancer 11,454**
3	Maternal Complications 25	Cancer 6	Congenital Malformations 11	Homicide 54	Heart Disease 53	Heart Disease 155	Unintentional Injury 371	Unintentional Injury 438	Chronic Lower Respiratory 2,520	**Unintentional Injuries 3,776**
4	Unintentional Injury 24	Homicide <5	Suicide 11	Cancer 25	Homicide 53	Suicide 136	Suicide 156	Chronic Lower Respiratory 275	Alzheimer's 2,424	**Chronic Lower Respiratory 2,865**
5	Circulatory 13	Influenza/Pneumonia <5	Perinatal <5	Heart Disease 11	Cancer 36	Chronic Liver Disease 55	Chronic Liver Disease 112	Chronic Liver Disease 238	Stroke 2,258	**Stroke 2,549**
6	Placenta/Cord/Membrane 13	Chronic Lower Respiratory <5	Homicide <5	Congenital Malformations 7	Chronic Liver Disease 27	Homicide 42	Diabetes 103	Diabetes 235	Unintentional Injury 1,960	**Alzheimer's 2,452**
7	Respiratory Distress 11	Septicemia <5	Heart Disease <5	Diabetes 5	Diabetes 13	Diabetes 32	Stroke 75	Suicide 182	Diabetes 1,120	**Diabetes 1,508**
8	SIDS 11	Anemia <5	Stroke <5	Septicemia <5	Congenital Malformations 11	Stroke 20	Chronic Lower Respiratory 57	Stroke 179	Influenza/Pneumonia 937	**Influenza/Pneumonia 1,074**
9	Homicide 10	Perinatal <5	Influenza/Pneumonia <5	In Situ Neoplasms <5	Stroke 9	Influenza/Pneumonia 13	Kidney Disease 34	Kidney Disease 76	Kidney Disease 788	**Kidney Disease 914**
10	Bacteria Sepsis 9	Septicemia <5	Influenza/Pneumonia <5	Influenza/Pneumonia 8	HIV 10	Influenza/Pneumonia 32	Influenza/Pneumonia 75	Parkinson's 676	**Suicide 886**

For example, if we only viewed the overall death rates, we would identify chronic lower respiratory diseases as a high priority area. However, as we look at sub-populations, we see that diabetes has a greater impact on all non-White populations. Identifying opportunities for improvements in the community assets that reduce the risk of diabetes will therefore have a greater impact on these communities.

TOP TEN CAUSES OF DEATH FOR ALL WISCONSIN RESIDENTS BY RACE/ETHNICITY, 2018

Numbers in each cell indicate the actual numbers of deaths by race/ethnicity and condition.

Rank	Hispanic	Asian	Native American/ American Indian	White	Black/ African American	All Wisconsin
1	Cancer 182	Cancer 88	Heart disease 98	Heart disease 11,116	Heart disease 618	**Heart Disease 12,053**
2	Heart disease 131	Heart disease 80	Cancer 90	Cancer 10,515	Cancer 572	**Cancer 11,454**
3	Unintentional injuries 114	Stroke 46	Unintentional injuries 49	Unintentional injuries 3,318	Unintentional injuries 265	**Unintentional Injuries 3,776**
4	Diabetes 38	Unintentional injuries 25	Diabetes 31	Chronic lower respiratory 2,708	Diabetes 121	**Chronic Lower Respiratory 2,865**
5	Stroke 32	Diabetes 19	Chronic liver disease 29	Alzheimer's 2,358	Stroke 108	**Stroke 2,549**
6	Chronic liver disease 32	Suicide 14	Chronic lower respiratory 20	Stroke 2,345	Homicide 108	**Alzheimer's 2,452**
7	Suicide 24	Influenza/ pneumonia 13	Stroke 17	Diabetes 1,298	Chronic lower respiratory 104	**Diabetes 1,508**
8	Chronic lower respiratory 23	Alzheimer's 12	Suicide 13	Influenza/ pneumonia 993	Kidney disease 80	**Influenza/ Pneumonia 1,074**
9	Alzheimer's 22	Kidney disease 11	Kidney disease 12	Suicide 803	Alzheimer's 49	**Kidney Disease 914**
10	Homicide 22	Congenital 11	Septicemia 9	Kidney disease 792	Perinatal 47	**Suicide 886**

Below, we have summarized the key points from each sub-section of the assets necessary for optimal health. The page numbers where more detailed information can be found are noted.

SUB-SECTION	KEY FINDING(S)
SOCIAL AND COMMUNITY CONNECTIONS (PAGE 16)	
Social Support and Community Connectedness and Health	The vast majority of Wisconsin residents surveyed indicated they had a partner, parents, or other family who could help them in a time of need. Disparities were noted based on age, educational attainment, poverty level, race/ethnicity, and source of health insurance.
The Fundamental Need for Social Connection	Positive peer and mentor relationships were found to be health-promoting, across all population groups.
The Relationship between Connectedness and Health	Adults who are older, White, more educated, and of higher socioeconomic status reported a stronger sense of community than their peers.
Social Isolation	Wisconsinites consistently described local churches, schools, libraries, parks, and outdoors as providing opportunities to overcome the barriers of social isolation by enhancing their quality of life and meeting their basic needs.
Culture and Traditions	Many groups that have commonly experienced discrimination and exclusion have created and continued their own cultural practices, promoting belonging and a sense of safety and community.
INFRASTRUCTURE (PAGE 22)	
Community-Based Resources	Access to child care, parks, community recreation, physical activity and healthy foods are all required for optimal community health. Disparities in access to these critical resources were found according to place of residence, socioeconomic status, race/ethnicity, and disability status.
Transportation	A lack of access to reliable, affordable, and accessible transportation is a barrier to health in many communities. Barriers included: living in rural areas, economic constraints, disability status, legal driving status, and physical infrastructure (e.g., interstate or rural highways).
Affordable housing	Nearly one in two Wisconsinites experience housing insecurity, meaning their gross rent costs are 30% or more of the household income. The history of redlining and covenants, and current gentrification, impact housing options today. Thousands of Wisconsin school children are homeless.

Tobacco Outlet Density and Tobacco Use	In Wisconsin, tobacco retailers are easy to find. One in three of these retailers accepted WIC benefits, and one in two accepted SNAP benefits at the same location. The rate of smoking in Wisconsin is currently slightly below the national average, however the rate of high school e-cigarette use grew substantially in the last few years.
Alcohol Outlet Density and Alcohol Use	A long-standing culture of alcohol consumption is a driving factor in the number and density of alcohol outlets in the state. There is a stark disparity in alcohol outlet density between low-income and high-income neighborhoods, leading to increased exposure from an early age for certain communities. Wisconsin ranks worst in the nation for excessive drinking. The number of alcohol-related hospitalizations and the rate of non-fatal injury from alcohol-related vehicle crashes have both increased.
Safe Spaces	Community members described outdoor areas, community centers, faith communities, libraries, and schools as safe spaces. Safe spaces are where people feel safe and free from the potential or threat of violence, judgement, or discrimination. This report includes a special section on violence that provides statistics on bullying, child and elder abuse, sexual assault, trafficking, police brutality and homicide.
Technology and Internet	In spite of the ability of technology and the internet to serve many Wisconsin residents' needs related to health care and education, the majority of the state is underserved for broadband. Underserved areas are primarily in the central and northern regions of the state, though there are pockets of lack of service in all but 15 of the state's 72 counties. A lack of competition among internet providers in some areas leaves many without options.
HEALTHY ENVIRONMENTAL SURROUNDINGS (PAGE 42)	
Air	There are multiple contributors to air pollution. Ozone and fine particulate matter (PM2.5) levels were higher in Wisconsin than national averages in the most recent data collection periods. Males aged 35-44 experienced the highest rates of emergency visits for carbon monoxide poisoning. Emergency visits for asthma increased, with Black/African American children experiencing dramatically higher rates than any other racial/ethnic group. Wisconsin high school students are frequently exposed to secondhand smoke. The percentage of Wisconsin homes where testing identified a high radon level increased over time.
Water	Multiple compounds can contaminate our water. Wisconsin is among the top ten states for lead poisoning in children, and childhood lead poisoning rates remained largely unchanged over time. While lead-based paint in older homes is the primary source of lead poisoning in children, contaminated water also contributes to this dangerous situation. Black/African American children experienced the highest poisoning rates. Nitrates and arsenic continue to be monitored.

Climate & Weather	The number of extreme heat days (days above 90° F) is expected to approximately triple by mid-century in Wisconsin. The number of emergency visits for heat stress has been steadily rising over time. This warming climate impacts ice cover on the Great Lakes, as well as inland lakes. Wisconsin has experienced an uptick in the number of days weather stations reported at least four inches of rain in the prior 24 hours. The number of tornadoes in Wisconsin has generally been increasing over the last 70 years.

ECONOMIC OPPORTUNITY (PAGE 53)

Employment and Income	Unemployment is slightly higher in urban areas than rural, and is much higher among individuals with disabilities than those without disabilities. The higher level of education one has, the lower their chances of being unemployed. There are also racial/ethnic differences in unemployment. While part-time jobs may be available, well-paying full-time jobs are lacking; community members may have to take multiple part-time jobs without benefits to make ends meet. Available jobs are often not geographically located where people live, and require skills or training different from what the local workforce offers. Wisconsin incarcerates communities of color disproportionately, and this has a detrimental impact on hiring and the workforce.
Education	Black/African American, American Indian/Native American and Hispanic students have substantially lower graduation rates than White students. Students with disabilities and students from economically disadvantaged households are also substantially less likely to graduate than their peers. The trauma of having an incarcerated parent affects student performance and graduation rates; Black/African Americans and Native American/American Indians are disproportionately incarcerated in Wisconsin.

HIGH QUALITY HEALTH CARE AND PUBLIC HEALTH (PAGE 61)

Health Insurance	People who have higher incomes and higher levels of education were the most likely to have health insurance. Adults aged 18–44 were the least likely to be insured, and those over 65 the most likely to be insured. More than 50% of those with insurance receive it through an employer-sponsored plan, with Medicaid and Medicare covering an additional one third of the insured population.
Cost of Care	Wisconsin residents identified the high cost of premiums, co-pays and insurance as contributors to deferring needed health care. Around one in 10 Wisconsin residents delay care due to costs. The people most likely to defer health care due to costs were female, people who are bisexual, people with a disability, people living in urban areas, and people who are Hispanic. The people least likely to defer care had higher educations, were without disabilities, were White, and over age 65.

Health Care Provider Shortages	Wisconsin falls far short of meeting our overall health care provider needs. The needs for health care providers are not equally distributed, and shortages exist in every public health region.
Sites of Care	Wisconsinites access health care at multiple types of places, including clinics that are part of consolidated non-profit health systems, urban and rural hospitals, and safety net providers, including Federally Qualified Health Centers (FQHCs), Rural Health Centers (RHCs), and free and charitable clinics. Virtually every Wisconsin resident has access to emergency care within 30 minutes, though only 2/3 of the population can reach emergency care within 10 minutes.
Support Services	Programs that support health include early childhood education, home visiting, school-based and senior nutrition, adult vocational training, and crisis lines. Programs that support recovery from substance use disorders, or that provide emotional support for cancer survivors and their families, are available in many communities. People with disabilities rely on programs that provide training and skill development, adaptive equipment, nutrition, specialized physical activity, and transportation. Some of these support programs require income eligibility, and some programs that can significantly lower the costs of health care are nonetheless not covered by insurance. These requirements can create barriers for Wisconsinites already experiencing inequities.
Prevention	Clinical preventive services, such as routine disease screening, immunizations, regular dental cleanings, and prenatal care are critically important for everyone to maintain their health. Vaccination rates for the standard childhood series, HPV, and flu all have room for improvement. Cancer screening rates are comparable with national levels, yet still do not reach everyone eligible. Screening for depression and substance use disorder is underutilized, and overdoses and suicides continue at high rates. Only about three-fourths of Wisconsin's pregnant population acquired prenatal care.
Health Education	Nearly one in 10 Wisconsinites expressed difficulty in asking questions when information from a doctor or other health care provider was unclear. Wisconsin youth used some method to prevent pregnancy the vast majority of the time, and the teen pregnancy rate in Wisconsin has dropped substantially. However, the number of STI cases is almost double among females as males. Eight out of 10 people newly-diagnosed with HIV were connected to care within one month of their diagnosis, but the stigma of the disease continues to impede progress in reducing transmission and increasing access to care. Hepatitis C infections among young adults in Wisconsin have increased dramatically as a result of increased injection drug use related to the opioid epidemic.

Quality of Care	Pregnancy and childbirth carry inherent risks. Black/African American mothers experience severe maternal morbidity, or so-called "near misses", at 1.5 times the rate of Whites. The rate of maternal death is five times higher for Wisconsin women who are Black/African American than for White mothers. Preterm birth, a major predictor of infant mortality, impacted significantly more Black/African American infants. Wisconsin's death rate for Black/African American babies is the highest in the nation, and getting worse. Health care technologies have the capacity to improve health outcomes, yet cost is often a limiting factor. Technology also needs to be accessible, including to people with different types of disabilities. There have been 168 Wisconsin practices that have been recognized as Patient-Centered Medical Homes (PCMH) by the National Center for Quality Assurance. Nonetheless, opportunities for improved cultural competency of providers were cited by many Wisconsin residents.
Public Health Infrastructure	Wisconsin ranks 48th out of 50 states in public health spending per capita, at $51 per person. We surveyed local public health departments and other partners about their ability to meet nationally-set standards for an optimal public health system prior to the pandemic (March-July 2019). Nearly half of respondents expressed the ability to contribute to the delivery of essential public health services significantly or optimally most of the time. Yet, only about a third of respondents indicated they had delivered these services using a health equity lens significantly or optimally. These results indicate opportunities for improving Wisconsin's public health infrastructure.

POLICIES THAT SUPPORT HEALTHY COMMUNITIES (PAGE 91)

|	
Connected Communities	Policies that support connected communities include: • Investing in public infrastructure, from transit to broadband. • Ensuring integrated, multi-modal transportation facilities and services that meet community needs. • Subsidizing public transit and internet services for low-income individuals and families. • Supporting broadband deployment in underserved areas. • Zoning for greater density, more integrated communities, more public spaces like parks and community centers, and fewer alcohol and tobacco outlets.

Inclusive Neighborhoods and Affordable, Quality Housing	Policies that support inclusive neighborhoods and affordable, quality housing include: • Banning exclusionary zoning policies that discriminate based on income, which is often tied implicitly or explicitly to race. • Authorizing more high-density and multi-family, multi-generation zoning, and relaxing lot size restrictions. • Respecting and amplifying the economic and cultural power of informal institutions and people in neighborhoods to avoid displacing long-time residents by rapid gentrification. • Enforcing eviction moratoria during crisis periods and providing focused support with debt-management after these moratoriums end. • Providing direct cash assistance for housing. • Allowing the conversion of unpaid rent into consumer debt. • Promoting stability for renters in affordable properties by providing tax incentives and other financial support for maintenance and repairs.
Equity in Education and Opportunity	Policies that support equity in education and opportunity include: • Providing subsidized or fully-paid quality child care and preschool. • Increasing supports for students with special educational needs. • Detaching school funding from residential and commercial property taxation to ensure socioeconomically integrated schools. • Creating community schools that provide a multitude of services to meet the needs of students and families. • Taking steps towards residential desegregation.
Economic Stability	Policies that support economic stability include: • Expanding the Earned Income Tax Credit. • Ensuring universal coverage for paid family and sick leave. • Enacting a living and family-supporting wage. • Expanding Unemployment Insurance benefits. • Providing universal basic income.

Civic Engagement and Access to the Political Process	Policies that support civic engagement and access to the political process include: • Protecting the right to vote and making it easier to vote. • Enacting fair and inclusive electoral policies and promoting civic engagement. • Promoting the inclusion of those most impacted in decision-making and policy-making processes.
Universal Access to Quality Health Care	Policies that support universal access to quality health care include: • Universal health insurance coverage, including physical and mental health care, dental, and vision. • Expanding the safety net, including Medicaid services. • Creating incentives for health care professionals working in underserved communities. • Increasing investment in primary care in order to improve response capacity.

THE ROLE OF SUPPORTIVE COMMUNITIES

In order for the people of Wisconsin to enjoy healthy lives, our social, spiritual, physical, and mental health needs must all be met. Where we live, work, pray, and play influences everything about our health. Supportive communities allow all of us to thrive.

Contributors to supportive communities include: our social and community connections, the infrastructure and healthy environmental surroundings in our lives, our economic opportunity, our ability to access high quality health care and public health, and the use of policies that support healthy communities.
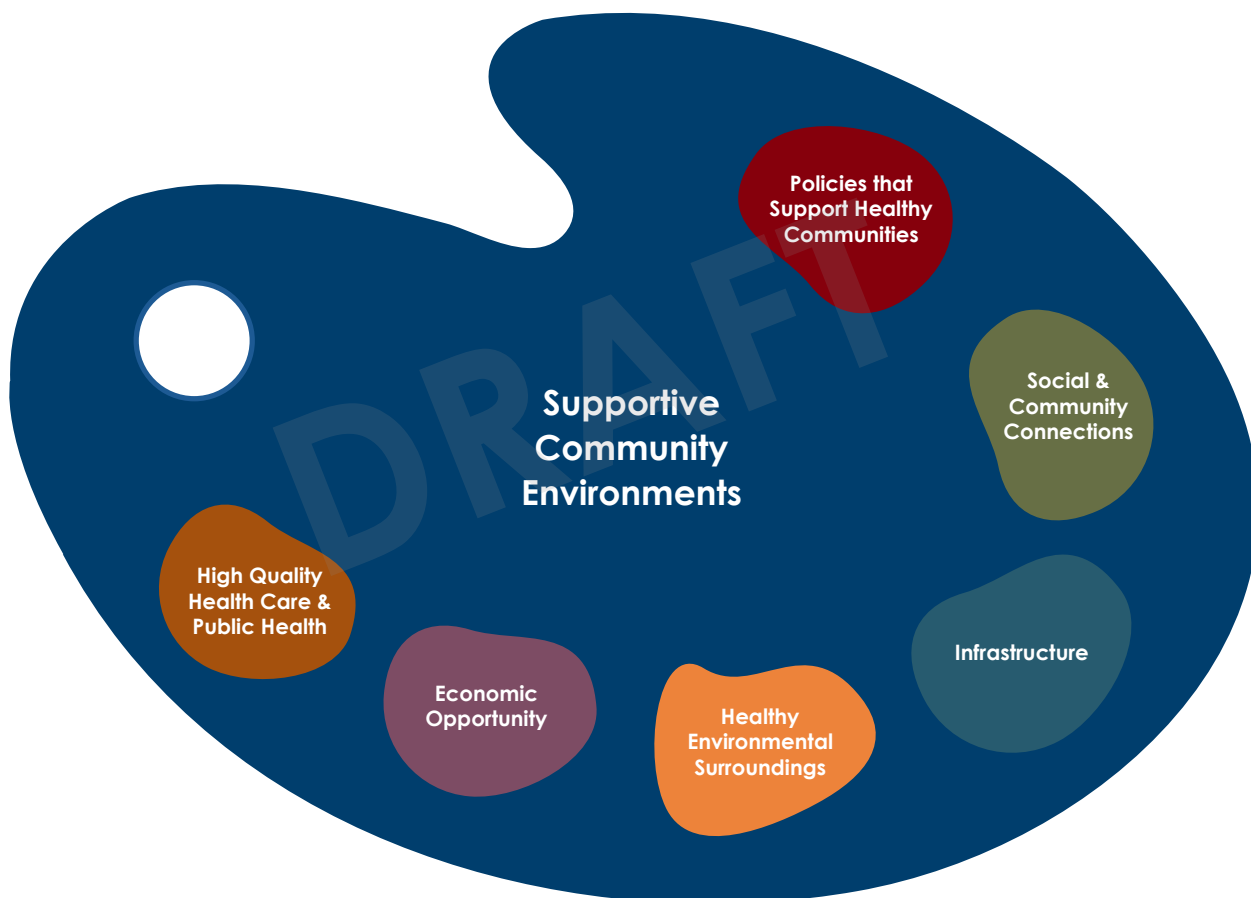
In the sections that follow, we assess these factors, laying out the current status of Wisconsin's communities. We understand that communities look different depending on where they are located, who lives there, and what resources are currently available. The purpose of this document is to capture a snapshot of health within Wisconsin at a specific moment in time. A number of data collection methods were used to capture these snapshots, including compiling national and state-level surveys and data sets, focused community conversations, discussions with stakeholder organizations, and a survey of partners engaged in public health efforts. These data show many outcomes worthy of celebration, and multiple opportunities to improve future health snapshots. The picture of Wisconsin's health is different today than 10 years ago, and will be different again 10 years from now. It is up to all of us to contribute to this picture as we move forward, current information in hand.

SOCIAL AND COMMUNITY CONNECTIONS

Social connection and connectedness refer to the ways that people can be physically, emotionally, and culturally connected to others, and the impact that connection has on health and well-being. While strong social connection is protective of health, a lack of social connection carries risk.

In fact, a former U.S. Surgeon General referred to the risks associated with social isolation and loneliness as an "epidemic."[4] Lack of social connection can lead to negative outcomes, such as misuse of alcohol, tobacco, or harmful drugs; high-risk behavior, such as driving aggressively or too fast; and at worst, suicide.

SOCIAL SUPPORT AND COMMUNITY CONNECTEDNESS AND HEALTH

Social and community connectedness refers to positive social relationships, networks, links, ties, shared resources, and cultural traditions and history that people have with other people or groups. These relationships may be with family, friends, neighbors, sporting or social groups, faith-based communities, or membership associations. Each of these connection points is a protective asset, positively influencing health and well-being. Our health is shaped by the people we know, the friends we confide in, the family we belong to, and the location and community in which we live.

> " We don't have a social collective anymore - it's all bootstraps mentality. But that's not life. Life is more interconnected, complex."
>
> – Community conversation participant

People who experience positive social support and connections, regular social contacts, greater trust between others, and at least one close relationship, enjoy better health and well-being. During focused community conversations about their health and the health of their communities, Wisconsinites identified social support and community connections among all community members as critical for a healthy and supportive community.

- The National Service Knowledge Network found that over 99% of Wisconsin residents regularly talk or spend time with friends and family.[5]

- From 2013-17, the vast majority (98%) of Wisconsin residents responding to the Pregnancy Risk Assessment Monitoring System (PRAMS) annual survey indicated they had a partner, parents, or other family who could help them in a time of need.[6]

  - This measure of being connected with others was slightly lower for individuals under 18 (93% of respondents answered affirmatively) and those on public insurance (96%).

  - Black/African American and Hispanic respondents reported they had this support at slightly lower than average levels, at 94% and 96%, respectively.

  - People with lower educational attainment and at a higher level of poverty also reported slightly lower levels of connectedness than those with higher education and income levels.

> " What if the solutions to some of our most urgent health care and social care needs could be found in our sense of belonging and in the compassion of our connections?"
>
> – Community conversation participant

To achieve optimal health, people and families need access to safe, supportive, welcoming, and thriving communities that provide connections with a sense of belonging. When an individual, population, or community belongs (that is, they are not marginalized or excluded), their voices are heard to help shape the conditions in the community that affect their lives and their health. Businesses, schools, faith communities, community organizations, professional societies and other resources contribute to cross-community and cross-business collective efforts that strengthen communities, particularly in rural areas.[7] Belonging improves the nature of relationships, expands access to resources, improves resilience and hope, and increases opportunities for health, education, and economic success.

THE FUNDAMENTAL NEED FOR SOCIAL CONNECTION

A HEALTHY AND SUPPORTIVE COMMUNITY IS:

- A safe and caring place that provides a sense of social and community connectedness.

- Where diversity, inclusion, and abilities are valued.

- Where community members feel free from judgement and discrimination.

- Where services are supported, accessible, and easy to navigate.

- Where belonging provides a pathway to hope and resilience with an opportunity to optimal health.

Participants in our community conversations told of the need for connection to people with shared identities or experiences, as these connections often provided the most compassion and care. Positive peer and mentor relationships were highlighted as health-promoting, across all population groups. For example, people living with disabilities reported finding comfort and power in connecting with others with similar conditions. Youth mentioned the importance of being able to confide in friends, as well as wanting positive role models and caring mentors who "watch out" for one another. These positive relationships may be especially vital for adolescents. Family and school connectedness may have long-lasting protective effects across multiple health outcomes related to mental health, including suicide risk, violence, sexual behavior, and substance use.[8]

People with social connectedness have an easier time accessing health care, understanding health information, and applying important health behavior messages. Positive peer relationships link people together to support, create and maintain health and healing, and reduce trauma and discrimination by supporting connections through inclusion.

THE RELATIONSHIP BETWEEN CONNECTEDNESS AND HEALTH

Social ties help support an individual's ability to make and maintain healthy behavioral choices by creating social norms and social supports.[9] Behaviors such as alcohol and drug use, smoking or vaping, wearing seat belts, and eating and exercising habits can all be influenced by social ties and relationships. These social ties also affect positive perceptions of self-efficacy, self-worth, and well-being, which can maintain or improve health, leading to increased life expectancy.[10]

> " When you help one group, it often helps other people, like how audible traffic signals [designed to help blind people] can help parents with young children."
>
> – Community conversation participant

Wisconsinites participating in our community conversations consistently described their community members as assets, noting the resourceful and helpful natures of their communities, with neighbors and neighborhoods working together. Throughout Wisconsin, participants in community conversations identified that "nice and friendly people" as well as "good neighbors who help out" and communities where "everyone knows everyone" were assets that contribute to health and quality of life.

Broad population-based data measuring social and community connections are limited. However, a few data sources provide some insight:

- One question in the Survey of the Health of Wisconsin (SHOW) asks people about their community connectedness. Adults who are older, White, more educated, and of higher socioeconomic status reported a stronger sense of community than their peers in 2014-16.[11]

- Wisconsin is ranked 12th in the nation for the percentage of residents volunteering – more than one in three.[5]

- Three out of five Wisconsinites do favors for neighbors, and one in three participate in local groups or organizations.[5]

The COVID-19 pandemic disrupted and weakened many social and supportive community connections, affecting the ways people interact with one another through activities such as eating out, shopping, exercising, vacationing, working, and schooling. Social media technologies proved to be both helpful, by creating new ways for people to connect to others, and also hurtful, because people could not offset negative messages with cordial, real-time conversation. Future analysis of the effects of community connection will likely be more difficult due to this pandemic.

At the same time, the momentum of the Movement for Black Lives opened up possibilities for new social and supportive community connections, responses, orientations, policies, and strategies that may address social ties that build long-term, community engagement toward the sense of everyone belonging.

SOCIAL ISOLATION

People experience social isolation when they have few or infrequent social contacts. Loneliness is the subjective and distressing feeling of social isolation, often defined as the difference between actual and desired level of social connection.[12] The number of people living alone has nearly doubled in the last 50 years, with one in six adults now living alone. In Milwaukee, approximately one in five adults live alone, ranking #13 on the list of large cities with people living alone. The onset of the COVID-19 pandemic, which resulted in people purposely avoiding interactions with others, is likely to worsen feelings of loneliness, and contribute to decreased quality of life.

People who are physically or socially isolated are at greater risk of abuse, neglect, feelings of loneliness, depression, and injury. For example, children with disabilities are nearly four times more likely than children without disabilities to be a victim of any sort of violence.[13] Children with mental or intellectual disabilities may be the most vulnerable. Neighborhoods with greater social capital provide residents with greater access to support and resources.

In Wisconsin, nearly one in five adults are without adequate social or emotional support. Many community members identified funding for support programs as an area where inequities related to community support occur, including access to programs requiring income eligibility. Other programs, such as those for addiction, mental health and cancer care and support are limited in many communities.

Wisconsinites consistently described local churches, schools, libraries, parks, and outdoors as providing opportunities to overcome the barriers of social isolation by enhancing their quality of life and meeting their basic needs. As an example, older adults described how beneficial rural senior centers and YMCAs are to their community. YMCAs provide opportunities for socialization, health-based activities, and enhancing quality of life, with programs often available at modest to no cost. Community and recreational centers, places of worship, and membership organizations were all named as community assets. Youth described how community organizations and recreational leagues provide opportunities for Wisconsinites of all ages to feel involved. These activities can give people a sense of belonging and challenge youth to be their best selves.

> " Community organizations bring youth together, provide new opportunities and experiences (like travel), provide interesting things to do, and provide outlets for stress relief."
>
> – Community conversation participant

CULTURE AND TRADITIONS

Culture and traditions are often especially important for populations that experience discrimination and exclusion to provide a sense of safety and belonging. For example, the traditional practices of Native American/American Indian populations encourage a worldview that brings balance and harmony to individuals, families, and community.[14] This cultural perspective may counter against the ongoing effects of historical traumas created by White settlers and the federal government. Connectedness to others in the community is shared through traditional practices and ceremonies creating a sense of belonging that contributes a protective factor to help reduce health disparities.[15]

Many other groups that experience discrimination and exclusion, including Black/African Americans, LGBTQ+, people with disabilities, and others have created their own cultural practices, promoting belonging and a sense of safety and community.

- Wisconsinites in our community conversations cited opportunities to share cultural values and practices as assets, with opportunities for more learning between generations and cultural knowledge-sharing with youth.

- People identified more exchange across cultures through events and relationship-building as opportunities for community-building.

- Those in the Deaf community shared that not only their neighborhoods but their culture is an asset; their sense of community is helpful and unique.

- Supportive relationships, belonging and acceptance, and positive connections with others were cited as critical factors for promoting resilience in people who identify as LGBTQ+ or people with disabilities.

Festivals, fairs, and afterschool activities were noted to be very positive community attributes that contribute to a strong quality of life for all ages. Community events and activities like these benefit folks of all ages and provide healthy ways to relieve stress and be active. Sharing cultures and traditions are a source of strength and growth for healthy communities.

BREASTFEEDING

Breastfeeding (or chestfeeding)* is an important part of health for mothers and babies.[16] As long as they are physically and medically able to do so, parents are encouraged to solely provide breast milk to infants for the first six months, and to continue providing breast milk until at least one year of age. Breastfeeding provides many health benefits, including reducing the child's risk of: ear, respiratory and gut illnesses, asthma and other allergic reactions, sudden infant death syndrome (SIDS), obesity and diabetes, and childhood leukemia (cancer). For the lactating person, breastfeeding reduces the risk of breast and ovarian cancer, as well as high blood pressure, heart disease, and type 2 diabetes. Breastfeeding also promotes connection and bonding, and supports the emotional well-being of both parent and baby. Successful breastfeeding also requires community acceptance of breastfeeding in public. This includes the availability of dedicated, private spaces for expressing milk and expectations of breastfeeding as a social norm for new parents.

Overall, two out of three Wisconsin mothers are breastfeeding at eight-weeks of age. However, not all mothers are as likely to breastfeed. People who are younger, Black/African American, and living in the Southeastern region are less likely to breastfeed.

Percentage breastfeeding at 8-weeks of age [6]
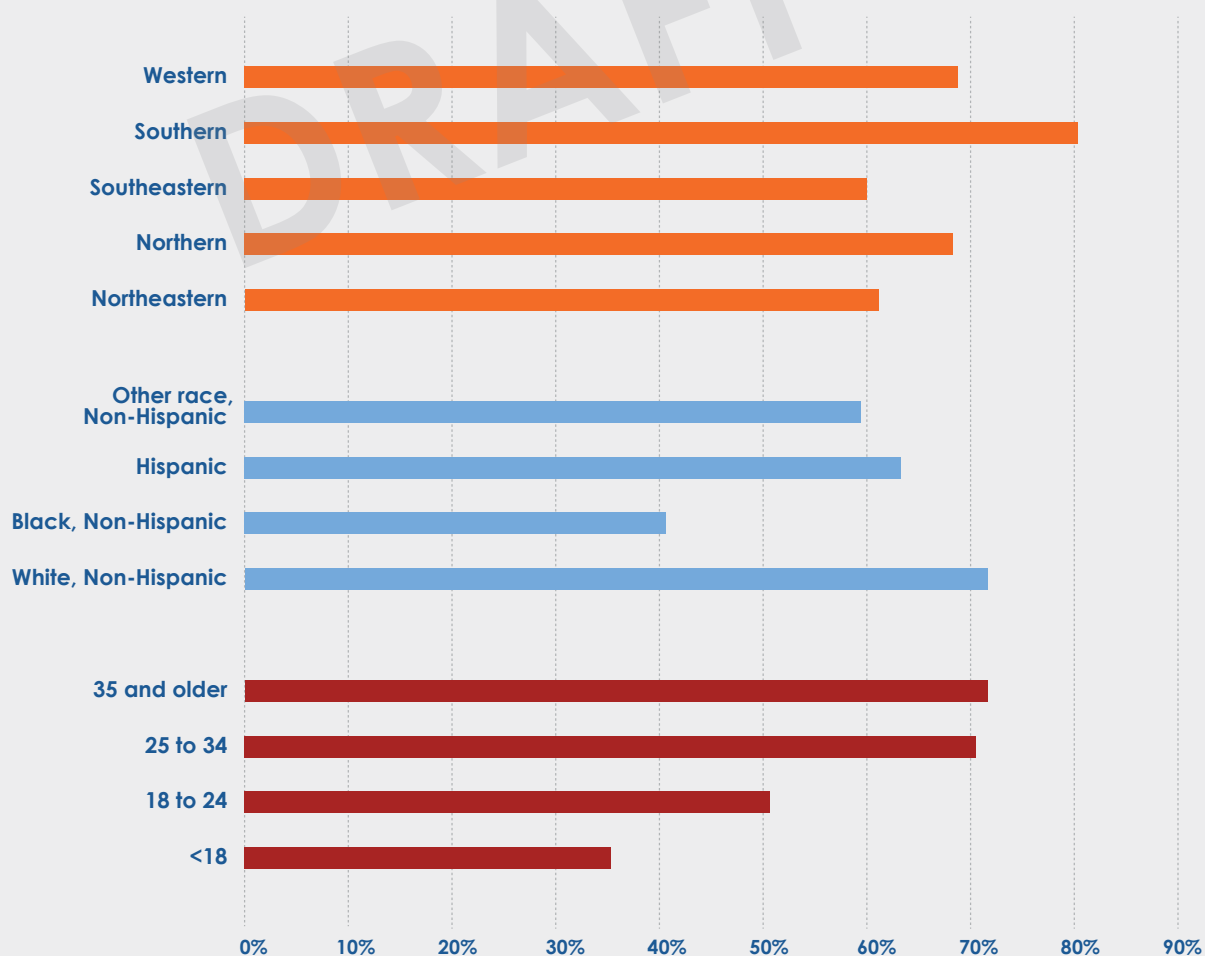
By three months of age, only 51% of Wisconsin infants are exclusively breastfed, dropping to 28% exclusively breastfeeding at six months of age. Only about one in three Wisconsin infants are still being breastfed at all by 12 months of age.[17]

While breastfeeding is a traditional practice in Native communities, centuries of historical trauma have disrupted cultural traditions. Breastfeeding rates in Native communities have been further negatively impacted by hospital practices: in 2017-18, 38% of Native American/American Indian mothers in Wisconsin received a gift bag with formula at the hospital.[18] Although 90% of Wisconsin's Native American/American Indian mothers surveyed breastfed their baby at least one time, the drop-off in breastfeeding was substantial: [18]

Age of baby when they stopped consuming breastmilk, all participating communities, Wisconsin Native Breastfeeding Survey, 2017-2018[1,2]
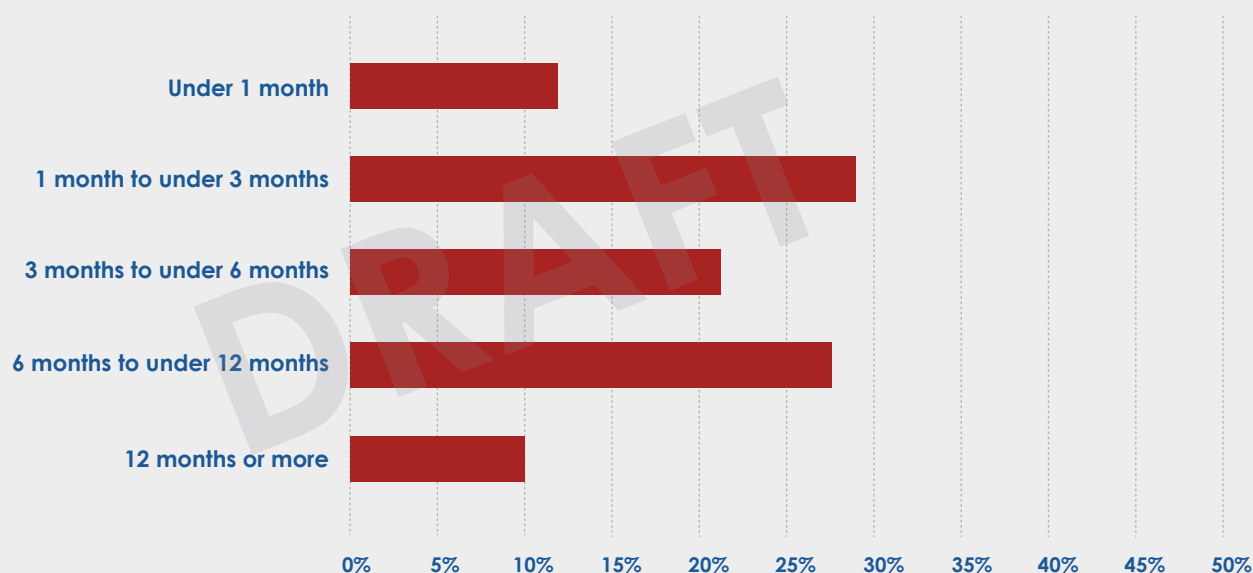
n=127
[1]Among babies who had ever been fed breastmilk
[2]Excluding those still breastfeeding

Studies have shown that hospital maternity wards that serve larger populations of Black/African Americans are less likely to help Black/African American mothers initiate breastfeeding or offer lactation support, and are more likely to offer formula to their babies.[19] Black/African American parents are also more likely to need to return to work earlier than 12 weeks, and are more likely to be in jobs without flexible work hours to allow them to express milk for their babies. In Wisconsin, only 12 hospitals are currently designated as Baby Friendly, meaning they fulfill 10 evidence-based practices to promote breastfeeding, and refrain from promotion of breast-milk substitutes (i.e., formula).[20] These hospitals are located in Antigo, Brookfield, Eau Claire, Elkhorn, Fort Atkinson, Green Bay, Janesville, La Crosse, Madison, Richland Center, and Stevens Point.

*Although we discuss women and breastfeeding, parents may be of any gender; transgender men and nonbinary-gendered individuals may also give birth, and many may want to breastfeed or feed at the chest (chestfeed). For the purposes herein, we mainly refer to "mothers" but want to acknowledge that this information is intended to be inclusive of all families.

INFRASTRUCTURE

Infrastructure, or the attributes of a community, shape many of the opportunities and resources that individuals and families need to live healthy lives. Community infrastructure and resources, many of which are interrelated, impact health outcomes by influencing access to transportation, housing, jobs, education, healthy foods, access to health care, social services and supports, levels of physical activity, community safety, and social connections. State and local policy play a key role in supporting healthy community infrastructure.

COMMUNITY-BASED RESOURCES

Community-based resources support healthy communities and provide opportunities for healthy lifestyles. These types of resources include hospitals and community clinics, public-oriented organizations, community and senior centers, food pantries and healthy food retail, parks and natural outdoor settings, and safe community spaces for social connections and healthy activities. However, not all communities across the state offer the same level of access to resources and opportunities that foster engagement in healthy activities.

ACCESS TO CHILD CARE

Many Wisconsinites participating in community conversations with us identified a need for safe, affordable, high-quality child care. A lack of access to child care is a workforce development challenge and it limits a parent or guardian's ability to maintain stable employment and provide for their family. Just over half (54%) of Wisconsin's population lives within a child care desert, which means there are either no licensed child care providers in the area or there is less than one child care spot open for every three children.[21] In Western Wisconsin, half of all zip codes fall within a child care desert.[22]

Child care is one of the biggest expenses faced by families. This includes infant care costs, which in Wisconsin are 20.5% higher than average rent costs.[23] Subsidies for child care costs help make child care costs more affordable for families, but capacity and resources for these types of programs are limited.

Challenges related to child care access were amplified due to the COVID-19 pandemic. Community outbreaks and the need to stay safer at home resulted in the temporary closure of many child care facilities, and led to more families having unmet child care needs. Child care providers closed temporarily or permanently, and child care workers lost their jobs. Parents or guardians who did not have the ability to work from home (e.g., essential workers) struggled to find child care options, and may have had limited options to oversee their children's attendance in online studies. Work from home policies often mandate child care, resulting in the need to take emergency or unpaid leave. The Families First Coronavirus Response Act provided paid sick leave and emergency family and medical leave in the event of illness or inability to work due to child care needs during the pandemic. However, employers with 50 or fewer employees, or more than 500 employees, were exempt, leaving many families without job protection if they couldn't work due to illness or child care loss.[24]

PARKS, NATURAL OUTDOOR SPACES, AND OPPORTUNITIES FOR PHYSICAL ACTIVITY

Parks and natural outdoor spaces are community assets that offer space for healthy recreation, active transportation, and social activities. Wisconsinites across the state expressed that state and local parks, and the outdoors, have a positive impact on their health and quality of life.

Community members who joined our community conversations identified safe and accessible opportunities for individuals to engage in healthy activities as a key need. Local parks and recreation community centers were seen as the hub for activities for all ages in the community, offering summer activities for kids, senior center activities, crafts, games, book clubs, drama, music, and other performing arts.

> " Good recreational areas provide community strength."
>
> – Community conversation participant

Participating in frequent physical activity lowers the risk of high blood pressure, high cholesterol, stroke, diabetes (type 2), heart disease, cancer and other chronic conditions. Exercise, and the socializing that often comes with it, have been linked to well-being. However, not everyone has the same opportunity to access these opportunities. Proximity to parks or recreational facilities is one measure of access to physical activity opportunity.

- Overall, 86 of every 100 Wisconsinites have access to spaces for physical activity. However, available data indicate a wide range of access across Wisconsin counties, from a low of one in 10 people living "reasonably close" to exercise opportunities, to virtually everyone living in close proximity to options.[25]

- Not all community members feel safe to use or access parks and outdoor spaces, even when they are available.

- Additional barriers to recreation are lack of walkable spaces or sidewalks, heavy traffic, unfavorable conditions for cyclists, little to no transportation to get to recreational places, high gym membership costs, and lack of adaptive activities like Special Olympics for individuals with disabilities.

- Many factors influence whether an individual will find parks, natural outdoor spaces, or other opportunities for physical activity available to them. Such factors include: zoning laws and ordinances and other policies governing land use; residential segregation; community capacity and civic engagement to fund public and accessible recreational facilities; and access to early child care, schools, and worksites with opportunities for physical activity. Community members cited free or discounted access to state parks and trails as one way to reduce barriers for those with limited budgets.

- In 2017, only about one in four Wisconsin youth met physical activity guidelines of 60 minutes of active time per day.[26]
  - Male youth were twice as likely to meet physical activity guidelines as female youth. Regardless, only one in three males met these guidelines.
  - Black/African American youth were least likely to meet physical activity guidelines, while White youth were most likely to get the recommended physical activity.
  - Lesbian, gay, bisexual and unsure youth were substantially less likely to meet the recommended physical activity guidelines as youth who identify as straight.

Percentage of Youth Meeting Optimum Physical Activity Guidelines (60 minutes/day) [26]
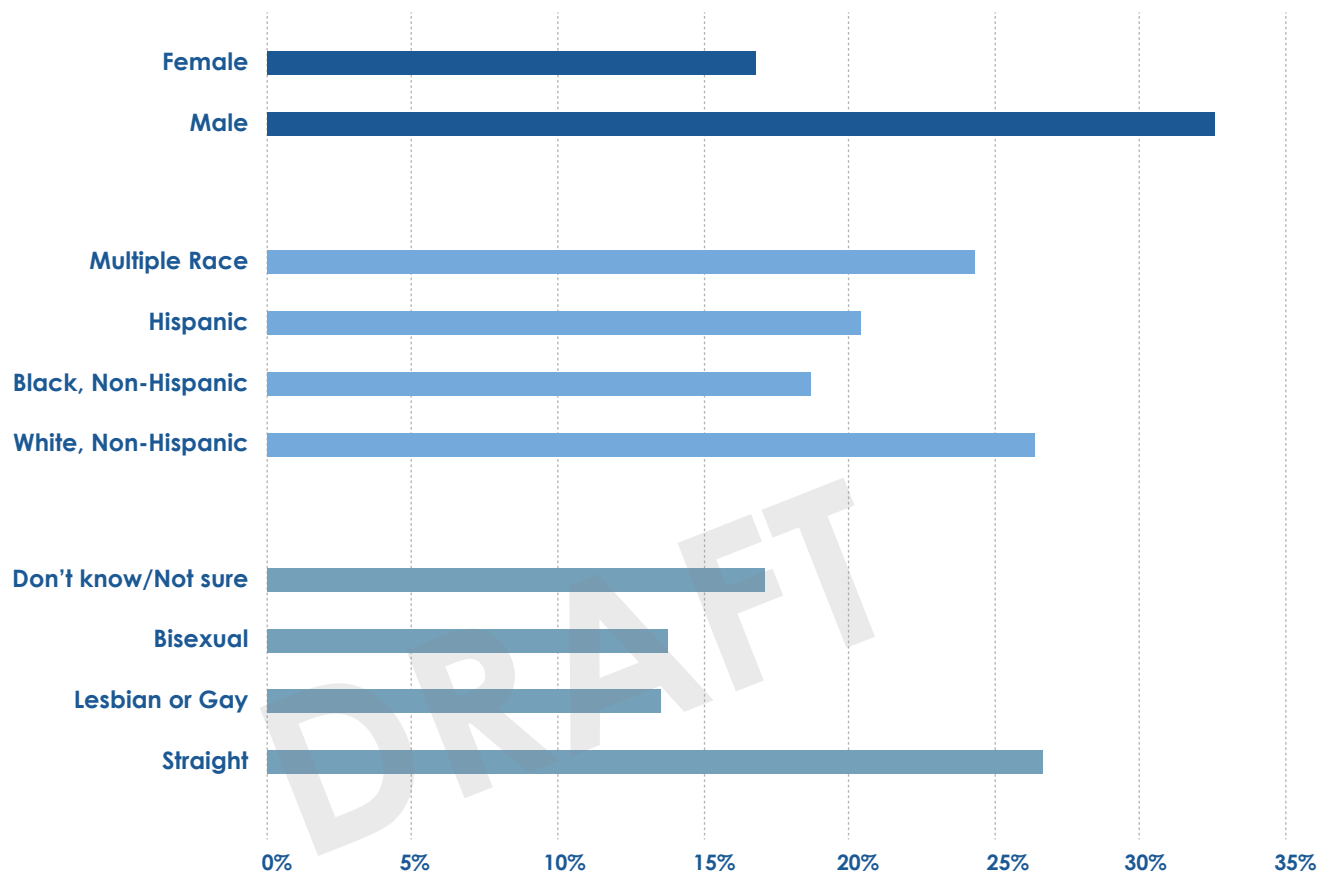
- For Wisconsin adults, about three out of five got the recommended amount of aerobic physical activity (150–300 minutes of moderate intensity, or 75–150 minutes of vigorous intensity) per week in 2017.[27]
  - People aged 25–54, in the prime working years, were least likely to meet this recommended physical activity level. The increasing sedentary nature of work, changing modes of transportation, and population shifts from rural to urban areas may all contribute to this finding.
  - Individuals with a disability were far less likely to get the recommended amount of physical activity than those without a disability. Adaptive physical activity opportunities and spaces or infrastructure in communities accessible to people with disabilities are not universally available.
  - People with less than a high school education were the least likely to meet physical activity guidelines, while those with a 4-year degree or higher were the most likely.

> " I find my grounding in nature. And having parks that are accessible and free (is an asset). Many parks offer a waiver for a lifetime membership or reduced admission fee for people with disabilities."
>
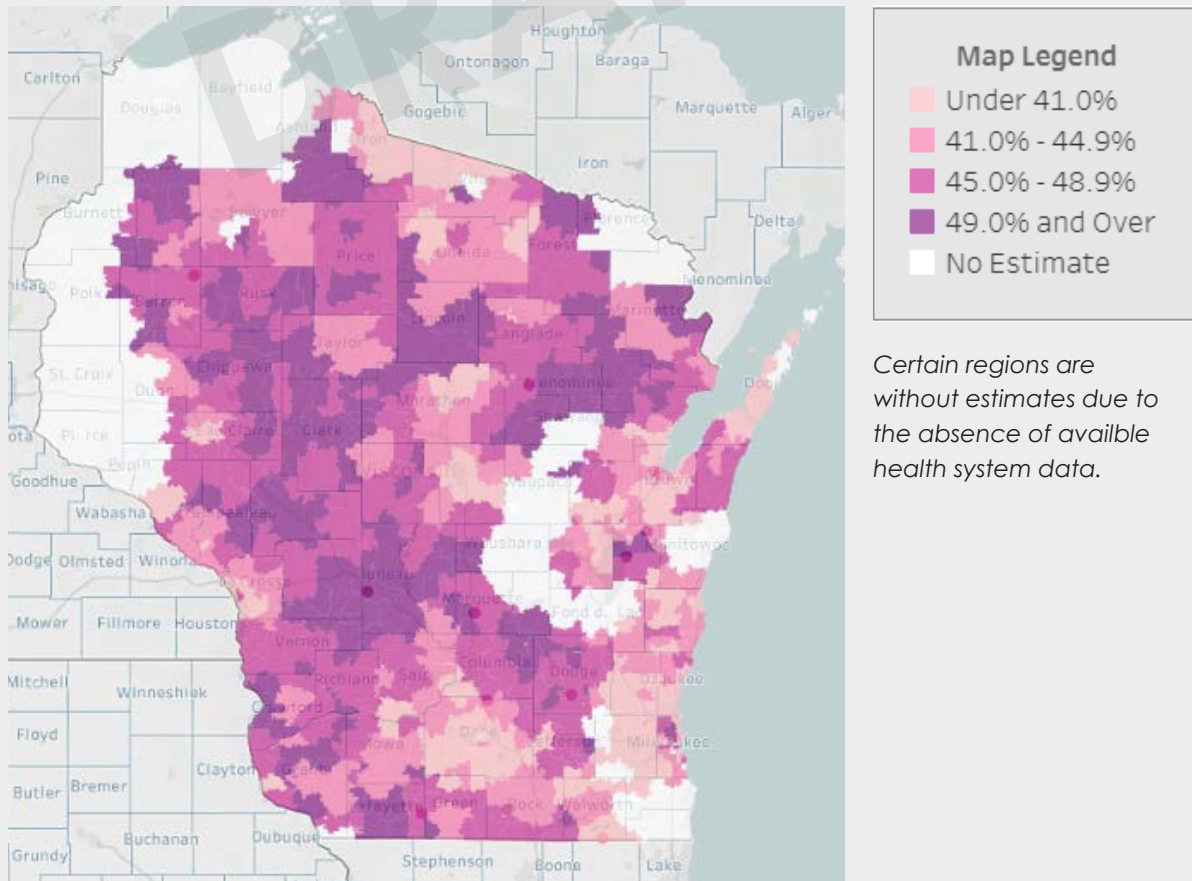> – Community conversation participant

Wisconsinites shared that activities like hunting and fishing allowed them to get exercise, and contributed to a relaxed mind and decreased blood pressure. Hunting and fishing also serve as methods to access food and contribute to social connections, as Wisconsinites often undertake these activities with friends, neighbors, and families. Trekking out to a tree stand or fishing hole and bonding over hunting strategy or location of wildlife was described as an enjoyable pastime for many.

OVERWEIGHT AND OBESITY

Overweight and Obesity are grave public health threats.[28] Overweight and obesity are linked to multiple chronic conditions, including type 2 diabetes, heart disease, and cancer, thus contributing to the decline in life expectancy in the U.S. Overweight and obesity are estimated to increase national health care spending by $149 million annually (about half of which is paid for by Medicare and Medicaid). Being overweight or obese is the most common reason young adults are ineligible for military service. In Wisconsin, nearly seven in 10 adults are living with overweight or obesity.[27] And the picture for youth isn't much better – nearly one in three are living with overweight or obesity.[26] Where you live makes a difference on your opportunity to be healthy. People of color, who are more likely to live in neighborhoods with few options for healthy foods and physical activity, and are the target of widespread marketing of unhealthy foods, experience the highest rates of overweight and obesity. People living with a disability are also more likely to experience overweight and obesity than those without a disability.

OBESITY RATES FOR ALL 18+ YEAR OLD PATIENTS BY ZIP CODE, 2015-2016[29]

Map Legend
- Under 41.0%
- 41.0% - 44.9%
- 45.0% - 48.9%
- 49.0% and Over
- No Estimate

Certain regions are without estimates due to the absence of availble health system data.

ACCESS TO HEALTHY FOODS

Healthy foods are necessary for all of us to live our best lives. Yet, depending on where one lives, healthy foods may be abundant, scarce, or somewhere in between. The cost of healthy foods also varies depending on where people live and are willing and able to travel to purchase or grow their food.

- The percentage of people with low incomes living in "food deserts," meaning they don't have a grocery store nearby, ranges from 0% to 14% in Wisconsin.[30] Most food deserts are in the northern half of the state, which is less populated.

- The percentage of the population lacking adequate access to food ranges from 6% to 17% across Wisconsin's counties.[31]

- The food environment index is a complex measure incorporating food choice access, the community's success in maintaining a healthy diet, and community characteristics that influence the food environment.[32]
  - Wisconsin ranks high for the food environment index overall at 8.8 on a scale of 0 (worst) to 10 (best), compared to 7.7 for the nation as a whole.
  - Wisconsin counties have disparate food environment index scores, however: The score ranges from a low of 6.5, well below the national score (7.7), to a high of 9.2, but this score can be deceiving. For example, Milwaukee has a food environment index score of 7.6, likely due to having one the lowest percentages of population with limited access to healthy foods. Yet Milwaukee has one of the highest percentages of populations with food insecurity in Wisconsin.

- About one in four adults[27] and one in six youth[26] regularly consume sugar-sweetened beverages (soda, energy drinks, lemonade, etc.), which provide no nutritional value. People under age 34, who were Black/African American or Hispanic, had a disability, or had lower levels of education, were the most likely to consume sugar-sweetened beverages.

> " The grocery store that is local has high cost foods. People that do not have access to transportation do not have options."
>
> – Community conversation participant

Many Wisconsinites identified assets in their community that help people with the basics. From farmers' markets and food pantries to soup kitchens and shelters, these sources of food help people supplement what they can get from retail food service, grocers, and markets. Depending on the community, availability of, and distance to, healthy food outlets were noted as assets where they were present, and as unmet needs where they were absent.

Fruit and vegetable consumption is heavily influenced by the food environment, which is influenced by regional and cultural factors for food availability, access, preferences, and expectations. Studies have shown that access (i.e., availability and affordability) are a driving factor in healthy food consumption. Lower rates of obesity and diabetes have been found in areas with increased access to healthy foods and a higher density of full-service restaurants and grocery stores.

- Fewer than 16% of Wisconsin adults consumed five or more servings of fruits or vegetables per day in 2017[27], the amount recommended by the World Health Organization for optimum health.[33]
  - Fewer than 14% of high school students ate vegetables three or more times a day, and about 15% ate fruit three or more times a day for the past seven days.[26]
  - Females were more likely than males to eat the recommended amount of fruits and vegetables.[27]

- Asian and Native American/American Indian Wisconsin adults were the most likely to eat five servings of fruits and vegetables, while Black/African Americans were least likely.[27]

- Hispanic youth were most likely to consume three or more vegetables or three or more fruits per day, while White youth were the least likely to do so.[27]

- People in rural areas were more likely to get their recommended fruit and vegetable servings than people in urban areas.[27]

- People with a disability were less likely to eat five fruits and vegetables per day than people without a disability.[27]

- People with a 4-year degree or higher level of education were substantially more likely to eat the recommended servings of fruits and vegetables than people with lower levels of education.[27]

Wisconsin community members highlighted the importance of food pantries as a community asset that meets their most vital basic needs. Food pantries help lift stress off of community members when they have limited financial resources and must make decisions to care for just the basic needs of shelter, electricity and heat. Others described the "Meals-on-Wheels" program as an asset both for promoting nutritional benefits and decreasing social isolation. Farmer's markets were also cited as lower cost options for families to access healthy foods. With the exception of Buffalo, Florence, Forest, Marinette, Marquette, Menominee, Oconto, and Waushara, every other county in Wisconsin has one or more farmer's markets.[34]
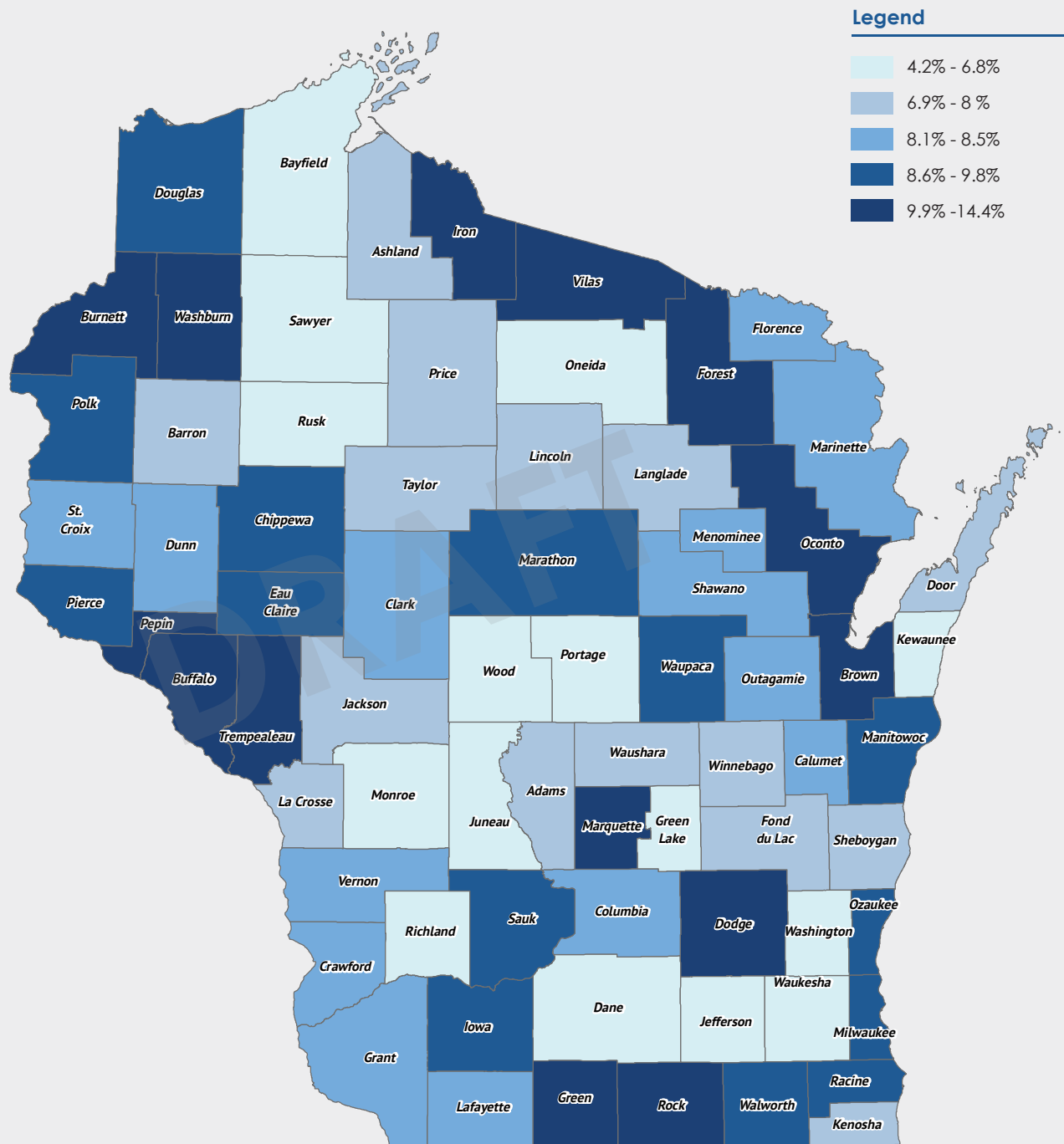
DIABETES

Diabetes affects how your body turns food into energy.[35] Most of what we eat is broken down into sugar (or glucose) and enters our bloodstream. The pancreas makes a hormone called insulin that lets blood sugar into our cells for energy. If you have diabetes, your body doesn't make enough insulin, or can't use available insulin as well as it should. When this happens, too much blood sugar stays in your bloodstream, which can lead to serious health problems, including heart disease, kidney disease, circulation problems, and vision loss. Type 2 diabetes is the most common form of diabetes, and the number of cases are rising as people consume less healthy diets and get less physical activity.

- Nearly one in 10 Wisconsinites have diabetes, and another one in three have pre-diabetes[27], where blood glucose levels are higher than normal, but not high enough yet to be diagnosed with diabetes.[36]

- The rate of diabetes increases with age: nearly one in five people over age 65 have diabetes.

- Native American/American Indians in Wisconsin are the most likely to have diabetes, while Asians and Whites are least likely.

- People living with a disability, and with lower levels of education are more likely to have diabetes.

- Among people living with diabetes, about 70% are able to keep their blood sugar levels in a healthy range, through diet, exercise, and medication.[37] White Wisconsinites, and those with commercial insurance or Medicare, were the most likely to have their blood sugar controlled.[38]

Diagnosed Diabetes by County, Behavioral Risk Factor Surveillance System (2012-2016) [39]

Legend

- 4.2% - 6.8%
- 6.9% - 8 %
- 8.1% - 8.5%
- 8.6% - 9.8%
- 9.9% -14.4%

Data Source: Behavioral Risk Factor Surveillance System, 2012 to 2016.
Diagnosed diabetes prevalence includes types 1 and 2, and estimates are age-adjusted to U.S. 2000 Census.
Menominee and Pepin counties exclude 2015 and 2016 data due to small sample size.

Map created by Wisconsin Department of Health Services,
Bureau of Community Health Promotion, Chronic Disease Prevention Program

TRANSPORTATION

Transportation is important to our daily lives to access employment opportunities, community-based resources, and other services such as health care. A lack of transportation is a barrier to these social and economic factors that influence our health.

Participants in our community conversations identified a lack of access to reliable, affordable, and accessible transportation as a barrier to health in many communities. Commonly identified barriers to reliable transportation include:

- Living in rural areas.

- Economic constraints.

- Disability status.

- Legal driving status.

- Physical infrastructure (e.g., Interstate or rural highways).

> " If you have a car that runs, it is easier to make healthy choices."
>
> – Community conversation participant

In many areas throughout the state, particularly in rural and tribal communities, there are limited public transportation options, and those that do exist in their communities often are not accessible for those using walkers, canes, or wheelchairs. Medical transit/transportation and ride share services were described as an asset in helping folks get to medical appointments.

Certain transportation performance measures are monitored across the state. Some measures related to mobility (i.e., delivering transportation choices resulting in efficient trips without unexpected delays) improved, stayed the same, or worsened between 2018 and 2019.[40]

> " Living my best life would be going anywhere I want to go, when I want to go there."
>
> – Community conversation participant

- Hours of vehicle delay and incident response measures improved.

- Transit availability and winter response measures did not change, but the goal has been met for winter response measures.

- Reliability and bicycling conditions on rural highways worsened.

Transportation is especially important for achieving and maintaining independence, particularly for individuals with disabilities and older adults. Wisconsinites in our community conversations identified a need for accessible transportation services for people with disabilities and seniors. This need is particularly important, since nearly one in three Wisconsinites age 65 or older live alone.[41]

The transportation barriers identified by many across the state became increasingly relevant during the COVID-19 pandemic. Access to COVID-19 testing sites and healthcare centers was often limited for those without transportation to get there. Those who rely on public transportation to get around experienced limitations due to reduced routes and services and may have increased their risk of exposure to the virus.

AFFORDABLE HOUSING

Shelter is one of the most basic conditions necessary for health. Many participants in our community conversations identified a need for access to more safe, healthy, and affordable housing. Nearly one in two Wisconsinites experience housing insecurity, meaning their gross rent costs are 30% or more of the household income.[42]

Policies and practices, both past and present, have contributed to challenges with housing access today, including housing insecurity and racially-segregated neighborhoods. A key example is redlining, a discriminatory practice in which banks denied loans and equal housing opportunities to people of color. Redlining negatively impacted health across generations by pushing families into poor housing stock further away from community-based resources and with greater environmental health risks.[43] In addition, while the GI Bill was supposed to be a path towards financial stability for returning veterans, White-run financial institutions often refused mortgages and loans to Black/African Americans. This lack of ability to secure housing loans eliminated people's ability to develop generational wealth. Covenants (legal contracts in property deeds) that denied home ownership to people of color were also prominent until the Fair Housing Act of 1968. Racial segregation due to the history of redlining, covenants, and discriminatory loan practices is still common to this day, seen most acutely in cities like Milwaukee.

> " It's unreal how much it costs to rent. Landlords are getting away with charging high prices that are out of our range. Then when good people can't afford to rent in a nice area, life feels bad."
>
> – Community conversation participant

Gentrification, known as the transition of neighborhoods from lower to higher value prices, contributes to the lack of affordable housing and displacement of long-time, typically non-White residents and businesses who become priced out of the area.[48] Gentrification impacts other areas of health by limiting access or availability to:

- Healthy food choices.

- Transportation choices.

- Quality schools.

- Opportunities for physical activity (e.g, walking/ bike paths, parks).

- Social networks.

> " People don't have the money to rehab their houses. They make just above the limits to get grants that could help, but not enough to be able to stay on top of major repairs and still provide for the family necessities."
>
> – Community conversation participant

Data show 12% of eligible census tracts in Milwaukee, already the most racially segregated city in America[49], were gentrifying over the 2009-2013 period.[50]

A variety of housing options (i.e., low-income, flexible, short-term and/or immediate, senior, assisted living) were identified by many Wisconsinites as ways to help meet different housing needs across the state. Increased housing rehabilitation and improving relationships between tenants and landlords were frequently mentioned by participants in our community conversations as a way to increase safety in neighborhoods and improve quality of living standards.

Impacts of redlining and segregation play a key role in health and racial inequities seen in Milwaukee today, and took on new urgency in the COVID-19 pandemic. Inequities in COVID-19 case and death rates track closely along prior redlines, as you can see by comparing the 1938 map of Milwaukee showing the Home Owners' Loan Corporation graded neighborhoods (left) with a map of Milwaukee current zip codes (right) with the highest rates of COVID-19 at the outset of the pandemic.[44] Not surprisingly, those areas deemed undesirable for investment due to the residents' skin color were hardest hit by the onset of COVID-19. Many other health conditions are influenced across generations by the environmental, economic, and political decisions that occurred in earlier years.[45]
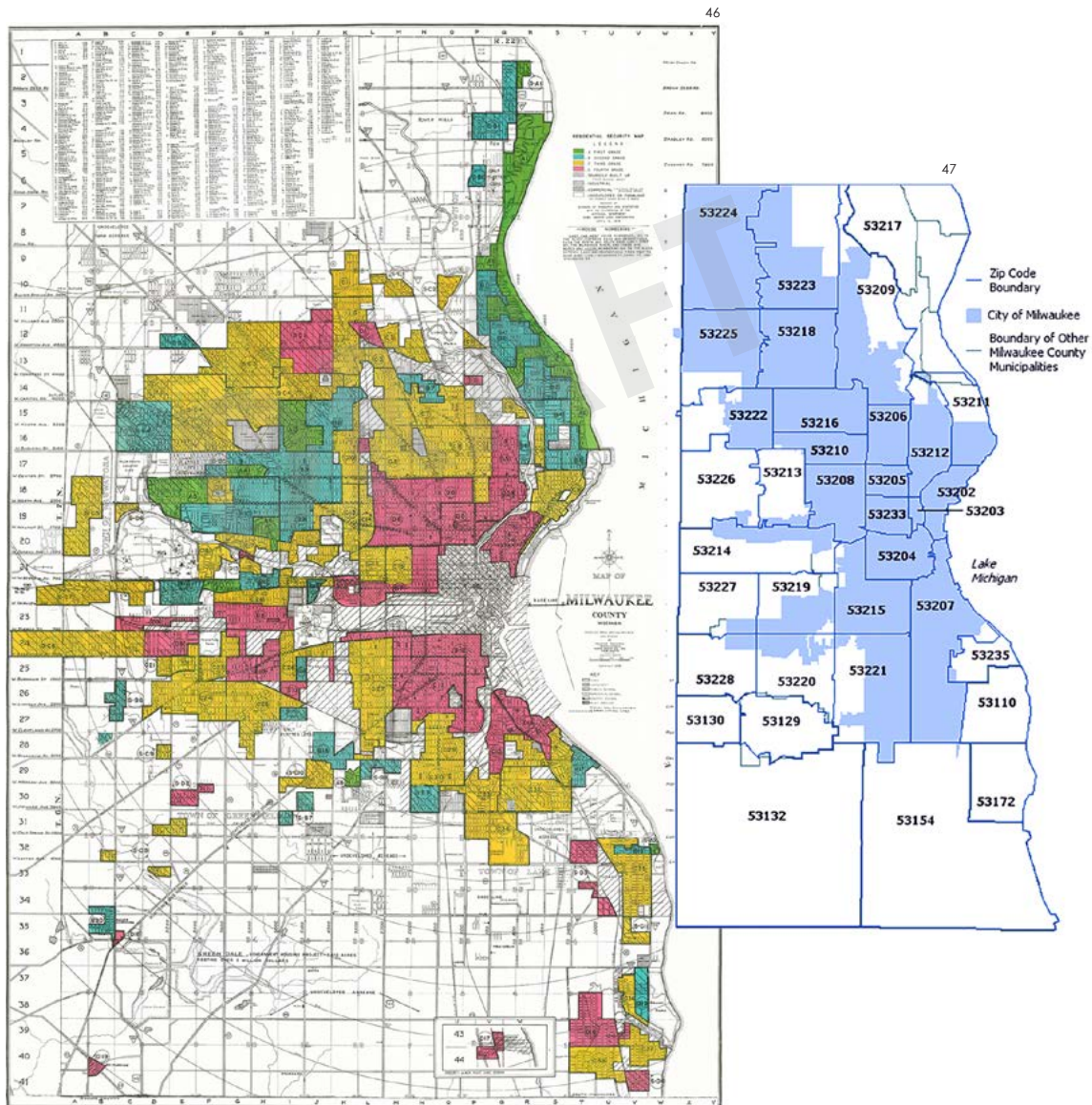
HOMELESSNESS

Wisconsinites identified many challenges to affordable housing and the impacts among populations experiencing homelessness. Perceptions of higher rates of homelessness were associated with a lack of affordable housing options in communities. Key issues related to homelessness and affordable housing include:

- Shelters providing emergency and temporary relief for individuals and families experiencing homelessness are often full.

- More permanent housing options are needed.

- More housing options for individuals and families in substance abuse recovery are needed.

- There are decreasing options for affordable housing.

Data on homelessness is difficult to collect and is often underestimated.[51] Federal data collection methods estimate the number of individuals experiencing homelessness on any given day, known as point in time (PIT) data. While the PIT statistics only identified 4,538 individuals experiencing homelessness in January of 2019, the Institute for Community Alliances used a more comprehensive data collection method, counting 21,632 individuals experiencing homelessness in Wisconsin in 2019.[52]

> " The healing can't begin until you're off the streets."
>
> – Community conversation participant

The Institute for Community Alliances estimates 10% of these individuals are veterans, and 9% are experiencing chronic homelessness. They also estimate 37% of those experiencing homelessness are families with children. However, public school data suggest this too is an undercount, since 18,853 Wisconsin students were reported as experiencing homelessness in 2017-18, with the majority of them "doubled up" with others at night.[53] Up to 40% of homeless youth age 12 to 17 are LGBTQ+.[54] Three percent of new mothers in the Wisconsin PRAMS survey reported experiencing homelessness in the year prior to giving birth, which amounts to almost 2,000 pregnant people each year.[6]

The COVID-19 pandemic highlights the importance of permanent housing solutions and the high risk of exposure among individuals experiencing homelessness, who are often sheltering in close quarters without access to basic necessities and hygiene. Homeless shelters and service providers had to stop providing or limit some services as a result of the pandemic, and some individuals experiencing homelessness were at risk of interrupted mental health or substance abuse services. While there was a pause on evictions during the first months of the pandemic, evictions jumped substantially once the moratorium expired.[55] It is also likely that the number of individuals experiencing homelessness in Wisconsin will grow as a result of COVID-19.

TOBACCO OUTLET DENSITY AND TOBACCO USE

Nationally, smoking remains one of the leading causes of preventable deaths and disability. Tobacco outlet density is defined as the average number of tobacco outlets per 1,000 persons per census tract. Tobacco outlet density, and the distance of tobacco outlets to residential areas and schools, affect tobacco use. High tobacco outlet density, and close residential proximity, are linked to more exposure to on-site marketing and cigarettes consumed per day, frequent purchasing of cigarettes, and lower odds of quitting smoking. In Wisconsin, there were 6,767 sites where tobacco was sold in 2016-2019, leading to 1.2 retailers per 1,000 people.[56] While only 5% of retailers were within 500 feet of a school, 15% were within 1,000 feet. One in three of these retailers also accepted Women, Infant and Children (WIC) benefits, and one in two accepted Supplemental Nutrition Assistance Program (SNAP) benefits at the same location. Tobacco outlets are not evenly distributed. Nationally, there is a higher density of tobacco outlets in urban than rural areas[57], with outlets more concentrated in communities of color, and areas with lower socio-economic status. However, in Wisconsin, the most densely populated areas of the state, Milwaukee and Dane counties, have proportionately lower tobacco outlet densities than many more rural areas. Indeed, eight counties in the Northern region are among the 15 counties making up the top tier of tobacco outlet densities in the state, with six counties in the Western region in the top tier.

TOBACCO OUTLET DENSITIES: TOP 15 COUNTIES COMPARED TO MOST POPULATED COUNTIES

COUNTY	RETAIL DENSITY (PER 1,000 PEOPLE)	REGION
Iron	5.28	Northern
Florence	4.42	Northern
Burnette	3.24	Western
Sawyer	3.12	Northern
Bayfield	2.79	Northern
Vilas	2.63	Northern
Langlade	2.61	Northern
Crawford	2.56	Southern
Washburn	2.44	Western
Buffalo	2.39	Western
Forest	2.33	Northern
Rusk	2.32	Western
Jackson	2.26	Western
Ashland	2.25	Northern
Polk	2.25	Western
Milwaukee	1.35	Southeastern
Dane	0.77	Southern

The rate of smoking in Wisconsin (16%) in 2018 was slightly below the national average (17%).[26, 27]
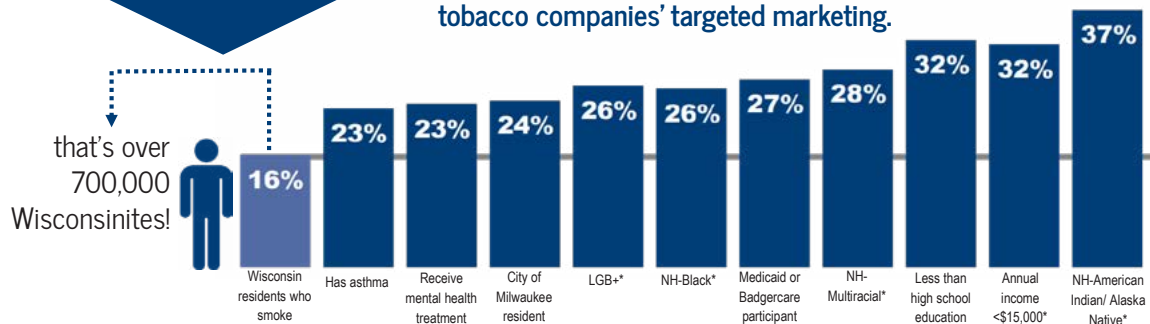
- Native American/American Indian Wisconsinites smoke at the highest rates, followed by multi-racial and Black/African American individuals. Asian and Hispanic people are least likely to smoke.

- More males than females are smoking in Wisconsin.

- People living with a disability, mental illness, or depression are more likely to smoke.

- People participating in Medicaid have higher smoking rates than those on other insurance.

- People who are LGBTQ+ experience higher smoking rates.

- The smoking rate in Milwaukee, Wisconsin's most densely populated area, is significantly higher than the rest of the state. However, people in rural areas overall are more likely to smoke than people in urban areas.

- One in three people with less than a high school education or with a low income (<$15,000) are smoking.

- One in nine Wisconsin women smoke while pregnant.

Adults and Tobacco 2018 [58]

The tobacco industry **targets specific populations**, and has done so for decades. These efforts have resulted in a **public health crisis:** smoking is higher in certain communities than others, especially communities of color.

Smoking levels in these communities show the impact of tobacco companies' targeted marketing.

that's over 700,000 Wisconsinites!

Category	Percentage
Wisconsin residents who smoke	16%
Has asthma	23%
Receive mental health treatment	23%
City of Milwaukee resident	24%
LGB+*	26%
NH-Black*	26%
Medicaid or Badgercare participant	27%
NH-Multiracial*	28%
Less than high school education	32%
Annual income <$15,000*	32%
NH-American Indian/ Alaska Native*	37%

* denotes that data is aggregated from 2014-2018; NH refers to those who identify as non-Hispanic.

Currently, not everyone has a fair and just opportunity to be as healthy as possible. In addition to tobacco industry targeting, obstacles like poverty and discrimination increase rates of retail tobacco use. These factors lead to poor health outcomes for those with fewer resources and less power in society.

Despite the military's effort to change its history of tobacco use, **29%** of U.S. Veterans use tobacco products.
Source: Centers for Disease Control and Prevention

1 in 3 Wisconsin adults **unable** to **afford health care** smoke cigarettes.

A lack of jobs **paying livable wages** puts Wisconsinites at a **higher risk** of smoking cigarettes.

Lack of access to health services has resulted in **70%** of U.S. adults starting to smoke while experiencing **homelessness.**
Source: Public Health Law Center

Adults living with a disability experience **discrimination** that contributes to their smoking rate being **double** that of the general population.

The amount of cigarettes sold in Wisconsin in **2018** could wrap around the Earth **7 times.** Cigarettes are the **most littered** item in the U.S. and disproportionately impact **low income neighborhoods.**

31% of Wisconsin adults with **COPD,** including **non-smokers,** are exposed to secondhand smoke at **home.**

Long distances separating patients from health care contribute to **20%** of people in **rural Wisconsin** smoking vs. **16%** of those in **urban areas.**

Tobacco companies market more than just cigarettes.

Tobacco companies continue to invest in other types of commercial tobacco products (including e-cigarettes and smokeless products) to hook new generations on nicotine.

30% of **LGBT+** adults have **ever** used **e-cigarettes.**
19% of adults have **tried e-cigarettes.**
4.8% of adults use **e-cigarettes.**

7.0% of **rural residents** use **smokeless tobacco.**
7.8% of **males** use **smokeless tobacco.**
4.3% of adults use **smokeless tobacco.**

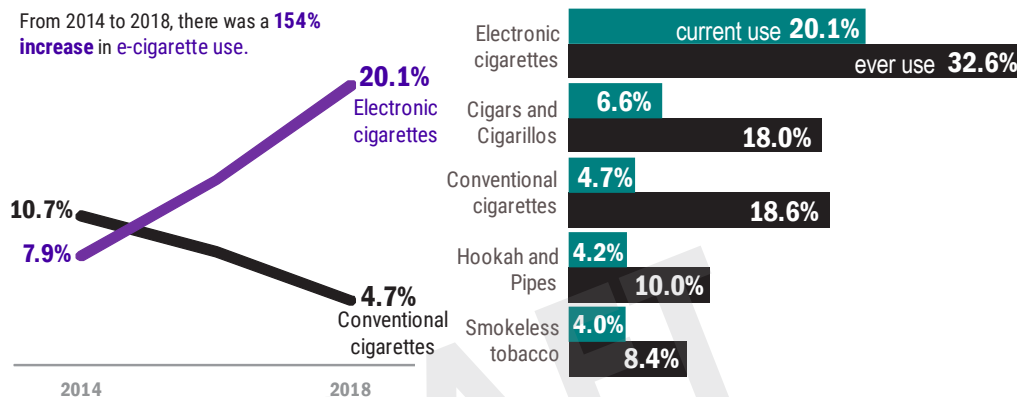**WISCONSIN DEPARTMENT of HEALTH SERVICES**

Recently, the rate for youth smoking of combustible products, such as cigarettes, cigarillos and cigars, has dramatically decreased. However, this decrease has been counteracted by a much larger increase in the rate of e-cigarette and other non-combustible, inhaled tobacco products. In fact, from 2014-2018, there was a 154% increase in high school e-cigarette use.

High School Snapshot
Youth Tobacco Survey 2018 [59]

As conventional cigarette use is declining, e-cigarette use is rising.

From 2014 to 2018, there was a **154% increase** in e-cigarette use.

20.1% Electronic cigarettes

10.7%

7.9%

4.7% Conventional cigarettes

2014   2018

	current use	ever use
Electronic cigarettes	20.1%	32.6%
Cigars and Cigarillos	6.6%	18.0%
Conventional cigarettes	4.7%	18.6%
Hookah and Pipes	4.2%	10.0%
Smokeless tobacco	4.0%	8.4%

1 in 5

Wisconsin high schoolers use e-cigarettes.

1 in 4 of those who have ever used e-cigarettes first tried an e-cigarette before age 16.

16% of e-cigarette users also smoke conventional cigarettes.

89% would not use unflavored tobacco products.

more than **half** of current smokers usually smoke menthol-flavored cigarettes.

19% live in homes where others smoke.
24% rode in vehicles where others smoked in the last week.

76% of high schoolers said it is easy to get tobacco products.

15% of high schoolers have never seen a warning label on a cigarette pack.

88% of high schoolers agree all tobacco products are dangerous.

40% of high school tobacco users want to quit using all tobacco products.

WISCONSIN DEPARTMENT of HEALTH SERVICES   P-01624 (Rev. 01/2019) | Division of Public Health | Tobacco Prevention and Control Program

The costs of tobacco use in Wisconsin are staggering. It is estimated that tobacco use causes more than 7,000 deaths, costs $3 billion in annual health care costs, and $1.6 billion in lost productivity.[60]

ALCOHOL OUTLET DENSITY AND ALCOHOL USE

Similar to tobacco outlet density, alcohol outlet density is the number of alcohol outlets in a small residential area. How close alcohol outlets are to neighborhoods or residential areas plays a major role in alcohol use, specifically excessive use. Excessive alcohol use, defined as binge drinking (>4 drinks in one sitting for women, > 5 for men), or heavy drinking (>8 drinks/week for women, >15 for men), can result in poor health outcomes, such as liver problems, cancer, violence, unintentional injuries, fetal alcohol spectrum disorder, and more. High alcohol density is associated with social harms in neighborhoods, such as damage to property, noise complaints, and disorderly conduct. Higher alcohol density may also contribute to higher rates of underage drinking.[61]

Wisconsin has 7.2 liquor stores per 100,000 population, comparing favorably to the national average of 10.6.[62] However, state rates mask county and sub-county variability. For example, in Milwaukee County, there are 11.7 liquor stores per 100,000 population, putting it well above the state and national averages.[62] Some areas of the state may have low numbers of people per liquor license, which is likely to increase alcohol consumption and negative alcohol-related health outcomes in these areas. A long-standing culture of alcohol use in our state is a driving factor in the number and density of alcohol outlets.

- According to America's 2019 Health Rankings, Wisconsin has the highest prevalence of excessive drinking in the nation.[63]

- Alcohol is the third leading preventable cause of death in the U.S. behind tobacco and poor diet/physical inactivity.[64]

- While Whites experience the greatest number of deaths from alcohol misuse, Native American/American Indians have the highest age-adjusted death rate from liver disease attributed to excessive drinking. Native American/American Indians are also overrepresented in alcohol-related motor vehicle deaths, and alcohol-related suicides.[65]

- Wisconsin continues to perform substantially worse than the U.S. in drinking behaviors. Many Wisconsin cities lead the nation in binge drinking.[66]

- The rate of non-fatal injury from alcohol-related vehicle crashes steadily rose from 2014-18.[67]
  - Males were about three times as likely to be injured as females.
  - The Southern and Western regions had the highest rates of alcohol-related vehicle injury, while the Northeastern region had the lowest.

Underage drinking is a serious issue, contributing to school problems, social problems, unwanted, unplanned and unprotected sexual activity, and long-lasting changes in brain development, among other negative outcomes.[68] Yet, more than 15% of Wisconsin high school students had their first drink of alcohol under the age of 13 in 2017, and more than 30% reported having had at least one drink in the past 30 days. However, both of these statistics have improved since 2009.[26]

SAFE SPACES

Community members in our community conversations emphasized the need to have safe spaces to help individuals and families live their best life. Wisconsinites said that safe spaces were valuable to convene or spend time with other community members, engage in after school activities, and attend social gatherings that are not centered on substance use. Safe spaces were viewed as venues to have healthy and accessible activities for leisure. When asked about the assets or strengths of their communities related to safe spaces, respondents defined safe spaces in various ways. Safe spaces included outdoor areas like rivers, streams and lakes, trails and parks, and community centers and schools. Safe spaces are where people feel safe and free from the potential or threat of violence, judgement, or discrimination. Many community members identified safe community spaces for social connections and healthy activities as a positive factor for their health. Community members named safe spaces such as the YMCA, community recreation sites, senior centers, houses of worship and schools as assets, while others reported lacking these assets. Several Wisconsinites also identified their local library as an asset, providing access to books, music, and movies, as well as free community events.

Faith-based organizations were identified in several community conversations as a community asset. Participants of all ages, from youth to older adults perceived their community's houses of worship as being safe spaces, places to socialize and an area to congregate.

Schools were also viewed by community participants as safe spaces. Community members noted that additional funding provided to schools results in improved spaces. The quality of a community's school and school board leadership was also noted as a community asset.

- After-school programming was described as vitally important to young community members and families.

- For high school community members, club activities such as the Future Farmers of America provide them with a vocational diversion which not only helps them to develop their skill sets, but also supports the farming industry in general.

- School systems supportive of people with developmental disabilities, providing much needed supports, resources, and transitional services, were also noted as community assets.

> " My church is a strong faith-based community, engaged with a lot of community building."
>
> – Community conversation participant

> " Youth find houses of worship important to them personally, even more so than for adults. Faith-based communities provide positive opportunities for youth to engage, including volunteering."
>
> – Community conversation participant

> " (We are) very happy with schools, (we have) good schools; (we have) a good school board."
>
> – Community conversation participant

VIOLENCE

Violence is the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in, or has a high likelihood of resulting in, injury, death, psychological harm, maldevelopment, or deprivation.[69] People may be victimized directly, witness an event, or hear about crime and violence in news reports and from neighbors and friends. Impacts of systemic, community, and individual violence may be concentrated in certain communities. Communities with fewer resources often have a history of trauma, segregation, explicit exclusionary practices, and limited access to care and services. These outcomes are direct consequences of decades of disinvestment in those communities and structures of injustice. Historical events, such as forced displacement of Native peoples, policies denying communities of color access to fair housing, and carving up these communities with highways for "urban renewal" may no longer be occurring, but their effects are still felt today. Funding for schools, home stock availability and ownership rates, and access to jobs and opportunities all tend to be lower in such communities. While the effects of violence can be felt in all communities, they are felt most deeply by communities that have faced a history of trauma and exclusion.

Repeated exposure to crime and violence can lead to negative health outcomes.[70] There are many different ways crime and violence can occur, including, but not limited to:

- Bullying.
- Child or elder abuse.
- Domestic violence.
- Sexual assault.
- Trafficking.
- Law enforcement violence.
- Homicide.

BULLYING

On average, a child in the U.S. is bullied every seven minutes.[71] In 2017, approximately one in five U.S. high school students were bullied on school grounds during the prior year.[26] Wisconsin ranked eighth in the nation for bullying[71], with more than one in three Wisconsin girls and one in four Wisconsin boys experiencing in-person or online bullying.[72] LGBTQ+ students, and those with disabilities, were bullied at higher rates. Students who report being subjected to bullying also report higher rates of experiencing other types of violence, and are more likely to report poor mental health and thoughts of suicide.[72] While the COVID-19 pandemic ended the possibility of bullying on many school grounds temporarily, online bullying has become an increased concern.[73]

CHILD AND ELDER ABUSE

Abuse of children and elders is fundamentally about power. Children and elders are generally perceived as weaker, and less likely to fight back against an abuser. Both children and elders can be abused by neglect, that is, the abuser not providing basic needs such as adequate shelter, food, or clothing, or by active maltreatment, such as emotional, physical, or sexual abuse.

In 2018, there were 37,325 Wisconsin children reported to Child Protective Services for maltreatment.[74] Neglect was the most common type of maltreatment allegation, followed by physical abuse, sexual abuse, and emotional abuse. After investigation and substantiation (finding evidence that abuse was present), 4,971 unique children were found to be child abuse victims in 2018, or two in every 500 Wisconsin children. Females were more likely to be victims than males due to higher rates of sexual abuse. In calendar year 2018, 26 children died from confirmed maltreatment.

Elder abuse is a growing problem across the nation. Approximately one in 10 Americans over age 60 have experienced some form of elder abuse.[75] Some estimates range as high as five million U.S. elders abused each year. Elder abuse is also typically under-reported: one study estimated that only one in 14 cases are reported to authorities.[76] In Wisconsin, there were nearly 3,000 cases of elder abuse reported in 2019.[77] Elders who experience abuse have a 300% higher risk of death when compared to those who have not been mistreated.[78] Estimates of elder financial abuse and fraud costs range between $2.9 billion to $36.5 billion annually.[75,79] Roughly two-thirds of all elder abuse perpetrators are family members.[80]

Domestic Violence

Domestic violence, a pattern of abusive behavior in any relationship that is used by one partner to gain or maintain power and control over an intimate partner, is a common problem.[81] It is estimated that 24 people are physically abused by intimate partners every minute, and nearly half of all Americans have experienced psychological abuse by an intimate partner in their lifetime.[82] Females aged 18-34 generally experience the highest rates of intimate partner violence. In 2017, Wisconsin saw over 30,000 reports of, or arrests for, domestic abuse, a number that has remained relatively steady since 2013.[83] More than four out of five people who have experienced rape, stalking or physical violence by an intimate partner experience long-term impacts such as post-traumatic stress disorder.[82] In 2018, there were at least 47 Wisconsinites killed by their domestic abusers.[84] Children witnessed violence in nearly one in four reported cases.[82] Domestic violence may be the single major precursor to child abuse and neglect fatalities in the U.S.[82]

SEXUAL ASSAULT

The term sexual assault refers to sexual contact or behavior that occurs without explicit consent.[85] In 2017, nearly one in five female high school students in Wisconsin experienced some form of sexual violence.[72] Among freshmen and sophomores, one in 16 female students reported being raped, and that number rose to more than one in 10 for high school juniors and seniors.[72] Rates of sexual and dating violence were higher for students with disabilities and LGBTQ+ students. Nearly one in five women and one in 71 men have been raped in their lifetime.[82] These experiences are vastly under-reported, particularly among men.

TRAFFICKING

Human trafficking involves the use of force, deceit, or coercion to obtain one-time or ongoing labor or commercial sex acts.[86] Millions of people are trafficked worldwide, including throughout the U.S. In 2018, there were 66 human trafficking incidents entered into Wisconsin law enforcement records, with an additional 35 incidents that may have been human trafficking.[87] This is likely a significant undercount, as language barriers, fear of their traffickers, and fear of law enforcement frequently keep victims from coming forward and seeking help.[86]

LAW ENFORCEMENT VIOLENCE

It can be very difficult to talk about violence at the hands of law enforcement. After all, law enforcement officers are charged with upholding the safety of our communities, and we expect them to be good, honest people who are firmly committed to serving all of us. Officers are trained to only use force when they have
no other choice. When police brutality occurs, it weakens the social contract between police and community members.

The death of George Floyd at the hands of Minneapolis police officers was a defining moment for our country and world. As a result of social isolation to try to slow the pandemic, people already had pent up angst and concerns. The fact that his death was captured on bystander video allowed the news to quickly spread through social media. Widespread protests broke out against police brutality, and its disproportionate impact on people of color, primarily Black/African American men. In Kenosha, Wisconsin, the subsequent shooting of Jacob Blake in the back by police in front of his children stoked further protests, and led to further violence when a White teenager killed two protesters and wounded another. While these events, and others like
them, spurred national and international outrage, there are limited data on non-lethal brutality at the hands of law enforcement.

From 2013-19, Wisconsin police killed 111 people, with the majority of the people killed being armed at the time of their death. However, 12 of these people (11%) were unarmed, another six were in a vehicle, and an additional five were killed when it was unclear if they were armed.[88]

- Thirty-two of these victims (29%) had known mental illness, and the mental health status of an additional eight individuals was unknown. Four of the victims were confirmed to be under the influence of drugs or alcohol at the time of their killing.

- The majority of the victims were White, as would be expected with Wisconsin's majority-White population. However, 28 victims (25%) were Black/African American, even though only 6% of Wisconsin's population is Black/African American. Similarly, five (4.5%) of the victims were Native American/American Indian, even though the Native American/American Indian population stands at around 1% of the Wisconsin population.

HOMICIDE

When we think about violence, homicide is generally the greatest fear. Nationally, and in Wisconsin, males die at higher rates from homicide than females. Sadly, 204 Wisconsinites lost their lives from homicide in 2018, and homicide was in the top 10 leading causes of death for those aged 0-45.[89]
As with most health issues, communities of color are disproportionately impacted. In 2016, Wisconsin had the second highest rate in America for Black/African American homicides.[90] The homicide rate for Black/African Americans in Wisconsin was 38 per 100,000 people, nearly twice the national rate for Black/African Americans (20 per 100,000), and more than seven times the overall homicide rate nationwide (five in 100,000). For Black/African American homicide victims, as is the case with all homicide victims, handguns are the primary murder weapon.[90] Research has drawn a direct connection to the number of guns and gun violence.[91] Indeed, the number of guns produced in the U.S. more than doubled between 2009 and 2016, and that spike in gun production coincided with a spike in gun homicides.[92]

TECHNOLOGY AND INTERNET

Access to technology, including broadband internet, results in more opportunities for independent living and positive health outcomes.

INCREASED TECHNOLOGY AND INTERNET USE

Internet use and technology advancement over the last decade has fostered the spread of both useful and inaccurate information. Wisconsinites in our community conversations noted positive impacts of technology expansion in communities and assistive technology use, including through the use of health care technology, to address unmet health needs and positively impact health disparities. Nearly nine out of 10 Wisconsin households have a computer.

UNEQUAL TECHNOLOGY ACCESS

While Wisconsinites in our community conversations recognized the positive impact and potential of increased technology and internet use, they also acknowledged that technology is not accessible by all communities across the state. Rural communities are one group in particular that often lack the infrastructure required to access broadband internet service.

- According to the Public Service Commission, the majority of Wisconsin is underserved for broadband.[93] Underserved areas abound primarily in the central and northern regions of the state, though there are pockets of lack of service in all but 15 of the state's 72 counties.
    - One in 10 households in Wisconsin do not have access to a wired connection capable of 25mbps download speeds.[94]
    - One in seven households in Wisconsin have access to only one wired provider, leaving them no options to switch if they experience intermittent or slow service.
    - Another one in 30 households in Wisconsin do not have **any** wired internet providers available where they live.

Disparities in internet and technology access became particularly acute during the COVID-19 pandemic. Those without the proper technology or sufficient internet service experienced limited access to telehealth services or regular provider check-ins when in-person hospital and/or clinic services became limited. Students and families with slow, unreliable internet access faced the risk of falling behind their peers, being unable to access online school lessons, or being unable to work remotely.

HEALTHY ENVIRONMENTAL SURROUNDINGS

The natural environment consists of air, water, and soil, and the quality of each directly impacts health. The environment is a major factor when it comes to years of life lived, well-being, and quality of life. Therefore, measures must always be taken to keep the environment healthy and safe for communities to thrive where they live, work, pray, and play. Clean air, water, and soil are essential to maintaining a healthy community environment.

AIR

Not everyone has access to clean air where they live.[95] In community conversations, Wisconsinites shared their concerns regarding health inequities to accessing clean air in the state. Racial and ethnic minority groups, especially Black/African Americans, and individuals and families with lower incomes, have greater exposure to poor air quality because of historical segregation resulting in these groups residing near industrial sources and high traffic roads.

Wisconsin's air quality has slightly improved over time, but air quality is still somewhat worse than the U.S. average. Poor air quality can contribute to shortness of breath, coughing, wheezing, chest pain, heart disease, cancer, and other long-term health complications. Air pollutants, including ozone, radon, fine particulate matter (PM2.5), carbon monoxide, secondhand smoke, and more contribute to deaths and disease burden.

OZONE

Ozone comes from vehicle emissions and industrial facilities. It can trigger health problems, especially for people with respiratory conditions like asthma.[96] Ground-level ozone is formed when emissions from cars, power plants, industrial boilers, refineries, and chemical plants chemically react in the presence of sunlight. Ozone can be transported long distances by wind. Warmer temperatures increase ground-level ozone, so levels tend to be higher in summer months.[97]

Ozone levels can be measured by the annual number of days in which the maximum 8-hour average ozone concentration exceeded the Environmental Protection Agency (EPA) standard, or the annual number of ozone days above the EPA standard.

- The annual number of ozone days above the EPA standard increased from 2010 to 2012, then decreased in 2013. However, the annual number of ozone days above the EPA standard increased from 2013 to 2014. In 2014, the annual number of ozone days above the EPA standard was 1.3 days, compared to 0.9 for the U.S. overall.[100]

- For rural counties, the annual number of ozone days above the EPA standard was 0.7 in 2014 compared to 2.2 for urban counties.[100]

- The Western region of the state had zero annual number of ozone days above the EPA standard in 2014, while the Southeastern region had five, more than five times the rate for the U.S. (0.9) overall.[100]

- Counties along Wisconsin's eastern edge tend to have more ozone days above the standard.[100] Scientists hypothesize that cool lake air can trap emissions. During warmer months, emissions can be pushed north by lake breezes.

CARBON MONOXIDE

Carbon monoxide is an odorless and colorless gas produced when fuel is burned. Carbon monoxide is very poisonous and can become a liquid when pressure is applied. Carbon monoxide comes from burning items, such as wood, charcoal, natural gas, gasoline, and other fuels. Generators, appliances, tools, and space heaters that use fuels also create carbon monoxide.[98] Carbon monoxide can be released from tobacco smoke, vehicle exhaust, and fires. Anyone can be poisoned, but certain populations are at particular risk. Individuals suspected of carbon monoxide poisoning exhibit symptoms such as weakness, confusion, shortness of breath, dizziness, and nausea.[99]

- The carbon monoxide poisoning emergency department (ED) visit rates varied in the state from 2014 to 2018, with an average of 8.6 per 100,000 residents.[100]

- People aged 35-44 had the highest carbon monoxide poisoning ED visit rate compared to other age groups.[100]

- Between 2016 and 2018, the carbon monoxide poisoning ED visit rate was higher for males (9.1 per 100,000) than for females (8.0 per 100,000).[100]

- For race and ethnicity, there were striking differences, with Black/African Americans and Hispanics experiencing the highest ED visit rates of carbon monoxide poisoning.[100]

- The Northern region had the highest carbon monoxide ED visit rates of any region.[100]

- Carbon monoxide poisoning ED visits were higher in rural areas compared to urban areas.[100]

Certain hobbies can put individuals at risk for carbon monoxide poisoning. Enclosed spaces with poor airflow (e.g., garages, ice shacks, trailers) are often involved in carbon monoxide poisonings. For example, hunters and anglers may spend time in shanties or tents that are poorly ventilated. Hockey players and figure skaters are also at increased risk of exposure. Wisconsin law does not require facilities (e.g., movie theaters, ice rinks) to have carbon monoxide alarms, but alarm installation is a best practice to reduce risk.

SECONDHAND SMOKE

Smoke from burning ends of cigarettes and smoke breathed out by others make up secondhand smoke. Secondhand smoke contains thousands of toxic and cancer-causing chemicals. Children are at particular risk of being exposed to secondhand smoke.[101]

- In 2018, nearly one in five Wisconsin high school students reported that there was someone smoking tobacco products in their home at least once in the past seven days. This rate has been largely unchanged since 2014.[26]

- More male high school students were exposed to secondhand smoke than female students.[102]

- About one in four 9th grade students were exposed to secondhand smoke at home, while about one in seven 12th grade students were exposed.[102]

- Native American/American Indian youth were exposed at substantially higher rates – nearly 37% experienced secondhand smoke in the home – compared to 28% of Black/African American and 23% of Hispanic students, while less than 19% of White and Asian students were exposed.[102] These rates closely correlate with adult smoking rates in the state.

- The education level of parents contributes to exposure to secondhand smoke. Twenty-seven percent of children whose mother had an education less than a high school degree were exposed, while 36% of children whose father had less than a high school degree experienced secondhand smoke exposure.[102]

These secondhand smoke exposure rates are particularly concerning, given that one in five high school students had asthma.[102]

FINE PARTICULATE MATTER

Fine particulate matter, also known as PM2.5, includes particles like smog, dust, mist, and fumes. These particles are more common near busy roads and in areas with dusty industries. Sources of PM2.5 include vehicle exhaust, forest fires, power plants, industrial processes, and agricultural burning. PM2.5 can settle in a person's lungs or bloodstream after being inhaled.[103] PM2.5 has been linked to heart attacks and asthma attacks.[104]

- In 2014, the annual number of days in which the daily 24-hour average PM2.5 concentration exceeded the EPA standard, also known as the annual number of PM2.5 days above the EPA standard, was 0.9 for Wisconsin compared to 0.5 for the U.S.[105]

- The annual number of PM2.5 days above the EPA standard was 0.6 for rural counties compared to urban counties with 1.3.[105]

- The annual number of PM2.5 days above the EPA standard was highest in the Southeastern region (2.5) and Southern region (1.4), lower in the Northeastern region (0.8) and Western region (0.5), and lowest in the Northern region (0.1).[105]

In most Wisconsin counties, there has been a downward trend in the annual average concentration of PM2.5. According to a 2019 Wisconsin Department of Natural Resources report, these concentrations have decreased by over 35% since the early 2000s.[106]

RADON

Similar to carbon monoxide, radon is a colorless gas. Radon is odorless, radioactive, and comes from soil. Radon can seep from the soil into buildings, including schools, homes, and workplaces. Radon is the main cause of lung cancer after smoking. One out of 10 homes in Wisconsin has high radon levels.[107] However, it is important to note that the test data do not reflect all homes in the state. Homes in high-radon regions are targeted for this testing. The percentage of Wisconsin homes where testing identified a high radon level increased from 43% in 2011 to 50% in 2015.[108]

Individuals who live in homes with high radon levels should pursue radon mitigation (the process of reducing radon from homes) to protect themselves from this environmental hazard. This process prevents radon from entering the home by drawing the radon from below the house and venting it to the outside air. For new homes, radon-resistant construction should be pursued.[108] Radon mitigation and radon-resistant construction support a national environmental health focus to increase homes with operating radon mitigation systems, especially in areas with potentially high radon.[95]
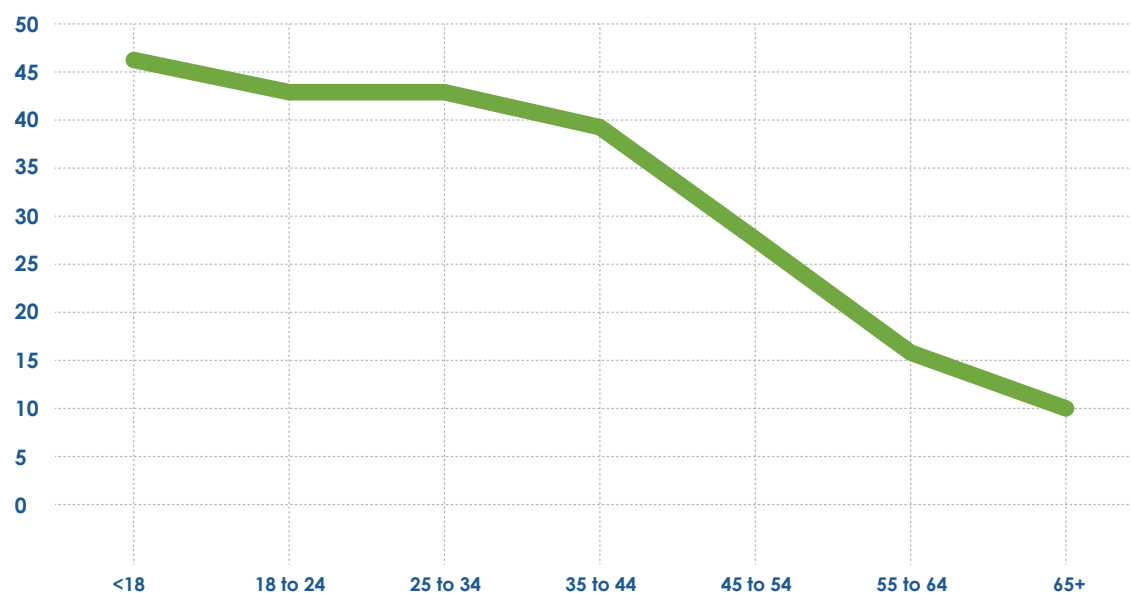
ASTHMA

Asthma is a health condition that makes it difficult for people to breathe. Symptoms include shortness of breath, coughing, and wheezing.[109] There are generally thought to be two types of asthma: allergic asthma, which can be triggered by pollen, tobacco smoke, mold, cockroaches, rodents, and pet fur/dander, and non-allergic asthma, which can be triggered by exercise, stress, and cold weather.[110] Air pollution can worsen asthma symptoms. Although asthma is not contagious, asthma does run in families. This means that if parents have asthma, then their children are more likely to develop asthma. Children, and those who live in urban areas and crowded or unclean conditions, have a higher risk of asthma.[111]

During high pollution days in the summer, individuals with asthma may have more frequent or severe asthma attacks, some of which may lead to ED visits and hospitalizations.[112]

- The ED visit rate has been increasing, from 34 per 10,000 visits in 2014 to 40 per 10,000 visits in 2018.[100]

- Females are far more likely to have an asthma ED visit than males. From 2016-2018, the ED visit rate was 37 per 10,000 for females and 33 per 10,000 for males.[100]

- There are significant racial and ethnic disparities in asthma ED visit rates: Black/African Americans experienced 158 per 10,000 visits in 2016–18, which was nearly three times as high as the next highest rate, 56 per 10,000 for Native Americans/American Indians. Hispanic populations fared a bit better at 43 per 10,000 visits, though that is still twice as high as Whites at 21 per 10,000 visits. Asians had the lowest rate at 13 per 10,000 visits.[100]

- In terms of rural and urban differences, from 2016 to 2018, the ED visit rate was about 28 per 10,000 for rural individuals and 37 per 10,000 for urban individuals.[100]

- The rate of ED visits in the Southeastern region (51 per 10,000), was substantially higher than all other regions in the state for 2016–18. The next highest rates were in the Northeastern and Southern regions (each with 27 per 10,000), followed by the Northern (24 per 10,000) and Western (23 per 10,000) regions.[100]

- Between 2016 and 2018, the rate of ED visits decreased with increasing age: those under 18 experienced a rate of 47 per 10,000 visits, while those over 65 experienced 10 per 10,000 visits.[100]

Asthma ED visit rates (per 10,000) by age, 2016-18 [100]

At the outset of the COVID-19 pandemic, there was great fear among people with asthma that they would be more susceptible to the devastating lung complications that can occur. However, ongoing research suggests asthma either does not increase the likelihood of hospitalization with COVID-19[113], or it may only be increased for those with non-allergic asthma.[114] It is critically important for this research to continue. Researchers also must meaningfully include racial and ethnic minority groups, given the major disparities in asthma burden cited above, to understand the real risk of COVID-19 complications for people with asthma.

WATER

Wisconsin is bounded on the east by Lake Michigan, and the north by Lake Superior. Inland lakes cover approximately one million acres, and 13,500 miles of navigable streams and rivers traverse the state.[115] Wisconsinites in our community conversations described beaches, lakes, rivers, and other waterways as being an asset for their community, providing wildlife habitat, recreation areas, and tourist destinations for everyone to enjoy. Wisconsin communities along the great lakes and Lake Winnebago use these lakes as the source of tap water, while in most other regions, underground aquifers supply our water.[116]

Clean water is essential to support healthy communities. We use water in our daily lives for a variety of purposes including cooking, growing food, cleaning, washing, drinking, and more. Water is used by industries to make products. Water can also foster enjoyment, such as boating, fishing, and swimming.[117] But similar to air, not everyone has access to clean water due to water contaminants.[118]
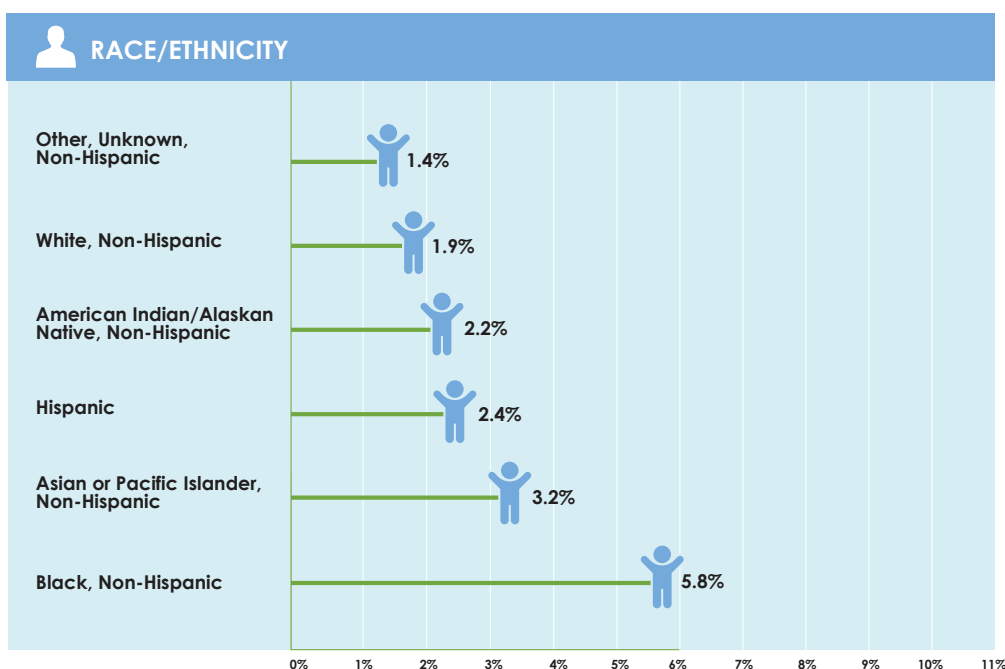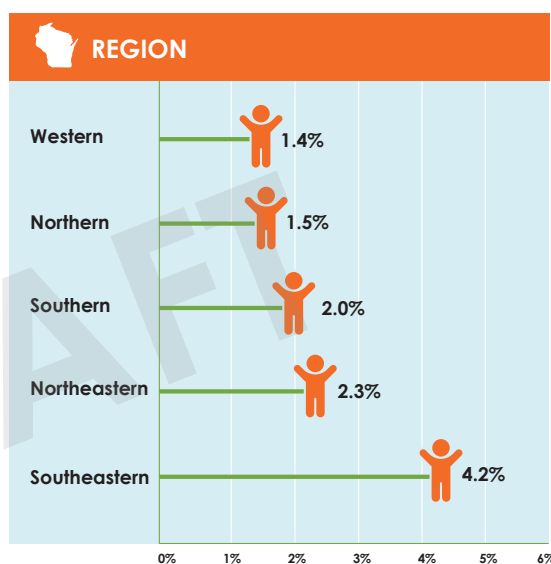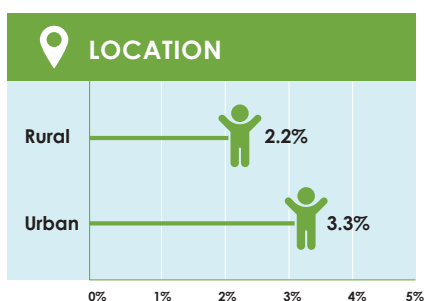
LEAD

Lead is a naturally occurring element that can be found in air, soil, and water. Lead was mined heavily in Wisconsin for use in products like paint, varnish, gasoline, plastics, pipes and more. Industrial sites release lead into the air, which then attaches to soil.[119] Activities like mining and processing metals increase lead levels. From the soil, lead may travel into groundwater.[120] However, lead is toxic. There is no safe level of lead in the human body; even very low levels of lead exposure can decrease IQ and attention span, and cause learning disabilities, developmental delays, and other health and behavioral effects.[120] Lead poisoning causes financial harm as well. The costs to society include increased medical expenses, including via Medicaid, and state and local government case management. Additional costs are lifelong loss of earnings, increased special education expenses, and involvement with juvenile and adult correctional programs by people exposed to lead poisoning as children.[121]

Lead poisoning is often a housing-based disease, especially when it comes to exposure to children. Lead was banned from varnish and paint for residential areas in 1978. But lead does not break down, thus it is still present in older paint and varnish, and lead pipes, and has leached into soil and water. Children are vulnerable to lead exposure because their bodies absorb more lead than adults due to their sensitive nervous systems. Children, especially babies, are more likely to be exposed to lead from putting objects in their mouth, transferring lead chips from old paint, or dust from porches and dirt, or ingesting lead from drinking water or breast milk.[120] Fixing housing is the primary way to protect children from exposure to lead.[122] Reducing or removing lead-based paint and lead pipes in older homes would eliminate childhood lead poisoning in Wisconsin.

Wisconsin is among the top 10 states for lead poisoning in children, and childhood lead poisoning rates remained largely unchanged over time from 2014 to 2018.[123] Lead poisoning does not affect all children equally. In 2018, there were noticeable differences for the incidence of lead poisoning cases among children under six years old, depending on their race and ethnicity. Black/African American children experienced the highest poisoning rates, at nearly three times the rate for White children. Childhood lead poisoning cases were higher in urban than rural areas, and were highest in the Southeastern region, and lowest in the Western region.[124]

Incidence of Newly-Identified Lead-Poisoned Children in the state, 2018[124]

LOCATION

Rural	2.2%
Urban	3.3%

0% 1% 2% 3% 4% 5%

5.8%

Black, Non-Hispanic children experience the highest rate of lead poisoning in the state

REGION

Western	1.4%
Northern	1.5%
Southern	2.0%
Northeastern	2.3%
Southeastern	4.2%

0% 1% 2% 3% 4% 5% 6%

RACE/ETHNICITY

Other, Unknown, Non-Hispanic	1.4%
White, Non-Hispanic	1.9%
American Indian/Alaskan Native, Non-Hispanic	2.2%
Hispanic	2.4%
Asian or Pacific Islander, Non-Hispanic	3.2%
Black, Non-Hispanic	5.8%

0% 1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11%

Children from low-income families across Wisconsin are at greater risk for lead poisoning as a result of limited housing options. These limited options often result in families living in older housing stock, with greater probability of having lead paint and pipes. Children enrolled in Medicaid were nearly three times as likely to have lead poisoning than children not enrolled in Medicaid.[125] The combination of low home ownership, high poverty levels, and residential segregation among communities of color interact to produce significant inequities in lead exposure.[126]

Number of children under age 6 with lead poisoning (blood lead level >5 μg/dL) per zip code, 2015-2019.[127]

Each dot represents one lead poisoned child (blood lead level >5 μg/dL) in the zip code that corresponds to the Zip Code Tabulation Area (ZCTA) on the map. Dots are randomly placed within the corresponding ZCTA.
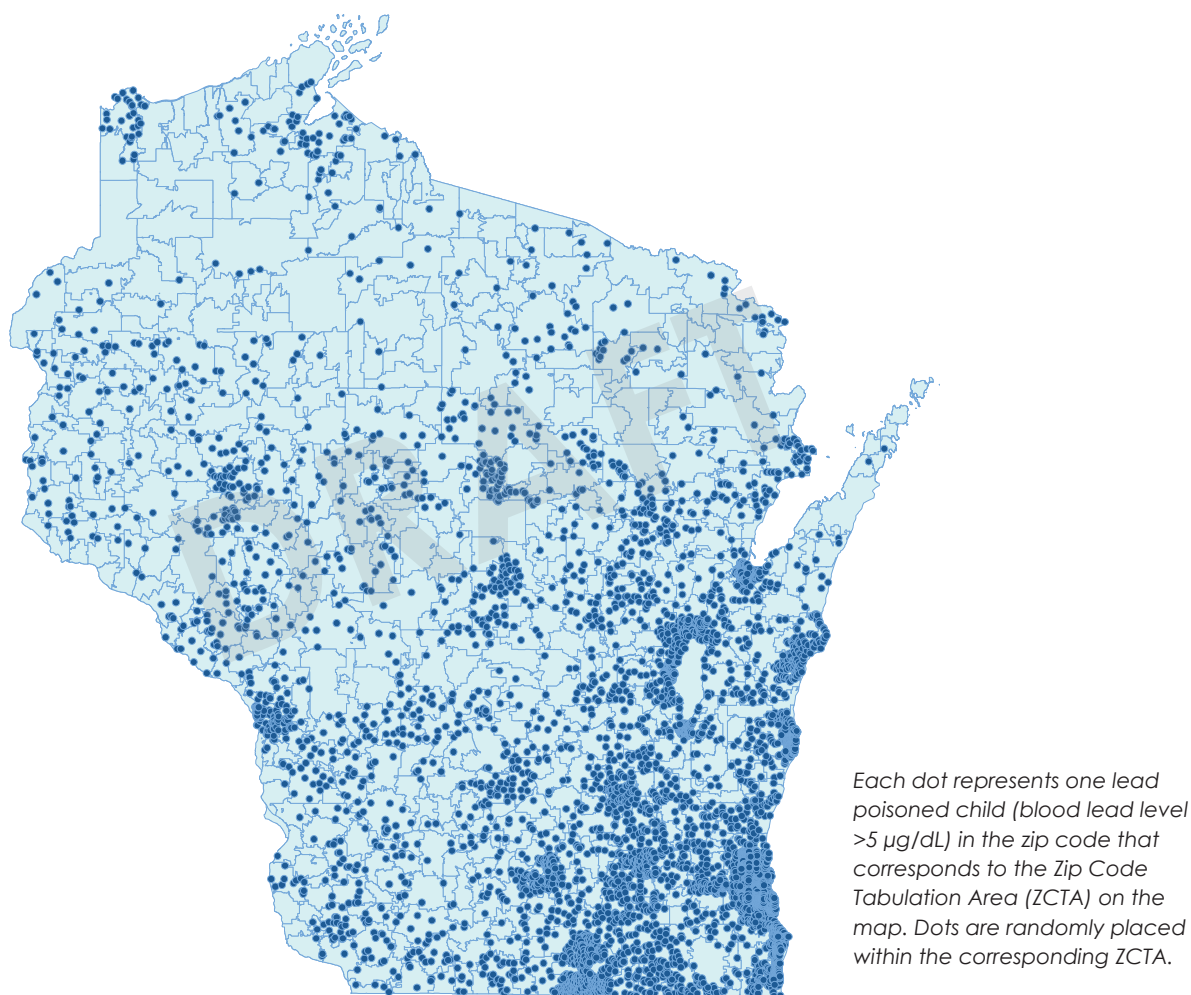
Since lead poisoning highly affects children from low-income and minority populations, many children with lead poisoning are never identified and do not receive help to reduce lead exposure. This increases their risk for health problems linked to early exposure to lead. Each year, only about one in five children under six years old are tested for lead poisoning.[124] The Wisconsin Blood Lead Screening Guidelines recommend targeted testing of children under six who are at greatest risk for lead poisoning.[128] This includes testing all children living in the cities of Milwaukee and Racine, due to a high amount of older housing stock. Children enrolled in Medicaid are required to receive a blood lead test at one and two years of age, and at 3–5 years old if not previously tested. In spite of this requirement, only 70% of 1-year-olds, 55% of 2-year-olds, and 20% of 3–5-year-olds not previously tested actually received a test for lead exposure in 2017.[124]

NITRATE

Nitrate occurs naturally at safe and healthy levels in some foods, and comes from natural processes, such as plant decay.[129] However, when nitrate levels get too high, they can cause multiple ailments, such as thyroid disease and colon cancer. In infants, high nitrate levels can result in Blue Baby Syndrome (which negatively affects how blood carries oxygen), neural tube defects. and can even be fatal. Nitrate is used in many fertilizers, and arises from sewage systems and animal waste.[130] Heavy rains can move nitrates from fields and holding ponds into the water supply, where nitrate levels can rise higher than the safe levels established by the U.S. EPA.[131] From 2002 to 2018, the average value for nitrate found in private wells in Wisconsin was 2.8 mg/l, which is under the EPA maximum contaminant level of 10.0 mg/l. However, this average masks regional variability. Moving north to south in Wisconsin, the average value increases, with the south central area of the state averaging between 5 and 10 mg/l. While public drinking water supplies are regularly tested and nitrates are removed if levels are too high, private wells do not have the same testing requirements. It is up to private well owners to test their well water regularly, and take action when nitrate levels get too high.[132]

ARSENIC

Arsenic is a naturally occurring mineral that can be found in water, soil, and bedrock. Arsenic is close to tasteless and has no odor. Arsenic has multiple commercial purposes. In manufacturing, arsenic is used to make other metals, wood preservatives, electronic components, and glass. Drugs that treat parasite diseases also contain arsenic. Exposure to arsenic has been linked to certain types of cancer, yellowing of the skin and nails, problems with the nervous system, high blood pressure, and diabetes. Prenatal and early childhood exposures can be particularly damaging.[133]

Arsenic occurs naturally in some Wisconsin drinking water supplies. Arsenic has been found in groundwater throughout Wisconsin and is most present in the Northeastern part of the state. Homes that are near waste sites where pesticides, electronic components, and paint are disposed of may also have arsenic in the drinking water.[133]

Between 2002 and 2018, the average value of arsenic found in private wells in Wisconsin was 2.8 parts per billion (ppb). However, this average masks regional variability.[134] Wisconsin drinking water standards for arsenic are set at 10 ppb, or 10 micrograms per liter (µg/L). Levels higher than this have been found in multiple community municipal wells across the state, with more contaminated wells found in the Southeastern portion of the state.[135]

FLUORIDATED WATER

Fluoridated water has been associated with many benefits, such as reducing cavities and keeping teeth strong, resulting in better dental health. Community water fluoridation is recognized as a cost-effective, safe and equitable method to improve the oral health of communities.[136] From 2013 to 2017, more than 87% of Wisconsin's population was served by a fluoridated public water system.[137] In 2017, Wisconsin was ranked as 19th in the nation for this metric.[138] The percentage of Wisconsinites with fluoridated water is higher than the national percentage and exceeds the Healthy People 2020 goal of 80%. However, the percent of the population in the state served by a fluoridated public water system has been decreasing over time.

CLIMATE AND WEATHER

Many Wisconsinites participating in our community conversations identified the changing climate as a key threat both to their community's built environment, and to maintaining health. Climate has an impact on a variety of health factors such as: food and waterborne illnesses, injuries, heat-related illness, breathing problems, and food insecurity.[139]

CLIMATE

According to climate change projections, the number of extreme heat days (days above 90 degrees F) is expected to approximately triple by mid-century in Wisconsin.

Day Per Year With TMAX > 90°F, 1981-2010 Conditions (Historical)

Day Per Year With TMAX > 90°F, 2041-2060 Conditions (RCP45)
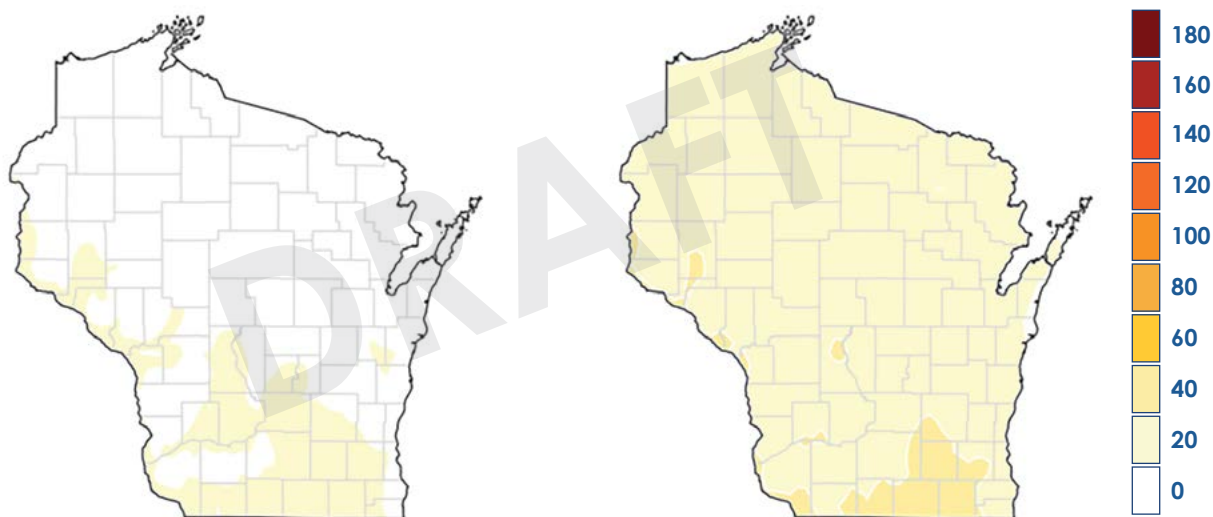
Source: Center for Climate Research, Nelson Institute, University of Wisconsin - Madison

Heat stress occurs when the body is unable to cool itself enough to maintain a healthy temperature. Normally, the body cools itself by sweating, but sometimes sweating isn't enough to keep body temperature from rising. Heat stress is more common during the summer, when higher temperatures and outdoor work occur. Heat stress includes a range of symptoms including heat rash, heat syncope (fainting), heat cramps, and heat exhaustion. Certain populations, such as people who work or recreate outside, adults who are socially isolated, and people without access to air conditioning, are at increased risk of heat-related illness. Counties with higher heat index values also have more cases of heat-related illness. The number of emergency department (ED) visits for heat stress has been steadily rising over time since 2014.[105]

Emergency Department Visits for Heat Stress, Age-Adjusted Rate per 100,000 [105]
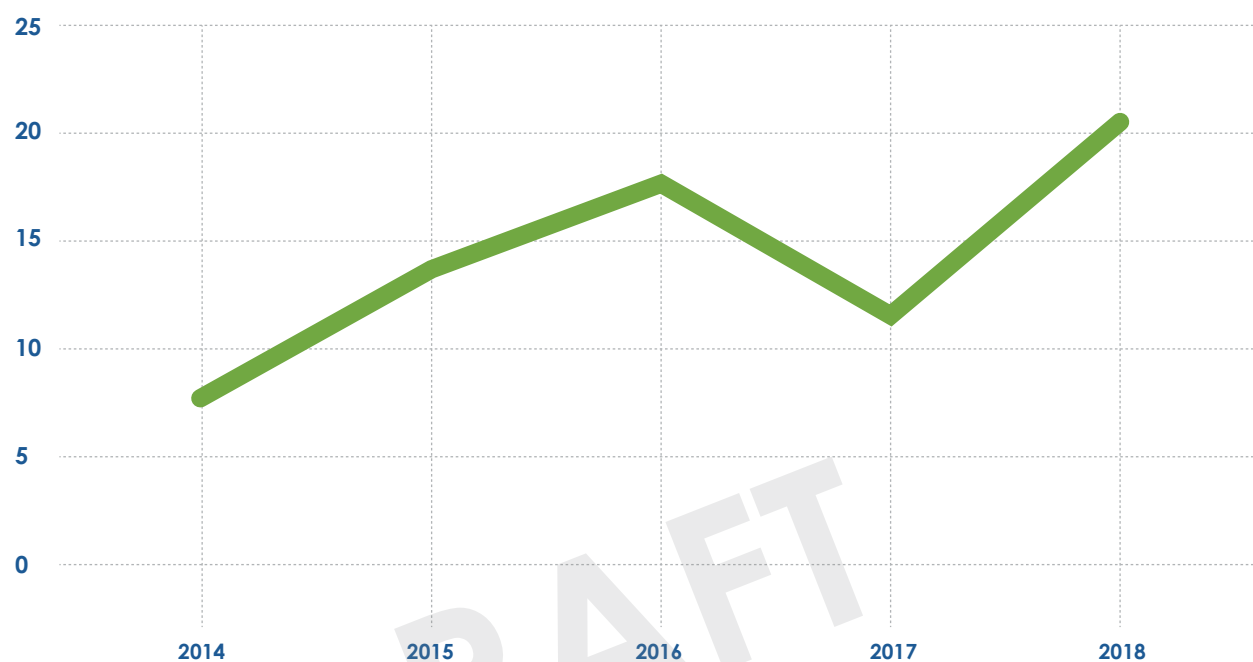
Between 2016 and 2018[105]:

- Heat stress ED visits were higher in rural areas compared to urban areas; the rural area rate was almost double that of the urban rate.

- The Southern region had the highest rates of any region.

- The Native American/American Indian population experienced the highest rate of heat stress.

- People aged 25–34 were most likely to have heat stress ED visits.

- Males had higher rates of heat stress ED visits than females.

Forest fires, which often occur during periods of drought and high heat, have been variable, but base numbers of fires have remained relatively constant over the past century.[140] Aside from a massive loss of acreage in 1930, the number of acres destroyed by fire in the state have also remained relatively flat.[141]

This warming climate impacts ice cover on the Great Lakes and inland lakes.[142] Most lakes are trending towards later formation of full ice cover, and that ice is melting sooner. One of the most studied lakes in the country, Lake Mendota, in the heart of Madison, is averaging approximately 30 fewer days of ice cover than 150 years ago.[143] Warming lakes lead to more algal blooms, impacting fishing and recreation, and threatening drinking water supplies. Warmer winters impact winter recreation such as ice fishing, ice skating, snowmobiling, skiing, and snowboarding, which affect local economies dependent on these activities.[142]

UNPREDICTABLE WEATHER

Unpredictable weather is seen with changing trends in climate, like severe thunderstorms and tornadoes, and more precipitation. Many Wisconsinites, including those in both rural and urban areas, have been affected by recent major flooding events.

Wisconsin has experienced an uptick in the number of days weather stations reported at least 4 inches of rain in the prior 24 hours.[144] Most of this trend is due to a sharp increase in heavy rain events since 2012. The impact of these rains is magnified by the increase in paved surfaces, which causes more rainwater to run along road surfaces, rather than seeping into the ground. This change in how rainwater is absorbed increases the strain on storm sewers, and influences the impact of rains on river systems and lakes.[145] Floods negatively impact Wisconsin's robust agricultural practices, homes, and businesses, and can increase disease-bearing mosquito populations.

Historical Change in Annual PRECIP (%) from 1950 to 2018 [146]
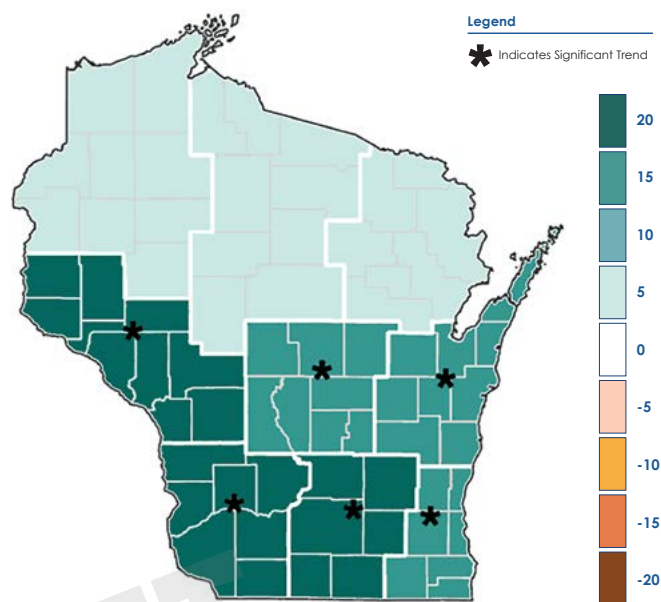
Source: Center for Climate Research, Nelson Institute, University of Wisconsin - Madison
Data: NOAA NCDC nClimDiv

- Wisconsin experiences an average of 30 days with thunderstorms along the Lake Michigan shore, to around 40 over the southwest third of the state.[147]

- The number of tornadoes in Wisconsin has generally been increasing over the last 70 years, though the proportion that are considered "strong" or "violent" has decreased.[148]

- The National Weather Service issues about 29 severe thunderstorm watches per year for Wisconsin, and about 11 tornado watches per year.[147]

- The southwestern part of the state averages about one day per year with a tornado. This average is 0.7 days per year in the Madison area, 0.6 days per year for the Milwaukee area, 0.4 days per year for the Green Bay area, and 0.2 days per year for northern Wisconsin.[147]

- The National Weather Service issues, on average, one to two tornado warnings and five to 10 severe thunderstorm warnings per county per year in the southern counties, and fewer of each in northern counties.[147]

The negative health impacts of climate affect some Wisconsinites more than others. Children, the elderly, women (especially pregnant and postpartum women), people with preexisting mental illness, the economically disadvantaged, homeless individuals, and first responders are more likely to experience distress and other adverse mental health consequences from exposure to extreme weather disasters.[149] Communities that rely on the natural environment for food and livelihood, as well as populations living in areas more susceptible to specific weather events, are at increased risk for adverse health outcomes.

Carbon dioxide released by the burning of fossil fuels contributes to extreme weather events.[150] Efforts to reduce reliance on carbon-based energy has the potential to help stabilize climate and weather patterns affecting the state. The Governor's Task Force on Climate Change is working to make the state's energy production 100% carbon-free by 2050.

ECONOMIC OPPORTUNITY

In order for people to live healthy lives, they must have sufficient economic means. It is only with sufficient money that people can realize their full personal potential. The ability of people to earn money relies on a number of factors, including their physical and mental condition, the education they receive, the environment and community they live in, and their family structure and resources. Each of these is interdependent, meaning when all factors are optimal, people have the greatest opportunity for economic success.

EMPLOYMENT AND INCOME

A person's job impacts their economic stability, the neighborhoods where they can live, and their ability to meet their basic needs like food and shelter. Some jobs provide benefits, such as health insurance and paid parental and sick leave, in addition to income. Workplaces also provide social networks, and a sense of pride and accomplishment. Yet, not everyone has equal access to employment. Unemployment (available to work, jobless, and looking for a job) was slightly higher in 2013-2017 in urban than rural areas, and was much higher among individuals with disabilities than those without. The higher level of education one has, the lower their chances of being unemployed. There are obvious racial and ethnic differences in unemployment, with Black/African American individuals experiencing the highest rates of unemployment, followed by those of two or more races, Native American/American Indians and Hispanics, with Asian and White individuals having the lowest unemployment rates in Wisconsin.[151]

> " This community does not have jobs that have affordable wages."
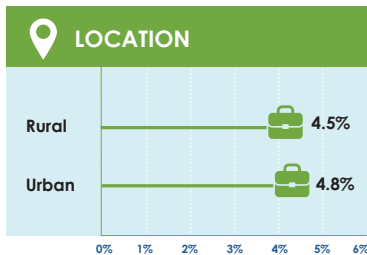>
> – Community conversation participant

> " Though there is manufacturing-based employment with decent pay, it is not often conducive to supporting families as far as flexibility and long shifts; this leads to difficulty in finding care for children. Employment can also mean long commutes."
>
> – Community conversation participant

During the COVID-19 pandemic, Wisconsin, like most areas of the country, suffered immense job losses. Wisconsin lost 439,400 total non-farm and 385,900 private-sector jobs from March 2020 to April 2020.[152] The state's unemployment rate grew from 3.1% in March 2020 to 14.1% in April. By the end of July, the number of unemployment claims reached 4.2 million.[153] The safety net did not help everyone equally. Due to state law, individuals receiving Social Security Disability Insurance (SSDI) who worked part-time before the pandemic and lost their jobs were at first unable to access state unemployment benefits; this issue was not rectified until four months after the onset of the pandemic response.[154] Wisconsin's unemployment benefit payment is the 40th lowest in the country.[155]

Unemployment Rate in Wisconsin, 2013-2017 [151]

LOCATION

Rural	4.5%
Urban	4.8%

0% 1% 2% 3% 4% 5% 6%

14.4%

Black, Non-Hispanic individuals represent the highest rate of unemployed

EDUCATION

4-year degree or higher	2.2%
Some college or technical school or Associate degree	4.3%
High School diploma or GED	6.4%
Less than High School	10.9%

0% 1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11% 12% 13% 14% 15% 16%

RACE/ETHNICITY

Black, Non-Hispanic	14.4%
Other race, non-Hispanic Two or More Races, non Hispanic	9.1%
American Indian/Alaskan Native, Non-Hispanic	7.7%
Hispanic, any race	6.7%
Asian or Non-Hispanic	4.6%
White, Non-Hispanic	3.9%

0% 1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11% 12% 13% 14% 15% 16%

DISABILITY

Has a disability	11.2%
Does not have a disability	4.3%

0% 1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11% 12% 13% 14% 15% 16%

ACCESS TO QUALITY EMPLOYMENT

During the Great Recession of 2007-9, Wisconsin experienced massive job losses. These losses were not equally distributed across the state, nor across all types of employment.[156] Much of the northern region of the state was hardest hit, with people in jobs requiring less education and training more likely to be laid off. It took more than seven years to fully rebound from this recession, though that recovery was incomplete and inconsistent across regions and employment sectors.[157]

Stable and quality employment improves quality of life and makes it easier to make healthy choices. The lack of quality, family-supporting jobs was an overwhelming theme from Wisconsinites in our community conversations. While part-time jobs may be available, well-paying full-time jobs are lacking; this causes community members to have to take multiple part-time jobs with limited job security and without benefits, like parental leave and health insurance. There were 63,600 Wisconsinites in 2019 who were employed part time for economic reasons (also known as involuntary part time).[158] These individuals were working part time because of insufficient work or business demand, or because they were unable to find a full-time job. Local business closures and limited access to affordable and high-quality child care were also cited by participants in our community conversations as barriers to employment. Other employment-related issues noted were lack of transportation to jobs and equal pay, largely focused on equal pay for women.

> " When looking for a job, it is very restrictive if you don't have a car."
>
> – Community conversation participant

> " People don't know where to go to get skills for better jobs. They don't want to stay at their current jobs because it doesn't pay enough to make ends meet. College costs too much for them."
>
> – Community conversation participant

BIASES IN EMPLOYMENT

Wisconsinites in our community conversations noted there were often not enough people in the area with the required education matching requirements for available jobs. Available jobs in the community are often not geographically located where people live and require skills or training different from what the local workforce offers. Most new jobs in Wisconsin are in urban areas[159], yet there is more entrepreneurship in rural areas.[160] However, broadband accessibility can hamper entrepreneurial pursuits.

Wisconsin residents shared that institutional biases, including racism, language, and legal barriers have negative impacts on their health and quality of life. Wisconsinites in our community conversations reported interpersonal discrimination and identity-based verbal abuse. A 2017 analysis examined multiple field experiments of "callback" rates – invitations to interview after submitting a résumé – by White applicants relative to Black/African American or Hispanic/Latino applicants.[161] This study supports the anecdotal reports from our community conversation participants: the authors showed Whites receive on average 36% more callbacks than Black/African Americans, and 24% more callbacks than Hispanic/Latinos. The authors identified no change in racial discrimination for Black/African Americans over the past 25 years, and only a slight reduction for Hispanic/Latino individuals.[161] In the 2014–2016 Survey of the Health of Wisconsin, less than 2% of White Wisconsinites indicated they have been discriminated against due to their race or ethnic background, while one in three people (32%) who identify as non-White have been.[162]

- Unemployment rates in 2013-17 were nearly twice as high for Hispanic/Latino Wisconsin residents as for Whites; Black/African American Wisconsinites suffered unemployment rates more than three times higher than Whites.

- Job opportunities are different depending on disability. According to the Bureau of Labor Statistics, unemployment rates were higher for people with a disability than for those without a disability regardless of educational attainment, and those with a disability were almost twice as likely to be employed part-time as people with no disability. People with a disability were also more likely to be self-employed, thus unable to take advantage of employer benefits, like health insurance and retirement plans.[163]

> " There are jobs with good pay but you need education."
>
> – Community conversation participant

- Wisconsin incarcerates people of color disproportionately, and this has a detrimental impact on hiring.[164] Unemployment for the formerly incarcerated is five times higher than for the rest of the population.[165]

  - Black/African Americans are overrepresented among the prison population six-fold compared to their overall population (36% of prison admissions, 6.7% of population).[166]
  - Native American/American Indians are overrepresented among the prison population five-fold (5% of prison admissions, 1.2% of population).[166]

STAGNATING WAGE AND INCOME GROWTH

The share of wages and salaries relative to total personal income in Wisconsin has declined from 63% in the 1960s to around 50% in 2017.[167]

- Wisconsin's wages and salaries grew slower than in the country as a whole during 2017 (3.4% vs. 4.6%)[167], ranking 33rd in the nation by 2019.[168] Average household income growth was slower in Wisconsin than nationally from 2016 to 2017.[169] Real growth in average household income since the last recession was likely weighted towards wealthier households. Wealthier households have income streams, such as assets and property wealth, which grew faster than employment earnings over the last several years.

> " Minimum wage is not livable wage… For a single parent, rent for a two bedroom isn't affordable."
>
> – Community conversation participant

- Black/African American households in Wisconsin have the lowest median income ($29,000), at about half that of White households ($58,000).[170] Wisconsin's Black/African American median household income is more than $10,000 lower than the Black/African American national median ($41,692).[171]

> " Wages are lower than they should be. Employers complain about the difficulty of hiring and keeping qualified workers, but then don't raise wages or improve working conditions."
>
> – Community conversation participant

OCCUPATIONAL INJURIES

In 2017, Wisconsin's worker injury rate remained in the highest quartile of reporting states and territories.[171a] Wisconsin's downward trend in work-related injury rates has continued from the previous decade, but has slowed to a 10% reduction over the last 5 years (2013-2017) compared to the 45% drop in rates over the 10 preceding years (2003-2012). Wisconsin's rate of 36 injuries/1,000 full-time workers in 2017 remains well above the U.S. average rate of 28 injuries/1,000 workers. There were 41 farm-related deaths in Wisconsin in 2017, and 34 in 2018, up from an average of 27 deaths per year from 2004-2006. Most of these deaths were in individuals over 65.[172]

INCOME INEQUALITY AND ECONOMIC DEVELOPMENT

For some people, income is almost entirely connected to wages earned. For others, however, additional sources of income, such as from family assets, property, or investments contribute to household wealth.

Poverty is measured based on household income. There are federal guidelines for income ranges that indicate poverty based on the number of people living in the household.[173] These guidelines are based on how much money it costs to purchase basic needs on average across the continental United States. It is important to note that federal poverty measures were developed in the 1960s, and have not kept pace with the increasing costs of housing, health care, and other essential household needs.[174]

" Small towns and farms are going out of business. There is a lack of economic development in rural areas of the county."

– Community conversation participant

Although statewide assessments of poverty in Wisconsin are consistently slightly lower than the national average, this obscures the reality of daily living for many Wisconsinites.[175]

Poverty in the US and Wisconsin, 2000-2018 [176]

Legend
US
WI
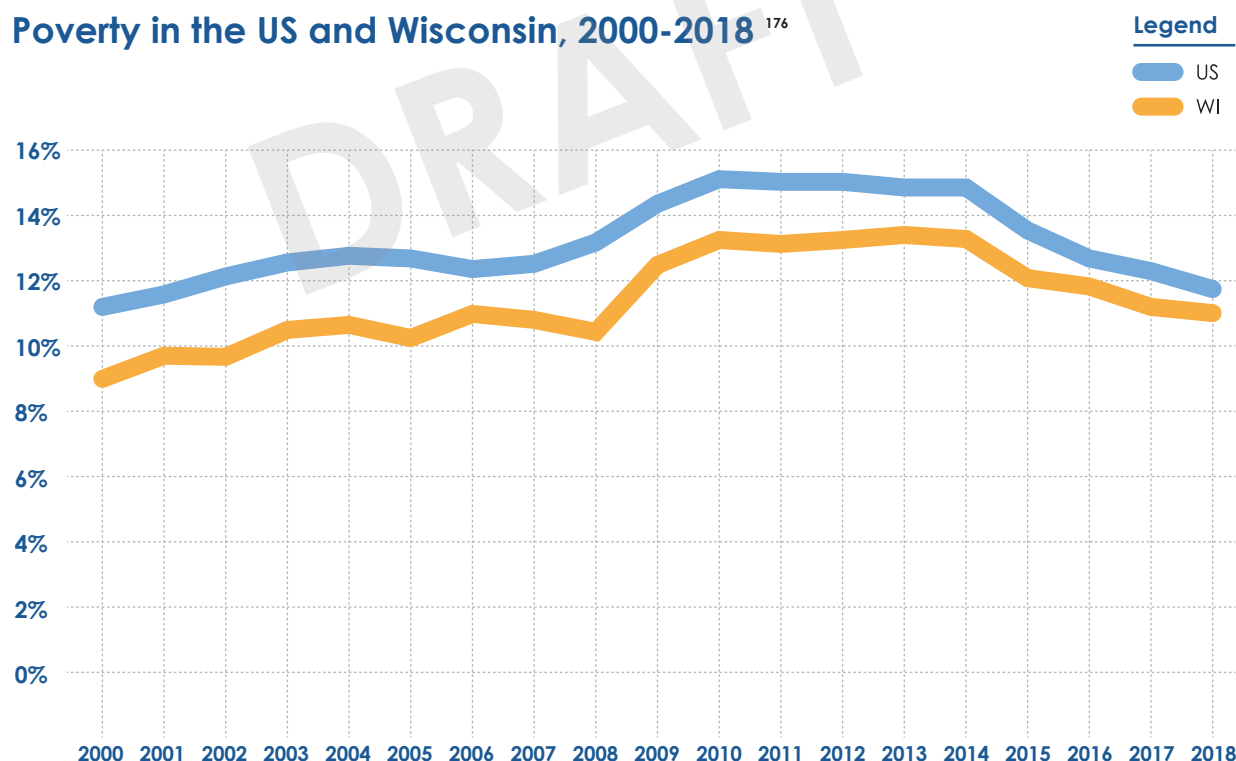
Poverty also differs by age: approximately one in six children under age five are living in poverty in Wisconsin, while that number drops to one in 12 for individuals over age 35.[175] As is seen in unemployment rates, Black/African American Wisconsinites experience the highest levels of poverty, at three times the rate as for White Wisconsin residents. While the average income per capita in 2017 was approximately $6,000 less in rural Wisconsin than in urban areas, because the cost of living is also generally lower, poverty rates are nearly equal between rural and urban areas.[177]

Poverty in Wisconsin by Age Range, 2017 [175]
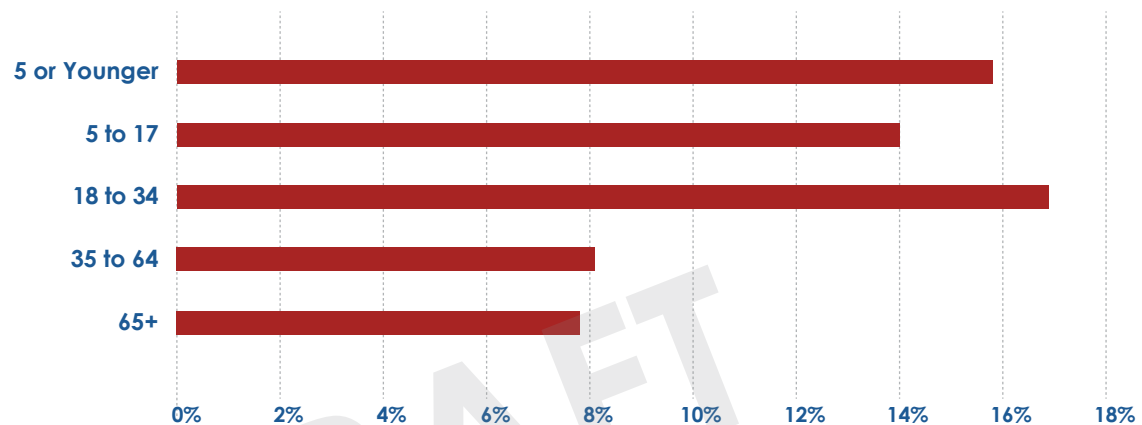
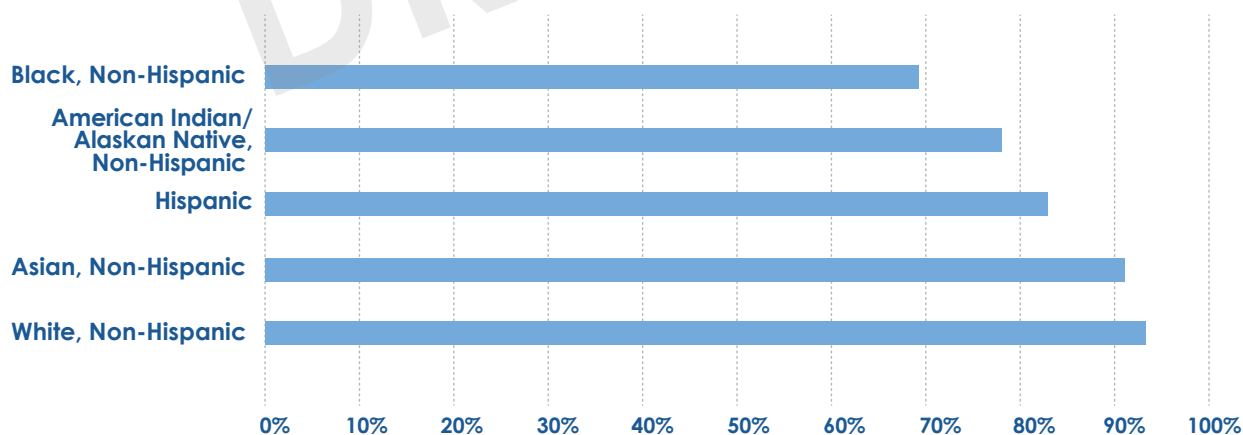## Poverty in Wisconsin by Race/Ethnicity, 2017 [175]
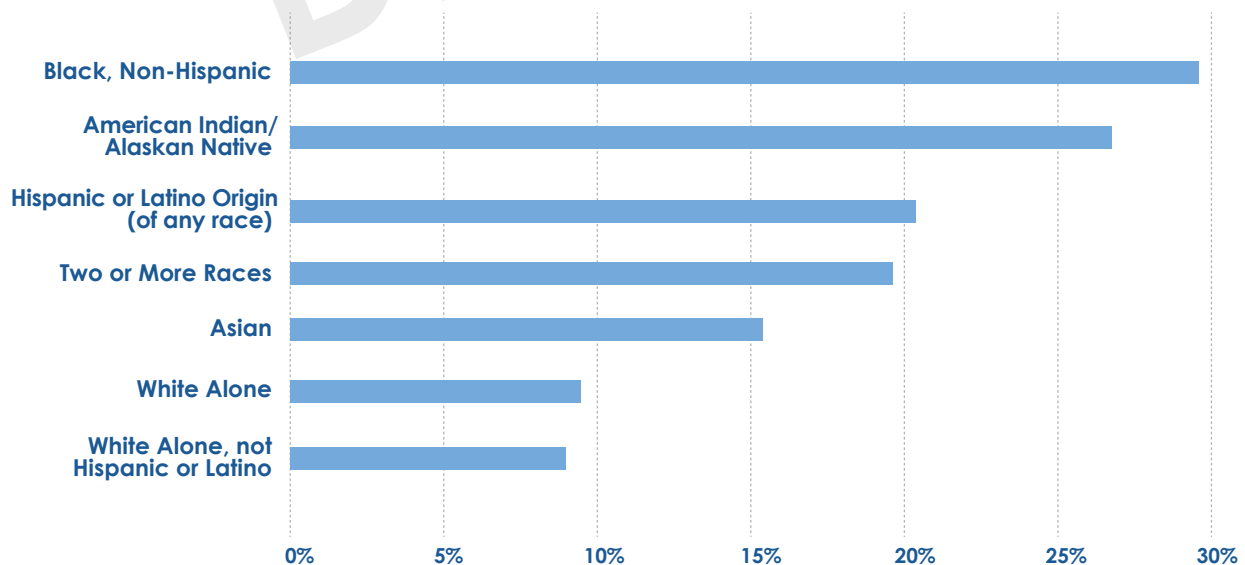
EDUCATION

Education provides a foundation for accessing stable and quality employment and other opportunities to live a healthy life. Yet, not everyone has the same access to educational opportunities. The way public education is funded — primarily through property taxes tied to property values and community wealth — creates inherent inequities in education. These inequities impact educational opportunities, such as course and class supply availability and the ability to recruit experienced teachers, ultimately limiting certain students from reaching their full potential.[178] Children with disabilities often cannot access sufficient supports to be their best selves.

> " I have two children with disabilities. Multiple balls in the air. Multiple meetings. The lack of workers to provide the services my family is approved for – you just can't – you have to overpay to get the resources you need. If you don't have education, what happens? If we pass the buck continuously, who hurts the most? The child does."
>
> – Community conversation participant

Prior to the COVID-19 pandemic, statewide graduation rates were relatively constant — between 88-90%.[179] However, not everyone has the same opportunity to graduate from high school. Only seven in 10 Black/African American students graduate, and about eight in 10 Native American/American Indian and Hispanic/Latino students graduate, compared to more than nine in 10 White students. Students with disabilities and students from economically disadvantaged households are also substantially less likely to graduate than their peers without disabilities or economic disadvantage.[180]

High School Graduation Rates by Race/Ethnicity, 2017-2018 [181]

High School Graduation Rates by Disability Status, 2017-18 [181]

Students without Disabilities

Students with Disabilities

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%
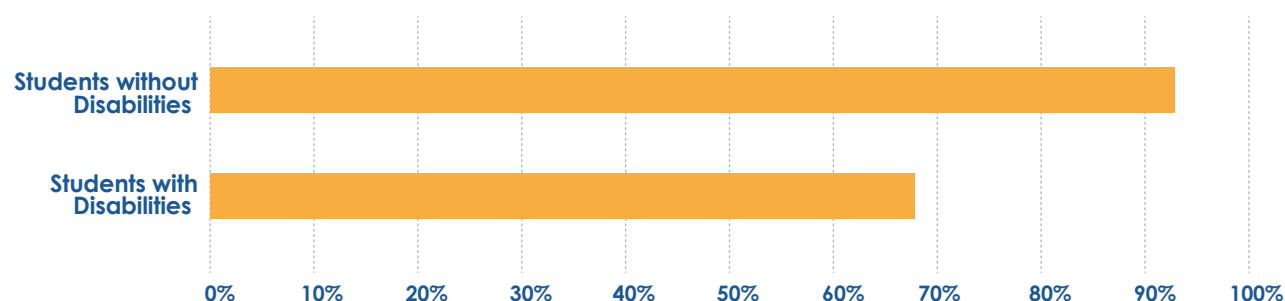
Access to the internet as it relates to education was never as important as it became at the outset of the COVID-19 pandemic. Suddenly, K-12 schools, colleges and universities were forced to close in-person learning opportunities and move them online. With one in 30 households without access to a wired internet provider, the disparity between individuals able to participate in online learning, and those who could not may have long-term effects on educational outcomes.

INCARCERATION'S EFFECTS ON EDUCATIONAL ACHIEVEMENT

The United States incarcerates more of its population than anywhere else in the world, and Wisconsin is no exception. One in nine Black/African American children in the U.S. has had a parent in jail or prison, about twice as high as that for White children. For Black/African American adolescents ages 12 through 17, it's nearly one in seven. This excessive, and disparate, rate of incarceration impacts classrooms. Regardless of economic or geographic situation, children of incarcerated parents are more likely to: [182]

- Have speech or language problems.

- Develop learning disabilities, including attention deficit hyperactivity disorder (ADHD).

- Misuse drugs and alcohol.

- Suffer from migraines, asthma, high cholesterol, depression, anxiety, post-traumatic stress disorder, and homelessness.

- Misbehave in school.

- Drop out of school.

Thus, the trauma of having an incarcerated parent is likely a major factor in the inequities we see in student performance and graduation rates.

In Wisconsin, males are about 10 times more likely to be incarcerated than females, however the numbers of females incarcerated continued to rise between 2014-18, while the number of incarcerated males rose between 2014-17, and began dropping slightly in 2018.[166]

- People aged 25-34 make up the largest numbers of incarcerated individuals, which correlates with the prime child-bearing and child-rearing years.[166]

- Black/African Americans and Native American/American Indians are incarcerated at significantly higher rates relative to their population in Wisconsin.[166]

HIGH QUALITY HEALTH CARE AND PUBLIC HEALTH

In order to live their best lives, everyone needs access to comprehensive, quality health care services. This access is needed to promote and maintain health, prevent and manage disease, reduce unnecessary disability and premature death, and achieve health equity.[183]

The ability to access high quality health care impacts one's overall physical, social, and mental health status and quality of life. Barriers to accessing health care include:

- High cost of care.

- Inadequate or no insurance coverage.

- Lack of availability of services, or lack of understanding how and when to engage them.

- Lack of culturally competent care, including operational barriers, such as complex online or phone systems, and ineffective or slow translation services.

Such barriers to accessing health services can lead to:

- Unmet health needs.

- Delays in receiving appropriate care.

- Inability to get preventive services.

- Financial burdens.

- Preventable hospitalizations.

> " I couldn't find anyone who would take Medicaid for our dental needs for two years. My husband has at least two cavities in every tooth….we'll be in the dental chair every Tuesday night for the next 12 weeks. Money that could've been saved."
>
> – Community conversation participant

HEALTH INSURANCE

Currently, not everyone has the same access to health care. Access to care can vary due to race, ethnicity, language, socioeconomic status, educational attainment, age, disability status, sexual orientation, gender identity, and where you live. In Wisconsin, health insurance status often governs the ability to receive timely, high quality care. There are multiple sources of health insurance, including those sponsored by employers, individual policies, particularly through the health insurance marketplace, and government programs such as Medicare, Medicaid, and through the military. Complex rules surrounding where and from whom care can be accessed by members of Health Maintenance Organizations (HMOs) further complicate the health insurance landscape.

> " Health insurance premiums are out of control and they cover less and less each year. People have to choose if they can afford medications or dental care. Some just don't go because they can't afford the out of pocket costs... after paying the premiums to have insurance."
>
> – Community conversation participant

- While the proportion of the population that has health insurance increased from 89% in 2014 to 93% in 2018, there are still disparities in who has health insurance.[184]
    - People who have higher incomes, and higher levels of education were most likely to be insured in 2018.[184]
    - Hispanic individuals were the least likely to be insured in Wisconsin.[184]
    - Adults aged 18–44 were the least likely to be insured, and those over 65 the most likely to be insured, likely due to the availability of Medicare.[184]
- Rates of insured individuals did not differ significantly among rural and urban residents, nor residents among the different public health regions.[184]
- In Wisconsin, 57% of those with insurance receive it through an employer-sponsored plan, 5% from the marketplace, 17% through Medicaid, 15% through Medicare, and 1% through the military.[185]

Health Insurance Rates, 2018 [184]
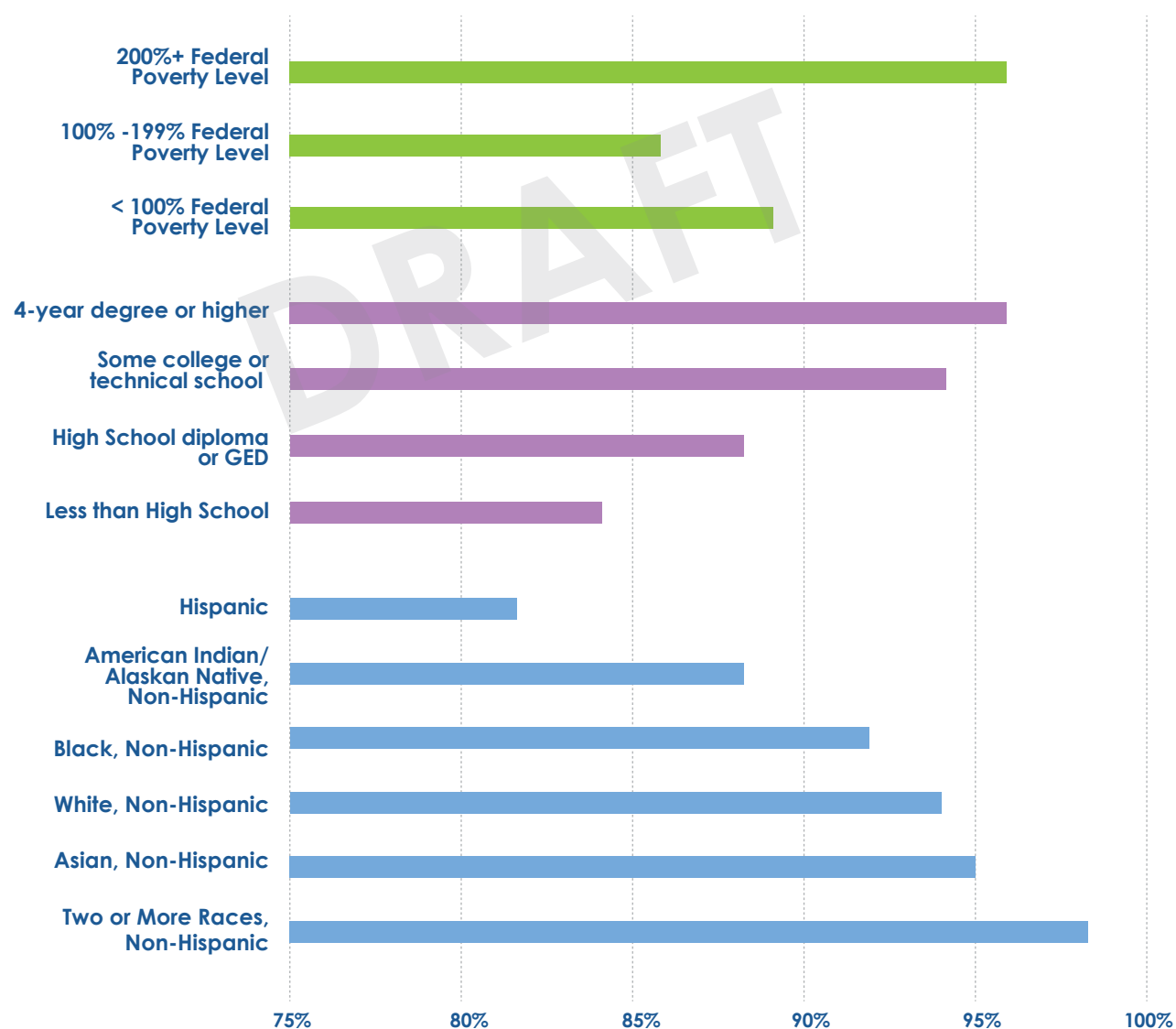
In Wisconsin, commercial dental insurance is often separated from health insurance. Even when dental insurance is included in employment benefits, full coverage of care is generally only for preventive visits; restorative care is usually only partially covered. Wisconsin is one of 29 states that include adult dental coverage via Medicaid[186], however less than 34% of Wisconsin's dentists accept Medicaid-covered patients.[187] To maintain optimal oral health, the American Dental Association (ADA) recommends regular dental visits, at intervals determined by a dentist.[188] For most people, a visit every six months is recommended, however some people, such as those who smoke, have diabetes, or other health conditions, may need to see a dentist more frequently. The proportion of Wisconsinites seeing a dentist in the prior 12 months remained relatively steady from 2014-18, with nearly 72% of the population accessing dental care[27], which is slightly better than the national average of 68%.

> " Health care costs and living expenses have increased significantly in the past few years. Both adults in the house have two jobs and we cannot make all the bills."
>
> – Community conversation participant

- Adult females were more likely to see a dentist in the past year[27]; there was no substantive difference between female and male youth.[26]

- Those aged 55–64 were most likely to see a dentist, while those aged 25–34 were least likely to do so.[27]

- Only six in 10 Hispanic and Black/African American individuals had a dental visit in the past year, while more than seven in 10 Whites did.[27]

- Rural Wisconsinites were less likely to have seen a dentist than urban residents.[27]

- Those with a disability were less likely to have seen a dentist than those without one.[27]

- Higher levels of education correlated with a higher rate of seeing a dentist.[27]

- Youth who identified as lesbian or gay, bisexual, or unsure were less likely to see a dentist than youth who identified as straight.[26]

COST OF CARE

Many Wisconsin households face limited access to health care due to high costs, regardless of insurance status. Some Wisconsinites turn to delaying care in order to forgo or reduce costs.

> " Only people who can afford health care can get a diagnosis, treatment, and recovery. Only people who can afford it can recover."
>
> – Community conversation participant

- Around one in 10 Wisconsin residents delay care due to costs, and this proportion did not substantially change between 2014-18.[27]

- The people most likely to defer health care due to costs were females, people who identified as bisexual, people with a disability, people living in urban areas, and people who are Hispanic.[27]

- The people least likely to defer care had higher education levels, were without disabilities, were White, and over age 65 (again, likely due to Medicare).[27]

Percentage of Respondents Who Did Not Receive Care in Prior 12 Months Due to Costs [27]
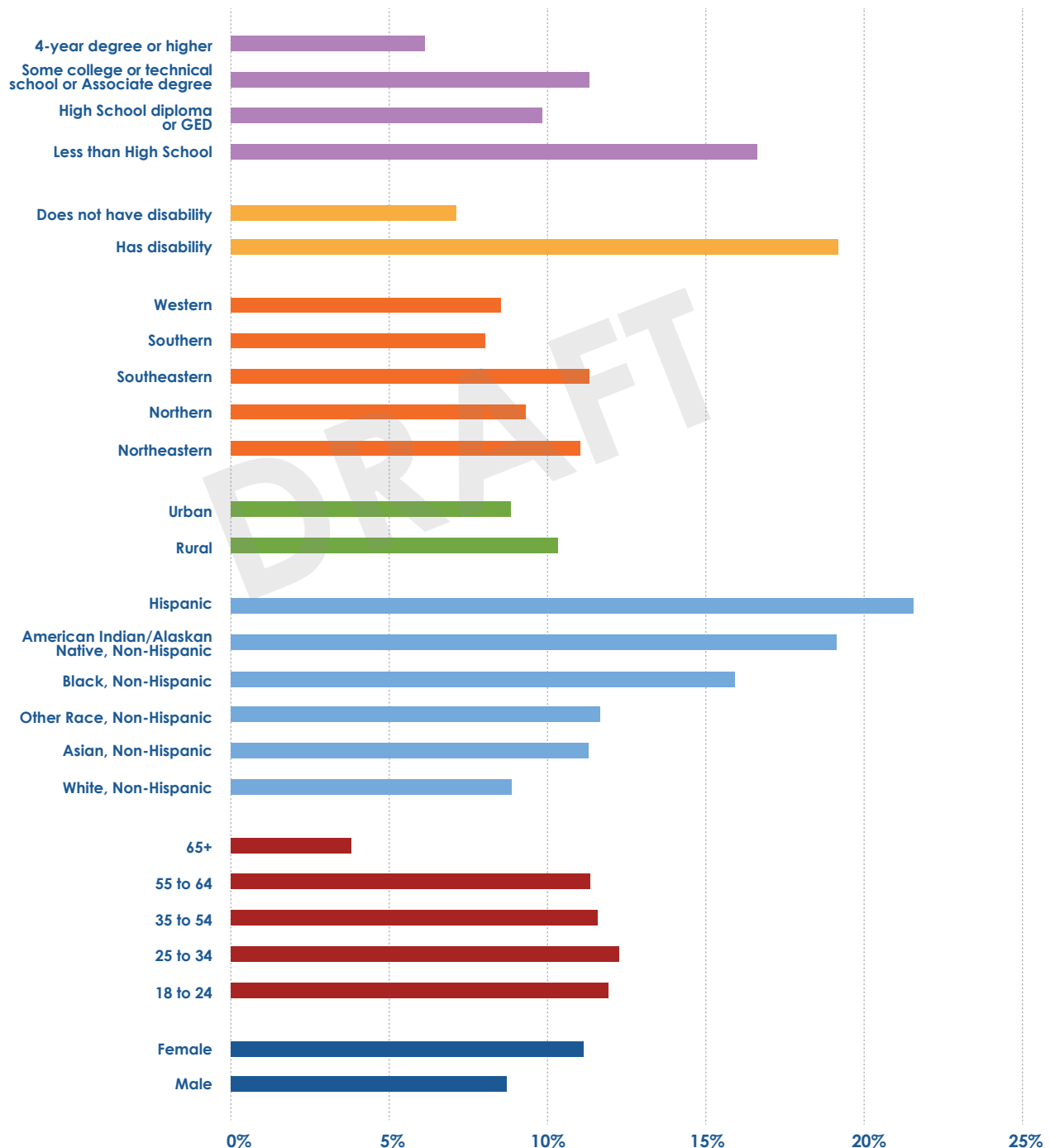
Wisconsinites in our community conversations identified the high cost of premiums, co-pays, and insurance as contributors to deferring needed care. In a comprehensive assessment of gaps in behavioral health services, Wisconsin residents cited their top barrier to receiving treatment was cost or insurance rules.[189]

HEALTH CARE PROVIDER SHORTAGES

Health care provider shortages pose a barrier to accessing quality health care for many Wisconsinites. Provider shortages arise when there is a lack of sufficient primary care, mental health, dental, specialty, or other health care professionals available in the geographic area to serve the needs of the community. Shortages also arise when an area lacks a sufficient number of providers who offer services to low-income or uninsured patients.

Wisconsin's population is predicted to age considerably during the coming decades. In fact, nearly half of the population will be over the age of 60 by 2040 in 16 of Wisconsin's 72 counties.[190] An aging population places more demand on health care systems, as older individuals are more likely to have chronic conditions. The aging population also applies to the people providing care: nearly 30% of Wisconsin's physician workforce is over age 60.[191]

As of 2019, approximately 60% of our primary care physician workforce needs, about 36% of our needs for dentists, and about 33% of our psychiatry needs were met.[192] This compares favorably overall to national averages, which are 45% for primary care, 29% for dentists, and 27% for psychiatry. Nonetheless, Wisconsin falls far short of meeting overall health care provider needs. The needs for health care providers are not equally distributed, and shortages exist in every public health region. Douglas, St. Croix and Pierce counties in the Western region, Sawyer County in the Northern region, Waupaca and Calumet counties in the Northeastern Region, and Sauk County in the Southern region are experiencing the highest levels of need for additional primary care providers to reduce their shortages.[193]

> " Resources and systems get tapped out quickly; people have a hard time finding places to go for their needs. I gave up trying to find a doctor for a while, because they were not accepting new patients or were booking six months out."
>
> – Community conversation participant

> " Pediatricians in the area do not stay. [We have had] four different pediatricians in four years."
>
> – Community conversation participant

> " My son has been in the waitlist since 2016 for services at a community dental clinic."
>
> – Community conversation participant

Health Professional Shortage Areas
Primary Health Care [194]

■ Shortage Area
▲ Facility-based Shortage Area

To determine if a specific location has a HPSA designation, visit HPSA Find.

Source: Health Resources and Services Administration, Geospatial Data Warehouse, Feb 2020.

Health Professional Shortage Areas
Dental Health Care [195]
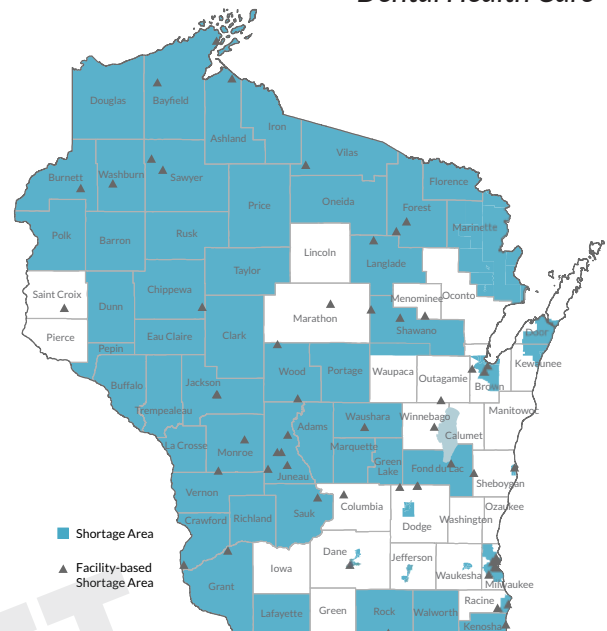
■ Shortage Area
▲ Facility-based Shortage Area

To determine if a specific location has a HPSA designation, visit HPSA Find.

Source: Health Resources and Services Administration, Geospatial Data Warehouse, Feb 2020

Health Professional Shortage Areas
Mental Health Care [196]

■ Shortage Area
▲ Facility-based Shortage Area
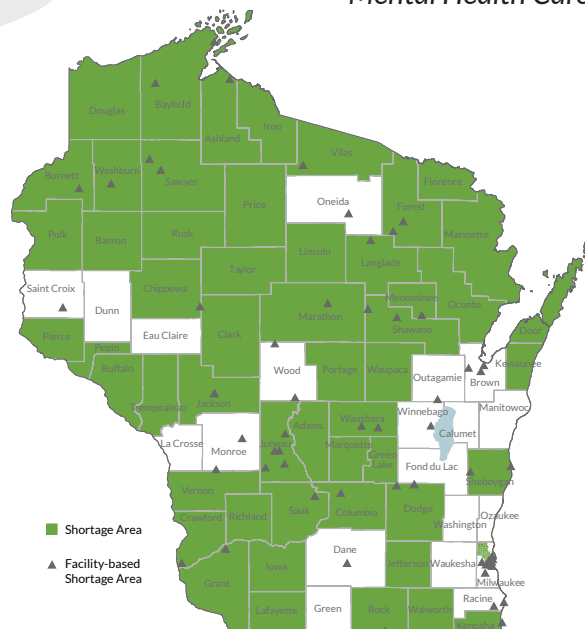
To determine if a specific location has a HPSA designation, visit HPSA Find.

Source: Health Resources and Services Administration, Geospatial Data Warehouse, Feb 2020

Wisconsinites in our community conversations described the difficulty in finding providers who could see them in a timely manner, or would accept their insurance. Community members repeatedly cited a lack of availability of both outpatient and inpatient behavioral and mental health services, and that when they were available, the wait times were too long to be useful in their times of need. Indeed, 31 out of Wisconsin's 72 counties have shortages of available psychiatrists[197], and only six counties (Columbia, Dane, Green, Juneau, Rock and Sauk) have met more than 70% of the county's needs for adult mental health treatment.[198] In a comprehensive review of Wisconsin service gaps, workforce or facility shortages were among the top five reasons people listed for not being able to receive behavioral health treatment.[189] For youth of color, one of the only options for accessing services came after becoming involved with the criminal justice system.[189] People with disabilities participating in our community conversations described a lack of available specialty care to help them live their best lives. Overall, a lack of access to specialty providers creates delays in receiving appropriate care.
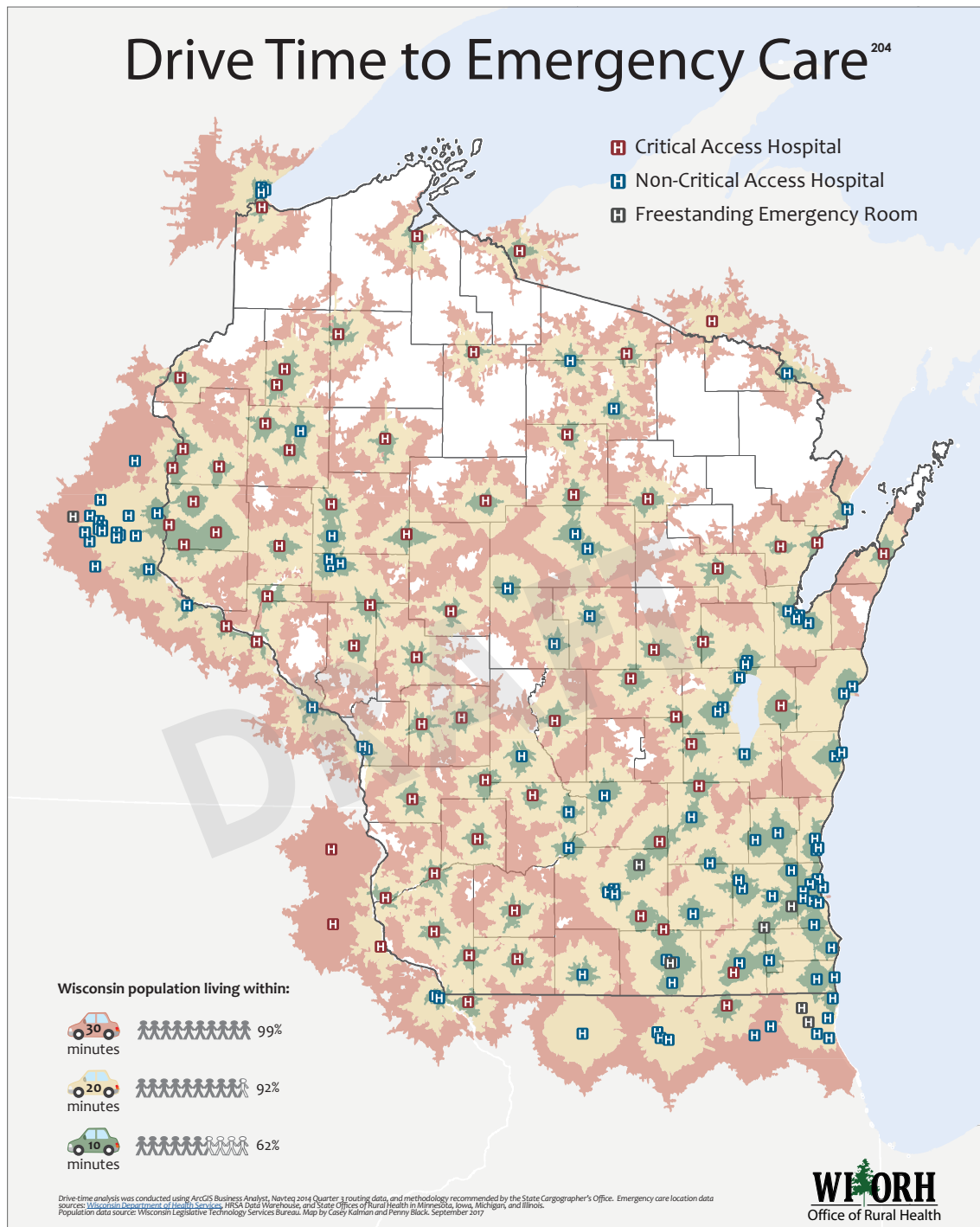
> " I'm appalled at the lack of mental health providers – and competent mental health providers - out there. The burden is put almost entirely on the parents. We went through 9+ systems to get our son the right help."
>
> – Community conversation participant

SITES OF CARE

Wisconsinites access health care at multiple types of places. In general, most Wisconsin residents access care through clinics that are part of consolidated non-profit health systems, which are both the provider and the insurer. Many of these health systems also include hospitals, so people in Wisconsin often experience fewer barriers to care coordination than people in other states.[199] However, people living in rural areas often have fewer options for care, particularly when hospital care is required. As of 2017, 16 of Wisconsin's 76 rural hospitals were running operating deficits[200], with a dozen being identified in 2020 as vulnerable to closure.[201] Only one rural hospital, in Arcadia, Wisconsin, has closed in the last decade, and a clinic was built there in its stead. Because rural patients are less likely to be covered by private insurance, and government-provided insurance payments cover less than full costs of care, rural hospitals are more vulnerable to payment delays and declines.[202] Rural hospitals can make the difference between life and death: heart attacks and strokes increase after rural communities lose their hospitals.[203] In Wisconsin, 99% of the population has access to emergency care within 30 minutes, though only 62% of the population has a drive time of 10 minutes or less to emergency care.[204]

In addition to the major health and hospital systems available, Wisconsin has an array of safety-net providers that serve low-income and underserved residents across the state. Federally Qualified Health Centers (FQHCs) provide comprehensive services to an underserved area or population, and offer a sliding fee scale. In 2020, FQHCs provided care at 70 sites statewide. These FQHCs provide quality mental health, medical, and dental services to over 300,000 Wisconsinites each year.[205] Rural Health Clinics (RHCs) are located in rural, underserved areas, and use a team approach to provide outpatient primary care services.[206] There are 100 RHCs across the state, many of which are part of major health systems or FQHCs. An additional 102 free and charitable clinics serve over 160,000 Wisconsin residents who are otherwise unable to pay for medical, dental, mental health/behavioral health care, or medications.[207]

Drive Time to Emergency Care[204]

Legend:
- H Critical Access Hospital
- H Non-Critical Access Hospital
- H Freestanding Emergency Room

Wisconsin population living within:
- 30 minutes — 99%
- 20 minutes — 92%
- 10 minutes — 62%

Drive-time analysis was conducted using ArcGIS Business Analyst, Navteq 2014 Quarter 3 routing data, and methodology recommended by the State Cartographer's Office. Emergency care location data sources: Wisconsin Department of Health Services, HRSA Data Warehouse, and State Offices of Rural Health in Minnesota, Iowa, Michigan, and Illinois. Population data source: Wisconsin Legislative Technology Services Bureau. Map by Casey Kalman and Penny Black. September 2017

WI ORH
Office of Rural Health

Critical Access Hospitals are those designated by the Centers for Medicare and Medicaid Services (CMS) as rural hospitals critical to ensuring 24-hour emergency medical and hospital admission services remain available to rural residents.

Non-critical care hospitals have not received such CMS designation.

Free-standing emergency rooms solely provide emergency care, without hospital admission services attached.

Safety Net Providers in Wisconsin [208, 209, 210]

Legend
- Free and Charitable Clinics
- Federally-Qualified Health Centers
- Rural Health Clinics
- Public Health Regions
- County Boundaries

MILWAUKEE COUNTY

DANE COUNTY
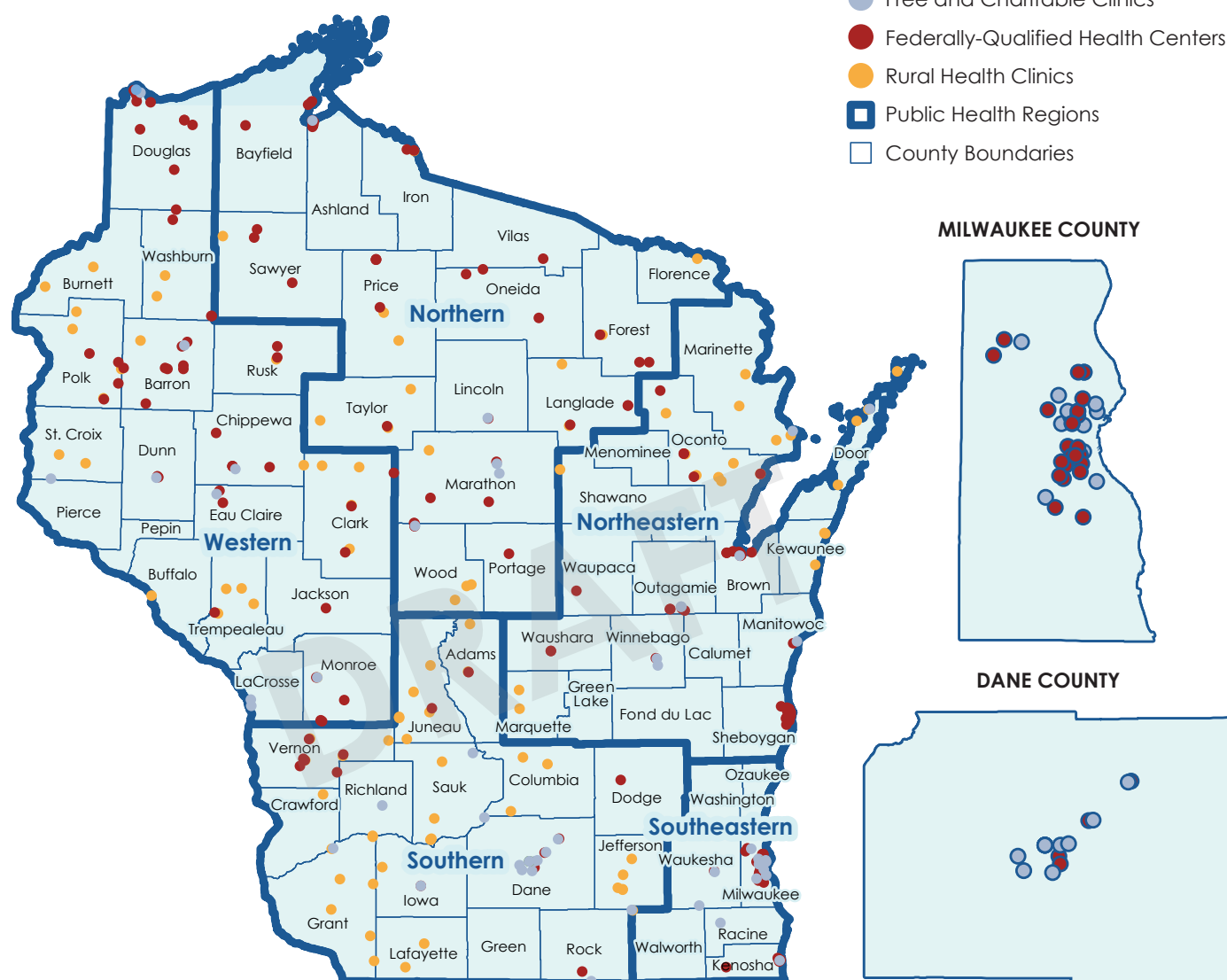
SUPPORT PROGRAMS

Programs that support health come in all shapes and sizes, and are supported by local, state and federal funding, as well as many non-profit organizations and health systems. Examples of these programs include, but are not limited to: early childhood education, home visiting, school-based and senior nutrition, adult vocational training, and crisis lines.[211] Programs that support recovery from substance use disorders[212], or that provide emotional support for cancer survivors and their families, are available in many communities.[213]

People with disabilities rely on programs that provide training and skill development, adaptive equipment, nutrition, specialized physical activity, and transportation. Some of these support programs require income eligibility, and some programs that can significantly lower the costs of health care are nonetheless not covered by insurance. These requirements can create barriers for Wisconsinites already experiencing inequities.

- No other country spends as much on health care, while the only other countries that spend as little as the U.S. does on social services are Chile, Estonia, Turkey, Korea and Mexico.[214]

- In the U.S., social service expenditures make up just over 9% of the Gross Domestic Product (GDP) spending, while health care takes up more than 16% of GDP.[214]

- Wisconsin ranks in the second-highest quartile for state and local public support program expenditures, at $2,000-$2,500 per capita. Wisconsin compares favorably to neighboring states of Illinois, Michigan and Iowa, which only spend $1,500-$2,000 per capita, but less so to Minnesota, which spends more than $2,500 per capita on these programs.[215]

PREVENTION

To stay healthy we need to eat healthy foods, drink plenty of water, get regular physical activity and plenty of sleep. But clinical preventive services, such as routine disease screening, immunizations, regular dental cleanings, and prenatal care are also critically important for everyone to maintain their health. Not everyone has the same opportunity to participate in preventive services in Wisconsin. The information that follows pertains to a variety of prevention indicators that, together, provide a more comprehensive perspective on access to care needs and issues in Wisconsin.

> " Preventive health appointments? There's no money to go; people are using the ER for preventive health."
>
> – Community conversation participant

IMMUNIZATIONS

Communicable diseases such as whooping cough, polio, measles, and rubella used to strike hundreds of thousands of infants, children, and adults in the U.S., with thousands dying each year.[216] Vaccines have prevented not just these deaths, but also miscarriages, infertility, paralysis, deafness, vision loss, developmental disabilities, chronic liver disease, and cancer.[217] Most vaccines are administered to young children, with boosters of certain vaccines needed during the teen years and into adulthood.

- In 2017 in Wisconsin, about 72% of children had received the full, recommended vaccination series by 24 months of age, similar to the national average of 70%. This percentage has risen from 68% in 2014.[218]
  - Children living in rural areas and children living in the Western region of the state were least likely to fully complete their vaccination series.[218]
  - Black/African American children were least likely to complete their vaccination series, with only a 62% completion rate, followed closely by Native American/American Indian children at 65%. White children were the most likely to complete the vaccination series, at more than 80%.[218]

Rate of Completion of Childhood Vaccination Series by 24 Months of Age [218]
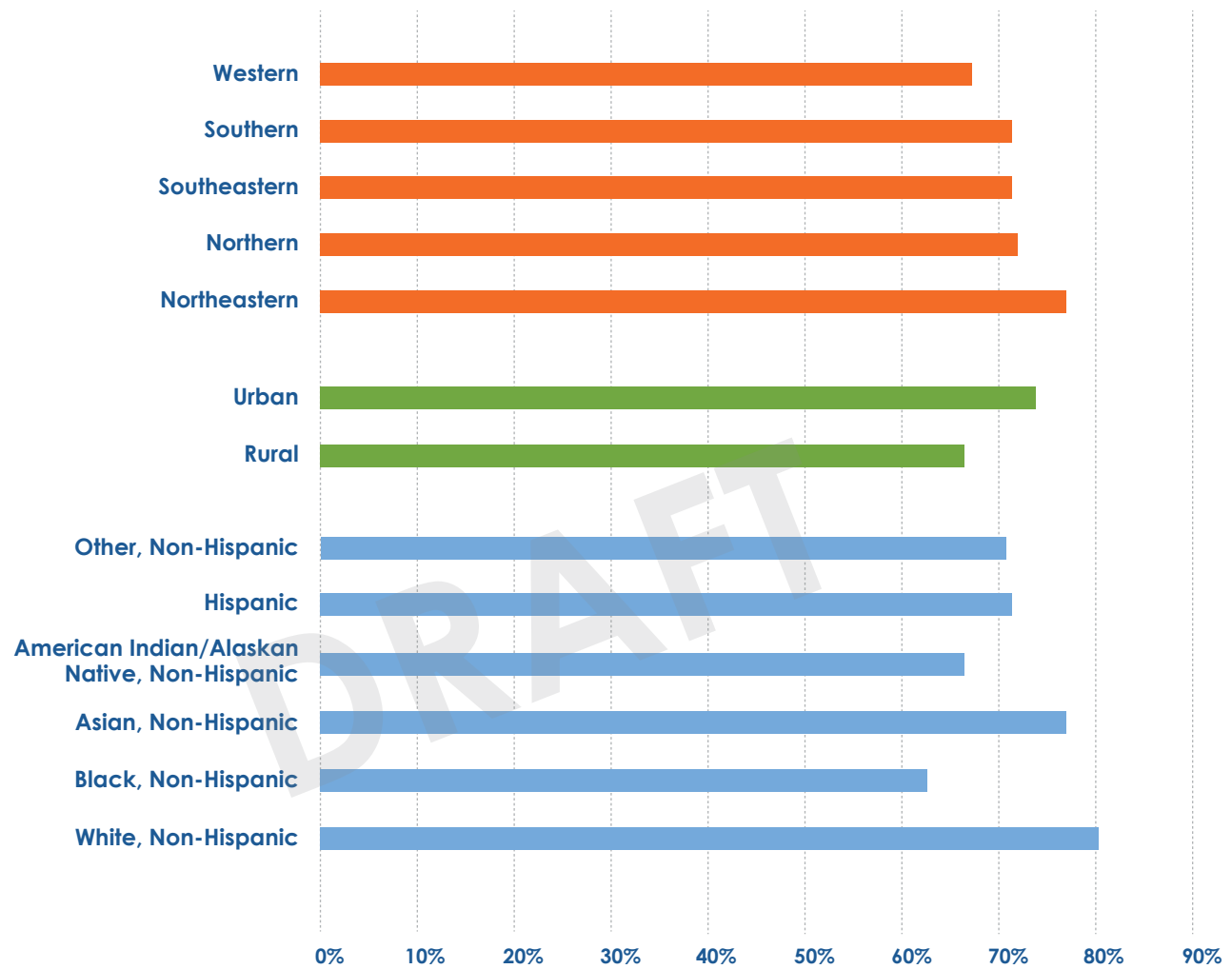
FLU

Influenza, or the flu, is generally a bothersome disease, causing fever, malaise, cough, and sometimes intestinal discomfort. However, for the very young, the very old, and people with compromised immune systems, the flu can prove deadly.

- In Wisconsin, there were 6,302 hospitalizations from flu in 2018, and 1,074 deaths, making it the 8th leading cause of death in the state that year.[219] These numbers could be much lower if a larger percentage of people got a flu shot.

- People who are Black/African American had the highest rate of hospitalization, more than double the rate for Hispanic and Asian people, who experienced the lowest hospitalization rates in 2018.[219]

- People living in the Southern region were most likely to experience hospitalization for the flu.[219]

The flu virus mutates quickly as it travels around the world, which is very different from other vaccine-preventable diseases. Because the version of the flu virus that's circulating changes so rapidly, people need a new flu shot every year. Scientists must predict how the virus will mutate about six months in advance to determine which flu vaccines to produce.[220] The fact that flu vaccine production relies on information gathered so far in advance means that sometimes the vaccines work better than others. Some people may not understand the vaccine development process and just think the flu shot doesn't work, and therefore don't get vaccinated. However, there is clear evidence that flu vaccines prevent between 40–60% of flu-caused illnesses.[221]

- The percent of Wisconsin residents getting their flu shot is increasing slightly each year, but in 2018-19, only two in five Wisconsinites got vaccinated, slightly lower than the national average.[218]

- Younger kids (age four and younger) as well as older adults (65 and older) get a flu shot much more often than other age groups.[218]

- People living in the Southeastern region were the least likely to get their flu shot, while people in the Southern region were most likely to do so.[218]

- Whites were most likely to get vaccinated, followed by Asians and Hispanics. Black/African Americans and Native American/American Indians were least likely to get a flu shot.[218]

HPV

The Human Papilloma Virus, or HPV, is the most common sexually transmitted infection (STI).[222] There are many different types of HPV, with some causing genital warts, and others causing cancer. HPV is the primary cause of cervical cancer (about nine in 10 cases are caused by HPV), and also causes vulval, vaginal, penile, and anal cancers.[223] There has been a recent increase in the rate of cancers of the tongue and tonsils caused by HPV.[224]

Like other communicable diseases, HPV can be prevented through vaccination. HPV vaccination is recommended for all 9-13 year olds, and requires a two-shot series.
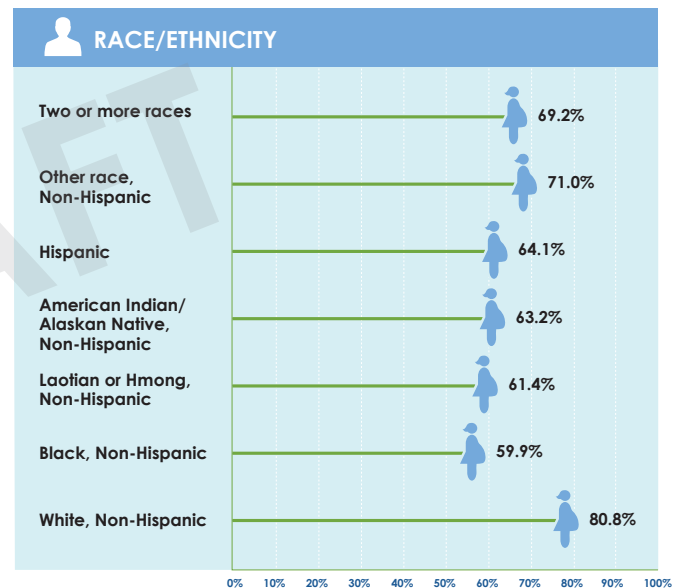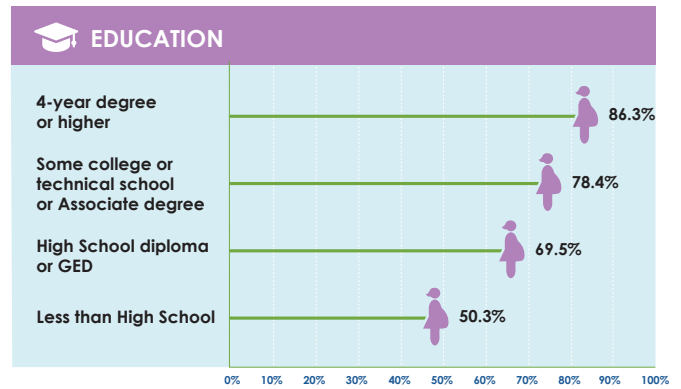
- In Wisconsin, fewer than three in 10 13-year olds have completed their HPV immunization series,[218] which is substantially lower than the average for the U.S., which stands at four in 10 children. Both of these immunization rates are far below the Healthy People 2030 goal of eight in 10 children receiving this life-saving vaccination.[225]

- The rate of completion of the HPV series in Wisconsin has almost doubled since 2014.[218]

- Asian youth are the least likely to complete the series, while Hispanic youth and youth of more than one race are most likely to do so.[218]

- Youth living in the Southeastern region were the least likely to receive the full HPV vaccine series, while youth in the Southern region were the most likely to do so.[218]

PRENATAL CARE

People who are pregnant need early and regular prenatal care to improve the chance of a healthy birth.[226] Prenatal care includes general health screening, nutrition management, taking care of any chronic diseases, regular monitoring of fetal growth, monitoring for complications of pregnancy, immunizations, and preparing for birth. People who are pregnant should avoid smoking, drinking alcohol, taking any drugs not prescribed by a doctor, and eating certain foods. People who are pregnant are encouraged to take folic acid to reduce the risk of neural tube defects. Not everyone has the same level of access to, or awareness of, prenatal care.

- In Wisconsin, about 76% of people who were pregnant received first trimester prenatal care in 2017.[227]
  - Pregnant people who were White, had a 4-year degree or higher level of education, were aged 30–39, and lived in the Northeastern and Southern regions were the most likely to access prenatal care in their first trimester.[227]
  - Pregnant people who were under age 20, Black/African American, had less than a high school education, and lived in the Southeastern region, were the least likely to access prenatal first trimester care.[227]

First Trimester Prenatal Care [228]

AGE

Over 40	71.1%
35 to 39	78.6%
30 to 34	81.1%
25 to 29	77.4%
20 to 24	67.5%
<20	57.8%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

EDUCATION

4-year degree or higher	86.3%
Some college or technical school or Associate degree	78.4%
High School diploma or GED	69.5%
Less than High School	50.3%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

REGION

Western	74.9%
Southern	78.3%
Southeastern	71.9%
Northern	76.7%
Northeastern	80.95%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

RACE/ETHNICITY

Two or more races	69.2%
Other race, Non-Hispanic	71.0%
Hispanic	64.1%
American Indian/ Alaskan Native, Non-Hispanic	63.2%
Laotian or Hmong, Non-Hispanic	61.4%
Black, Non-Hispanic	59.9%
White, Non-Hispanic	80.8%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

86.3% Individuals with a 4-year degree or higher are most likely to receive 1st Trimester Prenatal Care

Many factors may influence disparities in prenatal care, including:

- Insurance coverage.

- Lack of paid sick or family leave.

- Lack of access to child care during medical visits.

- Lack of adequate and safe transportation to care.

- Prior negative experiences with the health care system.

- Not wanting to be judged or not wanting anyone to know they are pregnant.

- Belief that early prenatal care is not necessary or will not be helpful.
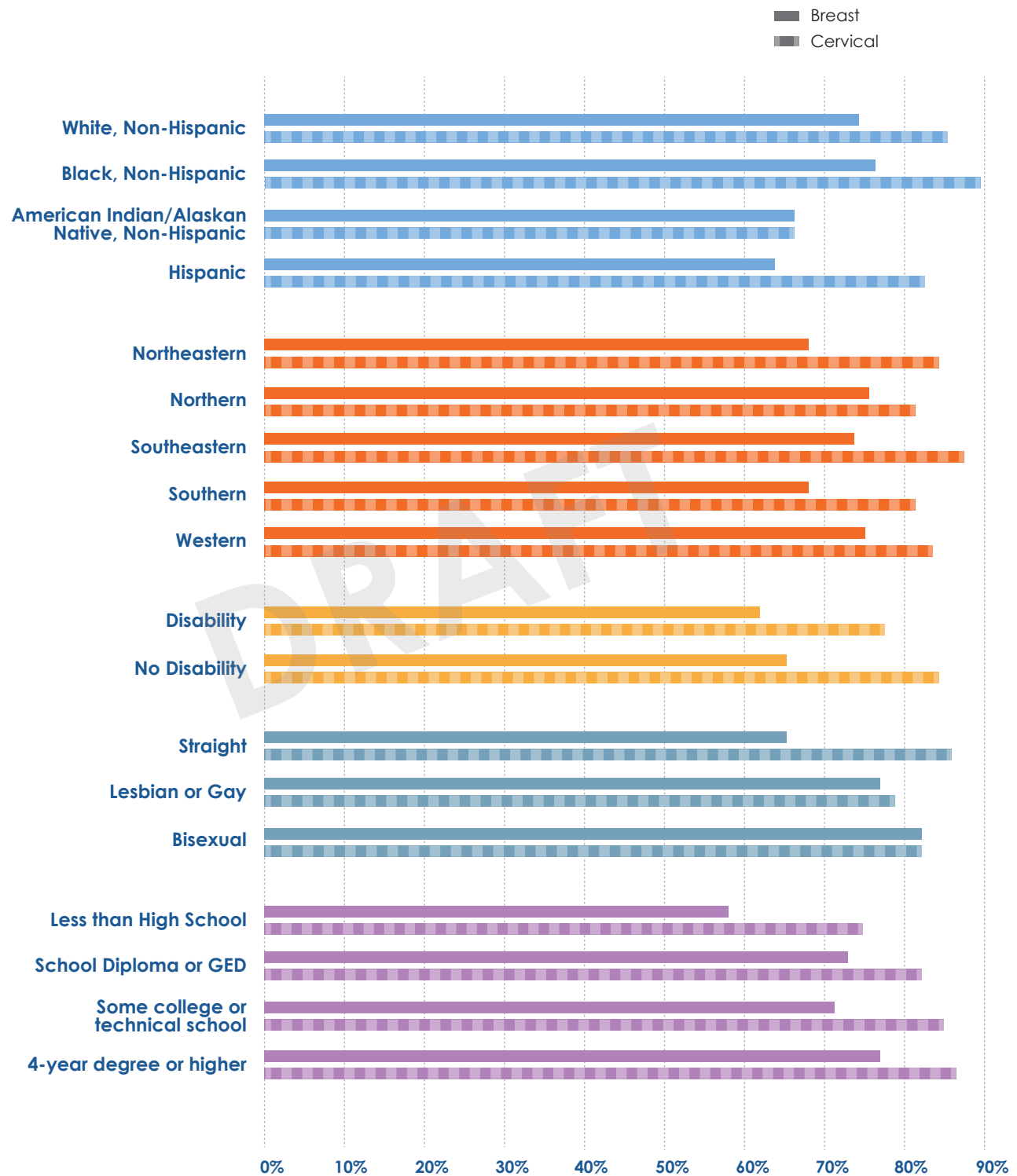
- Clinic or appointment availability.

CANCER SCREENING

Higher rates of preventive health screenings are a feature of quality health care access. Currently, the types of cancers health care providers can reliably screen for include breast, cervical, colorectal, and lung cancer. Some individuals may also be advised to undergo prostate cancer screening, depending on their risks. More and more screening tests are being developed all the time, so health care providers may have many more tools available for cancer screening in the future.

Cervical cancer deaths are almost entirely preventable with regular, recommended screenings.[229] It is estimated that between six to nine breast cancer deaths per 1,000 people screened are prevented through regular mammography.[230]

- In 2018, just over seven in 10 females in Wisconsin over the age of 40 received a mammogram in the past two years. This rate was consistent with the nationwide screening rate.[27]

  - More than eight in 10 Wisconsin females received cervical cancer screening in the prior three years. This rate was slightly better than the nationwide screening rate.[27]

  - Women under age 65 were slightly more likely to have had a mammogram in the past two years than women over age 65. (It is generally recommended that women stop getting mammograms after age 75.)[231]

  - Black/African American women were the most likely to get breast and cervical cancer screening. This is likely a reflection of the higher death rate from breast cancer among Black/African American women.[232]

  - Hispanic women were the least likely to receive a mammogram in the past two years, and Native American/American Indian females were the least likely to have had cervical cancer screening.[27]

  - Women in the Northern region were the most likely to get breast cancer screening, while women in the Southeastern region were most likely to get cervical cancer screening.[27]

  - Females with a disability were far less likely to have had a mammogram in the past two years, or be screened for cervical cancer, than those with no disability.[27]

  - Females who identified as bisexual were the most likely to get breast cancer screening, followed by females who identified as lesbian or gay, with females who identified as straight being the least likely to get breast cancer screening. In contrast, women who identified as straight were most likely to get screened for cervical cancer, and women who identified as lesbian were the least likely to get cervical cancer screening.[27]

  - Women with less than a high school education were substantially less likely to be screened for both cancer types.[27]

Breast and Cervical Cancer Screening Rates, 2018 [27]

Legend:
- Breast
- Cervical

White, Non-Hispanic
Black, Non-Hispanic
American Indian/Alaskan Native, Non-Hispanic
Hispanic

Northeastern
Northern
Southeastern
Southern
Western

Disability
No Disability

Straight
Lesbian or Gay
Bisexual

Less than High School
School Diploma or GED
Some college or technical school
4-year degree or higher

X-axis: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%

DRAFT

Deaths from colorectal cancer are also highly preventable with regular screening.[233] In 2018, about 75% of Wisconsinites aged 50-75 received colorectal cancer screening, compared to 70% nationwide.[27] Wisconsin's colorectal screening rate has been slowly but steadily rising since 2014.

- Women were slightly more likely to have received recommended colorectal cancer screening than men.[27]

- Those aged 65-75 had a more than 10% higher screening rate than people aged 50-64.[27]

- Black/African American Wisconsinites were the most likely to have received screening, again, likely due to their higher death rates from the disease.[232]

- In spite of Native American/American Indians having the highest rate of getting colorectal cancer, they were substantially less likely to receive colorectal cancer screening.[232]

- The colorectal cancer screening rate was lowest among Hispanic individuals, as was their death rate.[232]

> During the early days of the COVID-19 pandemic, all non-essential medical services were delayed, meaning many people did not get their cancer screening tests on time. The Department of Health Services will be closely analyzing trends in people getting and dying from cancer over the next several years to understand the long-term effects of these delays.
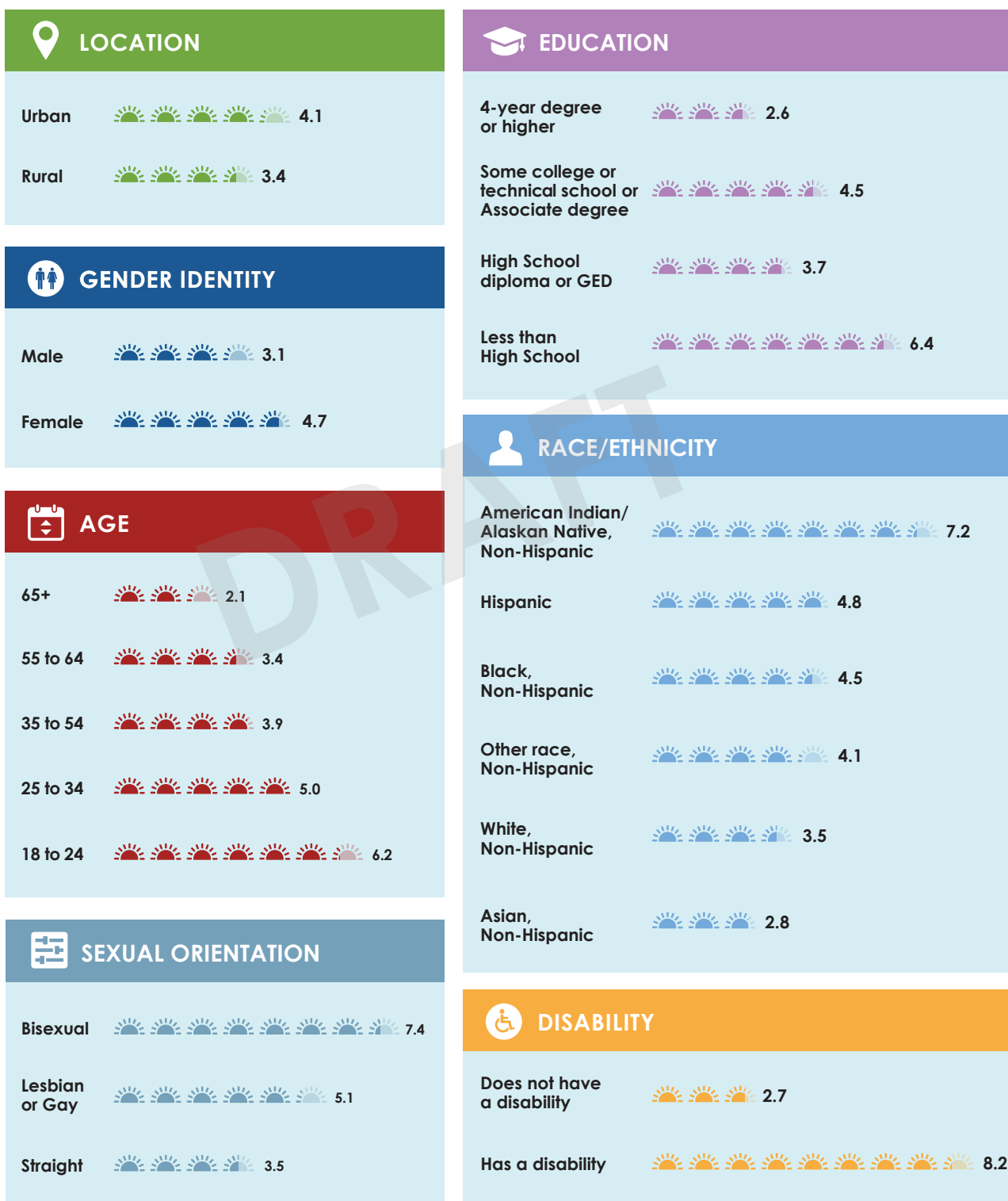
SCREENING FOR MENTAL ILLNESS AND SUBSTANCE USE DISORDER

Nearly one in five adults live with a mental illness in the U.S.[234] This rises to more than one in four among Wisconsin youth.[26] Wisconsinites participating in our community conversations frequently discussed the need for screening, early detection, and treatment for substance use and mental health needs.

Depression is the second-most common mental illness, after anxiety, and is generally treatable.[235] For these reasons, the U.S. Preventive Services Task Force (USPSTF) recommends routine depression screening of adults, including people who are pregnant and postpartum.[236] Of the 21 member organizations reporting to the Wisconsin Collaborative for Healthcare Quality (WCHQ), only 14 of them report a more than 70% rate of screening for depression.[237] This limited screening rate is in spite of current data on the number of people experiencing poor mental health days, or feeling sad or hopeless:

- In 2014-2018, poor mental health days were cited more frequently by women, people who identify as bisexual, those under 24 years of age, people of Native American/American Indian descent, people living with a disability, and by those with less than a high school education.[27]

- When answering the question "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?," youth who identify as lesbian, gay, bisexual or unsure chose "yes" much more frequently than their peers who identify as straight in 2017.[26]

Number of Poor Mental Health Days in the Last Month[27]

LOCATION

Urban	4.1
Rural	3.4

GENDER IDENTITY

Male	3.1
Female	4.7

AGE

65+	2.1
55 to 64	3.4
35 to 54	3.9
25 to 34	5.0
18 to 24	6.2

SEXUAL ORIENTATION

Bisexual	7.4
Lesbian or Gay	5.1
Straight	3.5

EDUCATION

4-year degree or higher	2.6
Some college or technical school or Associate degree	4.5
High School diploma or GED	3.7
Less than High School	6.4

RACE/ETHNICITY

American Indian/ Alaskan Native, Non-Hispanic	7.2
Hispanic	4.8
Black, Non-Hispanic	4.5
Other race, Non-Hispanic	4.1
White, Non-Hispanic	3.5
Asian, Non-Hispanic	2.8

DISABILITY

Does not have a disability	2.7
Has a disability	8.2

Youth Feeling Sad or Hopeless Every Day for Two Weeks in the Past 12 Months [26]
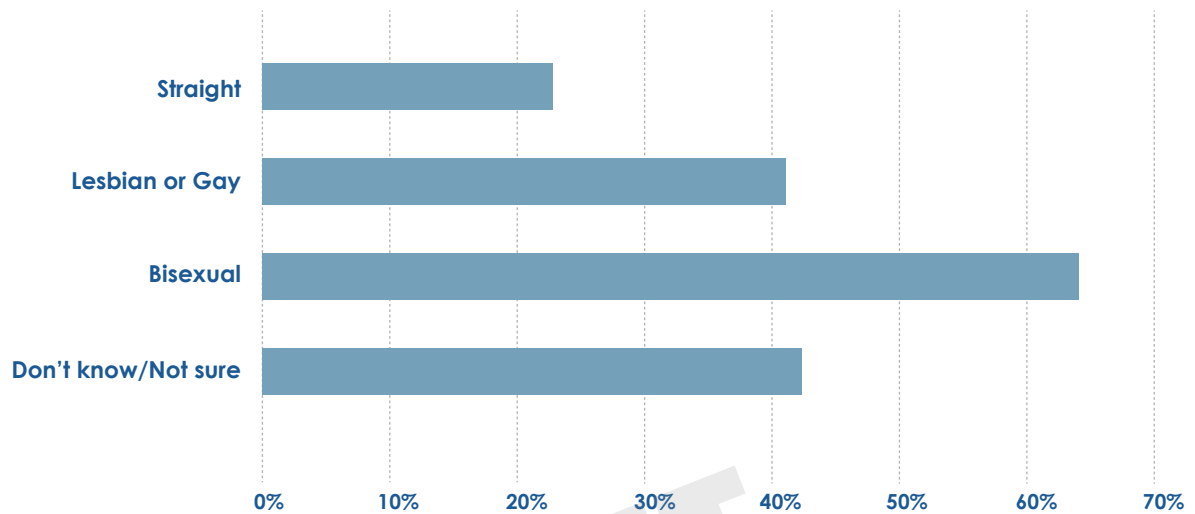
Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based approach to identifying and intervening in behavioral health issues, particularly substance use disorder (SUD). A school-based program in Wisconsin schools showed the utility of this approach: Of 14 schools reporting data, 259 students were identified in need of SBIRT, and 44 (17%) were recommended for further services.[238] More than 70% of students reported improvements in symptoms after participating in SBIRT. While SBIRT is known to be effective for identifying and intervening in SUD cases, it is not regularly implemented in primary care or school settings.[239]
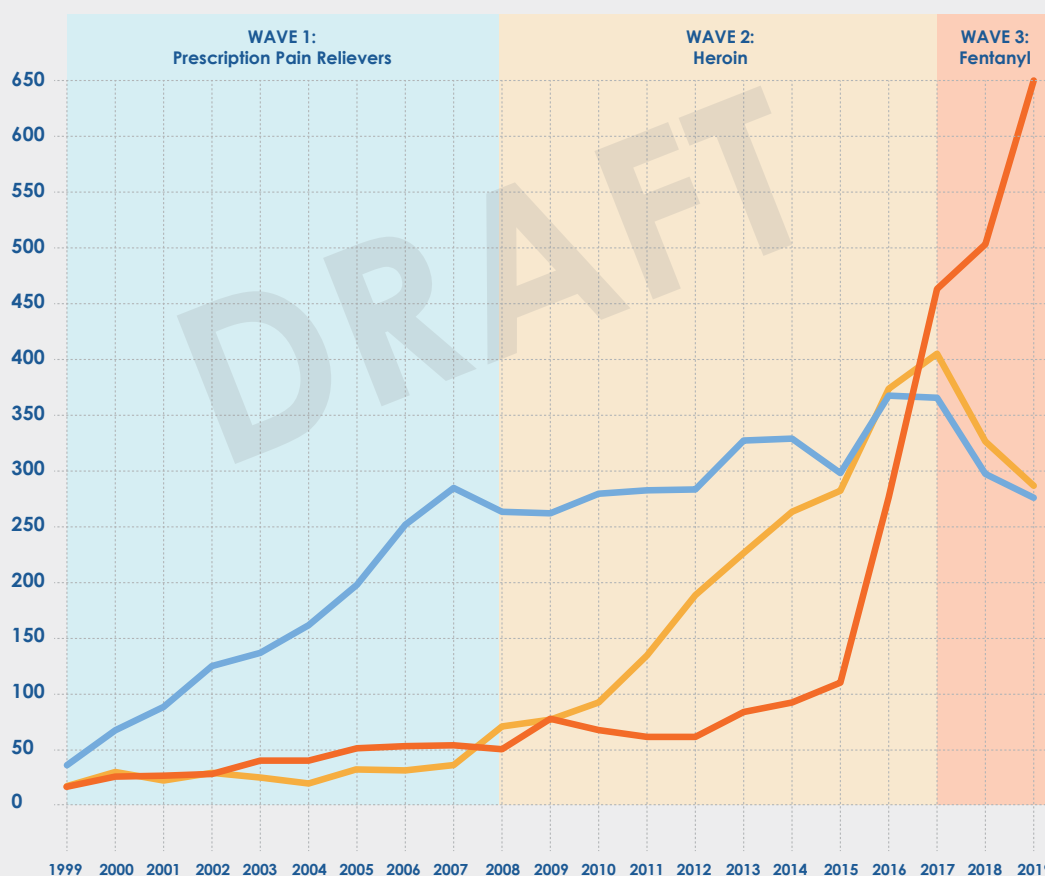
OVERDOSES

Drug overdoses more than tripled between 1999 and 2017, and are now the leading cause of accidental death in the U.S.[240] Initially, prescription opioids drove the increasing trend of drug overdose deaths, referred to as the "first wave" of the opioid epidemic, which began in 1999. Heroin was the second wave and drove opioid-related deaths beginning in 2010, because it is easier to access and cheaper than prescription drugs. Since 2013, fentanyl and other synthetic opioids have increasingly been found linked to opioid overdose-related deaths because of the illicit demand for stronger substances.[241] In Wisconsin, the 2014–19 rate of fatal overdoses due to opioids was 13.8 per 100,000.[242]

Overdose Deaths in Wisconsin, 1999-2019

Source: Office of Health Informatics (OHI) Wisconsin Department of Health Services (DHS) – Death certificates

Fatal overdoses are especially likely when individuals have been sober for a time, often due to incarceration, and then go back to using at the same amount they did prior to their sobriety. Although there has been a substantial push for first responders, pharmacies[243], schools, and others to have an on-hand supply of naloxone (Narcan®), the drug that will reverse an opioid overdose, this life-saving drug is not universally available.[244]

In 2018, the rate of hospitalization in Wisconsin for drug-related poisoning (accidental, intentional, self-harmed, or undetermined) was one per 500 people.[245]

- Females were substantially more likely than males to be hospitalized for drug-related poisoning.[245]

- People aged 18-24 were the most likely to be hospitalized for drug-related poisoning, and people under 18 were the least likely.[245]

- The rate of hospitalization of Native American/American Indians was almost 4-fold higher than the rate for Asians, who were the least likely to be hospitalized for drug-related poisoning.[245]

- Those living in urban areas were more likely to experience hospitalization than those living in rural areas, however rural individuals may be undercounted due to issues related to hospital access.[245]

- The Southeastern and Western regions of the state had the highest rates of drug-related hospitalization, while the Northeastern region had the lowest.[245]

Substance use often starts in the teen years: in 2017, more than 11% of high school students indicated they took prescription pain medication without a doctor's prescription or differently than how a doctor told them to use it.[26] Students who identified as lesbian, gay, bisexual or unsure were more likely than students who identified as straight to misuse these drugs.

During the COVID-19 pandemic, overdoses began to rise again[246], likely due to the stressors of the anxiety of the disease, high unemployment rates, and social isolation.[247] The burden of these increases are community-specific and vary related to the complex factors that interact to drive substance use disorder.

SUICIDE

Suicide continues to grow as a public health issue in Wisconsin. More than 16% of Wisconsin youth surveyed in 2017 had seriously considered attempting suicide.[248] About 175,000 Wisconsin adults experience Serious Mental Illness (SMI) per year, and about 61,000 adolescents experience a Major Depressive Episode (MDE).[249] The number of suicides in Wisconsin has increased every year for the past 10 years.[250] Suicide was the 10th leading cause of death overall in 2018, and the second leading cause of death among people aged 15–34, behind unintentional injury (which includes unintentional overdose deaths).[251] Tragically, suicide is the fifth leading cause of death among children aged 5-14 in Wisconsin. Without consistent screening protocols and access to treatment, these statistics are unlikely to change. The risk of suicide is not only among youth; White male farmers face the fastest growing rate of suicide attempts in Wisconsin.[189] Extreme weather and falling prices have led to serious financial stress among farmers, and the impacts of COVID-19 on crop and dairy prices, supply chains, and foreclosures will likely worsen this scenario. A 2020 report: *Suicide in Wisconsin: Impact and Response*, provides additional data and information on opportunities for prevention.[252]

HEALTH EDUCATION

Health education can enhance the work of health systems and the quality of health care outcomes. People who receive health education are more likely to learn about health and health risks, improving their health literacy and comprehension of what can be complex issues critical to their wellbeing. Health education can also lead to more accurate health beliefs and knowledge, and thus to better lifestyle choices, coping skills, and greater self-advocacy. Health education improves skills such as literacy, develops effective habits, and may improve cognitive ability.[253] The skills acquired through health education can affect health directly, through the ability to follow health care regimens and manage diseases, and also indirectly, by helping people maintain jobs and earnings. Many Wisconsinites in our community conversations expressed a need for additional health education at all stages of life for people to be successful in living their best lives. In 2018, surveys of Wisconsin residents showed the following[184]:

- Nearly one in 10 Wisconsinites expressed difficulty in asking questions when information from a doctor or other health care provider was unclear.
- Younger people, males, Hispanic, and Black/African American individuals were most likely to express having difficulty asking important health-related questions.
- People living in rural areas had more difficulty asking questions than people in urban areas.
- The Southeastern region had the highest rate of people having difficulty asking questions, and the Western region had the lowest rate.
- People living below 200% of the federal poverty level had more than twice as much difficulty asking questions of their doctors than those with higher incomes.

UNINTENDED PREGNANCY

Unintended pregnancy can have significant consequences for individual women and their families. However, young people must fully understand how the reproductive system works, and learn about effective means for pregnancy prevention in order for unintended pregnancy not to occur. In 2011, 45% of all pregnancies in the U.S. were unintended, including 75% of all teen pregnancies.[254] This rate is similar in Wisconsin, where 46% of all pregnancies are unintended.[255] Women who are economically disadvantaged (incomes under 200% of the federal poverty level) are disproportionately affected, with an unintended pregnancy rate more than five times higher than women with higher incomes.

- Wisconsin youth used some method to prevent pregnancy more than 92% of the time. This compares favorably to the U.S. overall, where only 86% of youth did so.[255]
- Using alcohol or drugs is known to lower inhibitions. More than one in six Wisconsin youth used alcohol or drugs prior to the last time they engaged in intercourse.[26] This is similar to the national rate.
- The teen pregnancy rate in Wisconsin dropped substantially over the past two decades.[255]
- The teen birth rate in Wisconsin declined 70% between 1991 and 2018.[255]

STDS/STIS

Sexually transmitted infections (STIs), or sexually transmitted diseases (STDs), are very common, affecting millions of people in the U.S. every year.[256] The rate of transmission increases with the number of partners one has, or the number of partners one's partner has. Unfortunately, the number of STIs reported in Wisconsin, including chlamydia, gonorrhea and syphilis, steadily grew from 2014–2018, reaching 6.4 cases per 1,000 people.[219]

- The number of STI cases is almost double among females as males. This may be a true difference in infection rates, or due to a greater number of females accessing testing and treatment services.[219]

- The highest number of STI cases occurred among those aged 20–24.[219]

- The vast majority of STI cases were documented in urban areas.[219]

  - There have been major increases in gonorrhea trends in Milwaukee County; this increase has led to the granting of a federal award to implement rapid surveillance and response to antibiotic-resistant strains of gonorrhea, and monitor transmission patterns and risk factors for this disease.

HIV

In 2018, there were 6,310 people living with HIV in Wisconsin, and 206 new diagnoses.[257] Eight out of 10 people living with HIV in Wisconsin are male. Black/African American and Hispanic individuals are disproportionately impacted. Nearly nine in 10 new HIV diagnoses are in men, and again, Black/African American and Hispanic individuals are over-represented in these numbers compared to their population in the state. The majority of individuals newly diagnosed with HIV are under age 34.[257]

One indicator of adequate health care access is the percentage of newly diagnosed HIV patients who receive appropriate follow-up, testing, and treatment within one month of diagnosis. In Wisconsin, 81% of patients in 2018 were connected to care within one month of their initial HIV diagnosis.[257] This percentage has continued to improve since 2014, when it was only 68%.

HIV/AIDS advocates noted in our community conversations that the stigma of the disease continues to impede progress in reducing transmission and increasing access to care. Populations that are highly stressed due to systematic racism and poor socioeconomic conditions continue to be differentially impacted by the disease. Wisconsinites participating in our community conversations also noted the impact of social media in spreading critical awareness of HIV prevention and treatment opportunities, but also in spreading misinformation that leads to reductions in trust with health care providers and within communities. Controlling HIV infection is complicated, and a difficult concept to convey, especially to people with lower health literacy levels.

HCV

Hepatitis C virus (HCV) can cause serious liver disease and cancer. HCV is generally transmitted through shared needles, or other bloodborne exposures, however it can be sexually transmitted among those with HIV. Because most new HCV infections are asymptomatic, many people with HCV do not know that they have it. Testing is needed, especially for high-risk populations like people who inject drugs.

- The rate of new HCV infection is 2.5 per 100,000 in Wisconsin.[219]

- Over the past decade, the number of new HCV infections among young adults in Wisconsin has increased dramatically as a result of increased injection drug use related to the opioid epidemic. [219]

- Rates of HCV infection are high among young men and women. In recent years, the number and rate of new cases reported among people age 15-29 has leveled off.[219] This could signal that fewer younger adults are becoming newly infected, but it might also indicate that testing efforts need to be improved.

  - Between 75-85% of newly infected persons are likely to become chronically infected, and will require treatment. Any babies born to women with HCV are at risk of HCV.

- In Wisconsin, rates of new HCV infections are highest among Native American/American Indian people. This is also true nationally.[219]

- Most cases of HCV among young people are in urban areas, but rates of HCV are highest in many rural communities.[219]

QUALITY OF CARE

In addition to needing places to receive health care, and the ability to seek care on a preventive, regular basis, people also need access to high quality care. The World Health Organization defines high quality care as: [258]

- Safe.
- Effective.
- Timely.
- Efficient.
- Equitable.
- People-centered.

A variety of indicators, including, but not limited to, the ones described below can be used to construct a comprehensive picture of the quality of health care in Wisconsin.

MATERNAL AND INFANT MORTALITY

Pregnancy can be dangerous. That is why it is best practice for women to receive regular prenatal care throughout pregnancy. The definition of maternal mortality is death during pregnancy, or within 42 days afterwards. In 2018, the U.S. maternal mortality rate was 17.4 deaths per 100,000 births.[259] However, this overall rate hides a stunning disparity: the rate for Black/African American women is 37.1 deaths per 100,000 births. Sadly, these deaths have been increasing in the U.S., while they have been decreasing in other developed countries.[260] Many of these deaths are the result of high blood pressure, existing diseases made worse by pregnancy, blood clots, and heart failure.

- Wisconsin has a rate of 39.5 cases of severe maternal morbidity, or so-called "near misses", per 10,000 deliveries. These severe conditions include renal failure, eclampsia, sepsis, heart failure during surgery, and hysterectomy.[261]
- Wisconsin women who are Black/African American experience much higher rates of severe maternal morbidity, at 61.3 cases per 10,000 births.[261]
- Approximately 25 Wisconsin women die each year within one year of pregnancy. More than two out of three of these deaths occur after birth.[262]
- The rate of maternal death is five times higher for Wisconsin women who are Black/African American than for White mothers.[262]

Losing a child is one of the hardest things a person can face. Infant mortality, where a child dies in the first year of life, is always heartbreaking. The infant mortality rate in the U.S. was 5.9 deaths per 1,000 live births in 2018, while the average rate among other industrialized countries was 3.9.[263] As is the case for maternal mortality, the disparity by race/ethnicity is striking: Black/African American infants die at a rate of 11.4 per 1,000 births, compared to 9.4 per 1,000 Native American/American Indians, 5.0 per 1,000 for Hispanics, 4.9 per 1,000 for Whites, and 3.6 per 1,000 for Asian babies.[264]

- Preterm birth, a major predictor of infant mortality, impacted 10% of Wisconsin infants in 2017. This rate has been slowly inching higher since 2013.[264]
- Preterm births were higher for Wisconsin Black/African American babies, at 15% of births.[264]

- There were 408 deaths of infants under age one in Wisconsin in 2017, leading to a death rate of 6.3 per 1,000 births.[264]

- Wisconsin's death rate for Black/African American babies, at 15 per 1,000 births, is the highest in the nation, and getting worse.[264]

- Perinatal death is a leading cause of death for Black/African American infants, but not for any other racial/ethnic group in Wisconsin (pg. 7).

In Wisconsin, Black/African American mothers and White mothers often live and work in very different social and physical conditions.[264] These living conditions impact the mothers' health before, during, and after pregnancy, which in turn affects the health of their babies. Policies and practices that have intentionally or unintentionally discriminated against Black/African Americans and other groups throughout history have resulted in less healthy living conditions. These unequal and unfair conditions create more hardship and stress throughout the lifespan for Black/African American women, leading to worse maternal health and more adverse birth outcomes. Collaborative efforts between faith communities, public health offices, health systems, and community organizations are underway in multiple communities to improve prenatal and postnatal care for women and their infants, and provide needed social supports.

HEALTH CARE TECHNOLOGY

The increasing availability of healthcare technologies is changing the health care landscape. Digital imaging platforms, shared electronic health records (EHRs), and telehealth communication tools for patient-provider interaction are examples of how technology is increasing the availability of many types of care. Indeed, the use of telehealth greatly expanded during the COVID-19 pandemic, and that expansion is likely to be maintained even after the worst of the crisis has passed. However, not everyone has the same access to these technological advances. While access to such technology has improved overall, health disparities still exist due to the need for affordable access to technology devices. Issues with rural broadband, location-dependent cellular service, health system mergers and acquisitions, and health insurance changes impact people's ability to interact positively with their health care teams. Reimbursement for health care technology also tends to lag behind availability, further confusing patients and health care providers.

Use of emerging health care technologies can address unmet health needs, such as: access to medication and treatment through electronic visits and consultation; reducing delays in receiving appropriate care, including urgent, specialty care; reducing overuse of emergency care; and improving the ability to receive preventive services, through pre-visit screening, vaccination reminders, and telehealth wellness visits. These uses can reduce barriers related to the availability of services and specialty providers, reduce the cost of care, and minimize time constraints around typical business-day appointments.

Many Wisconsinites in our community conversations identified the cost of technology as a potential factor that could increase health disparities, while funding for programs that provide technology to people who need it can reduce health disparities. Community participants also discussed the need for technology to be accessible, including to people with different types of disabilities. Assistive technology can yield more independent living and opportunities for positive health outcomes. The potential for health care technology to improve access to mental health services was addressed by many community participants in our conversations.

HIGH BLOOD PRESSURE, HEART DISEASE, AND STROKE

High blood pressure (hypertension) puts your health and quality of life in danger. High blood pressure can lead to a heart attack or stroke. High blood pressure usually has no warning signs or symptoms. The only way to know you have high blood pressure is to have a health care provider measure it.

- Nearly one in three Wisconsin adults has high blood pressure.[27]

- The rate of hypertension increases with age: more than half of Wisconsinites over age 65 have high blood pressure. However, nearly one in 10 people aged 18–24 already has high blood pressure.[27]

- Black/African Americans and Native American/American Indians in Wisconsin are the most likely to have high blood pressure, while Asians are least likely.[27]

- People living with a disability, and with lower levels of education, are more likely to have high blood pressure.[27]

- Among people living with hypertension, about 83% are able to keep their blood pressure under control, through diet, exercise, and medication.[265] White Wisconsinites, and those with commercial insurance or Medicare were the most likely to have their blood pressure under control.[38]

Heart disease refers to conditions that affect the heart's functioning and blood flow to it. The most common type of heart disease is coronary artery disease (coronary heart disease). Coronary artery disease occurs when the arteries that supply blood to the heart harden and narrow, a process called atherosclerosis. This narrowing results in less blood flow to the heart, and is the usual cause of heart attacks. People can also be born with heart disease, such as defects in the structure of the heart, or in the valves that connect to blood vessels to the heart.

- Heart disease was the leading cause of death in Wisconsin in 2018, taking 12,053 lives.[251]

- Heart disease is among the top 10 leading causes of death for every age group except children under five years old (pg. 6).

- Nearly 8,000 people were hospitalized for a heart attack in Wisconsin in 2015. The rate of heart attacks were highest for Black/African Americans and Native American/American Indians.[266]

The same conditions that lead to heart disease also can lead to strokes. Strokes occur when there is either a blood clot in the brain (ischemic stroke), or a blood vessel breaking and bleeding in the brain (hemorrhagic stroke). Both situations lead to a loss of blood flow to a part of the brain.

- Stroke was the fifth leading cause of death in 2018 for Wisconsin residents, taking 2,549 lives.[251]

- Nearly 10,000 Wisconsinites were hospitalized for a stroke in 2015. The rate of stroke for Black/African American Wisconsinites was nearly twice the rate for Whites.[266]

High blood pressure. heart disease, and stroke are ultimately indicators of more than health care quality; they are also indicators of where we live, work, play, and pray. Efforts to improve blood pressure, heart disease, and stroke outcomes begin with the healthy and supportive community environments discussed earlier in this report. In the absence of healthy and supportive community environmental assets, even the best health care will not be able to counteract what people are experiencing in their everyday lives.

PATIENT-CENTERED MEDICAL HOMES

The Patient-Centered Medical Home (PCMH) model uses a team-based approach to coordinating patient care. The primary care team is responsible and accountable for meeting the majority of each patient's physical and mental health care needs, including prevention, wellness, acute care, and chronic condition management.[267] The PCMH is relationship-based, caring for the whole person. The National Committee for Quality Assurance (NCQA), the Joint Commission, and the Accreditation Association for Ambulatory Healthcare (AAAHC) provide recognition programs for PCMHs, to ensure consistency and accountability. In 2019 there were 168 NCQA-recognized PCMHs[268], and two Joint Commission-recognized PCMHs in Wisconsin.[269] Practices that earn such recognition have made a commitment to continuous quality improvement and a patient-centered approach to care. Additionally, the Wisconsin Children and Youth with Special Health Care Needs Program aims to provide a medical home defined as accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally effective for children and youth with special health care needs and their families.

CULTURALLY COMPETENT CARE

Wisconsinites in our community conversations described difficulties associated with navigating complex health care and associated social service systems. Community participants described needs for better information and support to navigate these complexities, especially related to obtaining and using health insurance. Multiple participants in our community conversations described the importance of receiving culturally competent care, which meets patients' social, cultural, and linguistic needs.[270] Opportunities for improved cultural competency of providers were cited, especially by adolescents. Overall, demonstrating respect for patients as capable and autonomous individuals, and avoiding stigmatizing language, were noted by our community participants as key priorities for provider cultural competency.

Several Federally Qualified Health Centers (FQHCs) and other community clinics serve the culturally-specific needs of their communities. For example, in Milwaukee, Milwaukee Health Services, Inc. and Progressive Community Health Centers cater to a majority Black/African American population. Sixteenth Street Community Health Centers serve a majority Hispanic/Latino population, and the Muslim Community and Health Center serves people with guiding principles based on the Muslim values of compassion, kindness, peace, and diversity. Similarly, Rural Health Clinics (RHCs) serve not only as needed sites of health care, but also as places that understand the needs of rural Wisconsin residents.

PUBLIC HEALTH INFRASTRUCTURE

The purpose of public health is to: [271]

1. Diagnose the health of communities, and use data, evidence and research to offer solutions.

2. Cooperate to improve the health of communities by bringing together schools, businesses, government agencies, community organizations and others to make decisions and take action.

3. Prevent health problems before they start by ensuring everyone has access to clean and fresh air and water, safe and healthy food, and safe spaces to live, work, play, and pray.

These overarching purposes are often further broken down into 10 essential services performed by public health, and are grouped under three core functions (assessment, policy development, and assurance). These are: [272]

1. Assess and monitor population health status, factors that influence health, and community needs and assets.

2. Investigate, diagnose, and address health problems and hazards affecting the population.

3. Communicate effectively to inform and educate people about health, factors that influence it, and how to improve it.

4. Strengthen, support, and mobilize communities and partnerships to improve health.

5. Create, champion, and implement policies, plans, and laws that impact health.

6. Utilize legal and regulatory actions designed to improve and protect the public's health.

7. Assure an effective system that enables equitable access to the individual services and care needed to be healthy.

8. Build and support a diverse and skilled public health workforce.

9. Improve and innovate public health functions through ongoing evaluation, research, and continuous quality improvement.

10. Build and maintain a strong organizational infrastructure for public health.

Public health and the 10 essential services are not the responsibility of one sector or entity – it takes a whole public health system, including all public, private, and voluntary entities that contribute to the delivery of essential public health services within a given area. A strong public health system not only delivers the essential public health services, but does so in an equitable way.

We used the Public Health System Assessment [PHSA (see Methods)] to better understand the extent our Wisconsin public health system partners (i.e., local/tribal public health and other government, education, health care, organizations, coalitions, and community services) were meeting the nationally-set standards for an optimal public health system. Results were mixed: 46% of partners are contributing to the overall, general delivery of the 10 essential services in a significant (31%) or optimal (15%) way. However, when delivering the 10 essential services using a health equity lens, less than a third (32%) were doing so in a significant (22%) or optimal (10%) way. Each entity plays a role in the overall public health system – no one entity is expected to provide all 10 essential services. On average, an entity contributes to two of the essential services in an optimal way. These results indicate opportunities for improving Wisconsin's public health infrastructure.

In the U.S., public health is funded primarily through federal dollars, however these funds make up only 0.08% of the Gross Domestic Product (GDP).[273] This level of funding is about 1.5% of the level spent on health care.[273] A smaller proportion of public health funding comes from state sources. Wisconsin ranks 48th out of 50 states in public health spending per capita, at $51 per person.[274] This is six times lower funding per capita spending than in Alaska and West Virginia, the states with the highest per capita public health funding in the nation. County and city funds also help support local public health departments; these funds are most dependent on changing local economic conditions, such as business openings and closures, disaster events, and aging populations. Very few funds for public health are raised through fees, fines, and other sources.

Wisconsin's public health governance system is decentralized, meaning the state Division of Public Health has a strong partnership with city and county public health departments, but does not control them.[275] Local public health departments are staffed by city and county government employees, and these staff report to local officials, not to state employees. Each local health department develops its own budget, and has authority to issue local orders. While this structure allows for public health departments to optimally respond to local needs, it can lead to inconsistencies across county lines.

The COVID-19 pandemic exposed multiple underlying weaknesses across the public health system, including in Wisconsin. Public health staff were almost entirely reassigned to assist with the response, regardless of training or experience. Even then, there were not enough staff to respond to the enormous need for regular, up-to-date information distribution, contact tracing, and guideline development.

Efforts to reduce cancer and cardiovascular disease, the leading causes of death in Wisconsin and nationwide, ground nearly to a halt as a result of health clinics cancelling non-emergency visits, and public reticence to resume visits once it was safer to do so. Overdoses rose as a result of more individuals using drugs alone.[276] Preventive services for students, such as dental sealants and vaccinations, were delayed indefinitely as schools were closed. Partnerships took on a new level of importance, with efforts to coordinate messaging and develop guidance across public health, health care, community, professional, and trade organizations.[277]

The COVID-19 pandemic especially stressed efforts to distribute evidence-based information to the people who needed it most. This was a new virus, and learning about it is ongoing. Information about the importance of mask-wearing, cleaning surfaces, and the role of aerosolization of the virus all changed during the course of the pandemic, leading to widespread sharing of outdated or inaccurate information. The rise of social media led to rapid spread of inaccurate and misleading information. Destabilizing messages from foreign sources further challenge the public health response. Anti-vaccination trends were amplified in anti-mask messages and in distrust of infection and death statistics. Known public health measures to limit communicable disease spread were constantly questioned. These challenges led to the departure of public health officials and high-profile staff across the country, including in Wisconsin, leaving the state even more vulnerable to future infectious disease, environmental, and other threats.[278] It will be essential to increase public understanding of, and trust in, evidence-based approaches as we rebuild from the effects of this pandemic.

POLICIES THAT SUPPORT HEALTHY COMMUNITIES

Policies and systems are part of, and often determine, the conditions in which individuals, families, and communities exist. Policies impact individual and community health both directly and indirectly, by altering social and economic conditions, behaviors, and the availability of assets.

For example, policies related to transportation, wages, and zoning can dramatically impact health outcomes, especially for marginalized communities with limited assets due to socioeconomic barriers and systematic disinvestment.

Policies are a driving force in creating and increasing health disparities; thoughtful policy development can help reduce and eliminate disparities. It is important to lead with health equity and address and mitigate unintended consequences, particularly when they compound existing inequities and add to the burden of marginalized groups.

During our community conversation sessions, Wisconsinites shared that the conditions in their communities largely improve or hinder health and quality of life. There are many policies that support the ability of individuals and communities to be healthy, thriving, and resilient.

CONNECTED COMMUNITIES

Connected communities are healthy communities. Access to reliable, affordable, and timely transportation, high-speed internet for all Wisconsin homes and businesses, and safe spaces to gather and exercise, improve overall health and well-being. Evidence-based policies that support connected communities include:

- Investing in public infrastructure, from transit to broadband.

- Ensuring integrated, multi-modal transportation facilities and services.

- Subsidizing public transit and internet services for low-income individuals and families.

- Supporting broadband deployment in unserved and underserved areas through grant programs that fund a portion of the cost of deployment in these communities.

- Zoning for more public spaces like parks and community centers and fewer alcohol and tobacco retail/outlets.

INCLUSIVE NEIGHBORHOODS AND AFFORDABLE, QUALITY HOUSING

Promoting diverse and inclusive neighborhoods through planning for integrated, healthy, and affordable communities is critical. Evidence-based policies that support inclusive neighborhoods and affordable, quality housing include:

- Banning exclusionary zoning policies that discriminate based on income.

- Authorizing more high-density and multi-family, multi-generation zoning, and relaxing lot size restrictions.

- Seeking solutions that respect and amplify the economic and cultural power of the informal institutions and people in neighborhoods to avoid displacing long-time residents by rapid gentrification.

- Enforcing eviction moratoriums during crisis periods, and providing focused debt-management after these moratoriums end.

- Providing direct cash assistance for housing.

- Allowing the conversion of unpaid rent into consumer debt.

- Providing tax incentives and other financial support for maintenance and repairs.

EQUITY IN EDUCATION AND OPPORTUNITY

Polices that combat income and racial segregation in schools, provide equitable access to quality child care, and prevent disinvestment in the education system help improve health outcomes, decrease the achievement gap, and improve graduation rates. Examples of evidence-based policies that support equity in education and opportunity include:

- Providing subsidized or fully-paid quality child care and preschool for universal access.

- Increasing supports for students with special educational needs.

- Detaching school funding from residential and commercial property taxation to ensure socioeconomically integrated schools and address school segregation.

- Creating community schools that provide a multitude of services to meet the needs of students and families (e.g., food, mental health, social services).

ECONOMIC STABILITY

Economic stability is one of the most critical conditions for healthy individuals and communities. Policies that promote economic stability and equality lead to better health outcomes and quality of life for all. Evidence-based policies that support economic stability include:

- Expanding earned income tax credit eligibility and amounts.[279]

- Ensuring universal coverage for paid family and sick leave.

- Enacting living wage legislation.

- Expanding unemployment insurance benefits.

- Providing universal basic income.

- Utilizing state tax incentives to attract businesses to foster local and regional development strategies in all corners of the state.

CIVIC ENGAGEMENT AND ACCESS TO THE POLITICAL PROCESS

Increasing access to the political process by protecting the right to vote and making it easier to vote is a critical upstream factor for health. Enacting fair and inclusive electoral policies and promoting civic engagement strengthens communities and, eventually, improves health outcomes. Policies that promote inclusion of those most impacted in decision-making and policy-making processes are critical for health equity and lead to more equitable resource allocation.

UNIVERSAL ACCESS TO QUALITY HEALTH CARE

Equitable health care access means that all individuals have access to affordable, high quality, culturally and linguistically appropriate care in a timely manner. This includes regular preventive care, in addition to emergency care, as well as mental health support. Evidence-based policies that promote equitable access to health care include:

- Universal health insurance that covers physical, mental health, dental, and vision care.
- Expanding the safety net, including Medicaid services.
- Creating incentives for health care professionals working in underserved communities.
- Increasing investment in primary care in order to improve response capacity.

CONCLUSION

When our policies are exclusionary, create inequities, and lead to widespread, deliberate structural violence and racism, they can lead to individual and community violence. Policies that promote disinvestment in marginalized communities or lead to concentrated poverty, unemployment, economic instability, or structural racism, often lead to a lack of access to safe housing, quality health care, and reliable transportation, thereby deepening existing health inequities and negative health outcomes.

Many of the disparities in physical and behavioral health and violence we are seeing in Wisconsin today are deeply rooted in such policies and systems. All of us have the opportunity to critically examine the policies and systems shaping our communities, and revise them as appropriate to better protect and promote the health and safety of all the people of Wisconsin.

STATE OVERVIEW:

OUR HISTORIES IMPACT OUR PRESENT

The health of the people of Wisconsin is influenced by events, decisions, and experiences of the past, which differ depending on where people live and who they are. The geography and natural resources, the way people moved in and out of the regions, and the businesses that were started and closed, all have had long-term impacts on the people of the state. Here we present a brief summary of the major attributes and history of each of Wisconsin's five public health regions, which contribute to the picture of health we see today.

WESTERN REGION

The Western Region of Wisconsin includes the counties of Barron, Buffalo, Burnett, Chippewa, Clark, Douglas, Dunn, Eau Claire, Jackson, La Crosse, Monroe, Pepin, Pierce, Polk, Rusk, St. Croix, Trempealeau, and Washburn. The region is defined by its vast differences in population: the most populated county is La Crosse County, which is the 12th most populated county in the state, and the least populated county is Pepin County, which ranks 69th out of 72 counties. St. Croix County lies directly on the St. Croix River and is part of the Minneapolis-St. Paul-Bloomington, Minnesota-Wisconsin statistical area. Since 2010, both St. Croix and Eau Claire counties experienced significant growth, at 6.26% and 5.57% respectively, making them the third and sixth fastest growing counties in Wisconsin.[281]
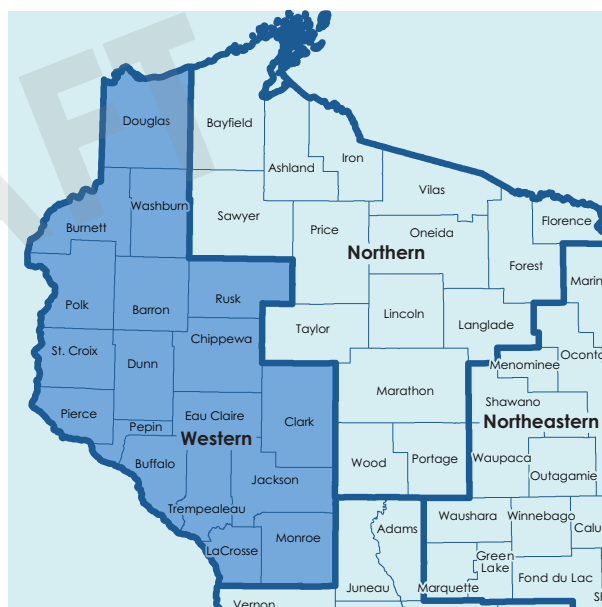
Western Region[280]

The poverty level in Wisconsin's Western region increased from 9.5% in 2000[282] to 13.1% in 2012[283], and dipped down a bit to 11.8% in 2017.[283] The poverty level in the Western region is second only to the Southeastern region. Three out of 20 children age 17 and younger lived in poverty in the Western region in 2017.[281, 284] The child poverty rate ranged from 5% to 23% among the counties in the Western region in 2018.[285]

Employment in the Western Region of Wisconsin largely relies on office and administrative support among females and production and management among males. The largest employers in the southern part of the region include health care, social assistance, and retail trade. The Mayo Clinic Health System operates two facilities in Eau Claire. Other hospital systems, including Sacred Heart Hospital, Marshfield Clinic, and Oakleaf Medical Network have clinics scattered across the Western Region. The transportation industry is a vital component of the economy in the northern part of the region, as Douglas County borders Lake Superior, where there is significant boating and shipping activity.

KEY Innovations

The world's first supercomputer was created in Chippewa Falls in 1975.

Wisconsin is the leading producer of cranberries in the nation, with 20 counties, primarily in the Western and Northern regions, growing the crop on 21,000 acres. Ocean Spray has cranberry processing facilities in Wisconsin Rapids, Tomah, and Kenosha.

AMISH PEOPLE IN THE DRIFTLESS AREA

In most of Wisconsin, glaciers once covered the area, and the underlying rock was flattened from the weight of the glaciers and the movement of rock and soil as they melted. In contrast, the Driftless Area, or the Coulee Region, was never covered by glaciers, and the land remains more rugged. Many smaller rivers in the region flow into the upper Mississippi River, also contributing to the area's steep ridges, rock outcroppings, and deep, narrow valleys. The Driftless Area is largely rural in character, with land cover that is mostly forested. The Driftless Area comprises much of the southwestern quarter of Wisconsin, bordered by the Chippewa and Wisconsin rivers. La Crosse is the principal urban area wholly within the Driftless Area, but small cities and towns are scattered throughout the region.

The Amish established their first Wisconsin settlement in the early 1900s in Sawyer County, and later in Taylor County in the 1920s.[286] In the early 1970s, the first Amish came to the Driftless Area of Wisconsin, settling in the northern part of Vernon County and in Monroe County. Later, settlements were made in Vernon and Crawford Counties. [286] More than 20,000 Amish people live in Wisconsin, making it the fourth largest Amish population in the United States, behind only Pennsylvania, Ohio and Indiana.[287] Cashton is the largest Amish community in Wisconsin.[286] A culture based on traditional values and practices, Amish people are known for their simple living, plain dress, old-world skills and separation from the modern world.[288] Amish are also less likely than their non-Amish counterparts to seek medical care and treatment.

Health among the Amish population is characterized by lower rates of cancer and obesity but higher rates of heart disease. Amish also experience much higher rates of rare genetic and metabolic disorders, which are a result of reduced genetic variation among the population, due to a lifestyle that has been geographically and culturally isolated for centuries.[289]

NORTHERN REGION

The Northern region of Wisconsin encompasses the counties of Ashland, Bayfield, Florence, Forest, Iron, Langlade, Lincoln, Marathon, Oneida, Portage, Price, Sawyer, Taylor, Vilas, and Wood. Three counties – Florence[290], Iron[291] and Forest[292] – have populations below 10,000, making them the least populated in the state. Since 2010, Ashland, Forest, and Price counties have experienced negative population growth.[293] The largest city in the region is Wausau in Marathon County, followed by Stevens Point in Portage County, and Marshfield and Wisconsin Rapids, which are located in Marathon/Wood County and Wood County respectively. The poverty rate in Wisconsin's Northern region is 11.7%[294], which has declined from 12.2% in 2008-2012[295], but increased from 8.3% in 2000.[282] Women have a higher poverty rate than men (9.3% vs 7.2%)[282] and children 17 and under (15.4%) have the highest poverty rate of any age group.[294]

Northern Region[280]

The child poverty rate ranged from a low of 9% to a high of 24% in 2018 among Northern counties.[285] The Northern Region has the highest disability rate (13.4%) of all the public health regions in Wisconsin.[296]

Today, most employment in the Northern Region is in the areas of office and administrative support, management, construction and extraction, and sales.[297] This is a substantial change since the late 1800s, when employment was dominated by the logging industry. When settlers came to the region, farming was not viable in the dense forests. Instead, logging was set up along the Wisconsin River with sawmills built in cities such as Wausau and Stevens Point. Logging began declining in the beginning of the twentieth century, as most of the forests had been cleared. Residents of the region turned to growing feed crops and dairy farming – both of which excelled in the more rugged landscape. New settlers from New York and immigrants from Europe shared their farming and cheesemaking experience, resulting in Wisconsin being the largest producer of dairy until the 1990s.[298]

KEY Innovations

Marathon County is the Ginseng Capital of the World, producing 95% of all ginseng exported from the U.S.

The world's largest trivia contest is hosted every year by the University of Wisconsin-Stevens Point.

The first-ever refrigerated salad bar is located in Plover.

NATIVE WISCONSINITES [299]

RED CLIFF

BAD RIVER

LAC COURTE
OREILLES

LAC DU
FLAMBEAU

FOREST COUNTY
POTAWATOMI

ST CROIX

SOKAOGON

STOCKBRIDGE
MUNSEE

MENOMENEE

ONEIDA

HO CHUNK

FOREST COUNTY
POTAWATOMI
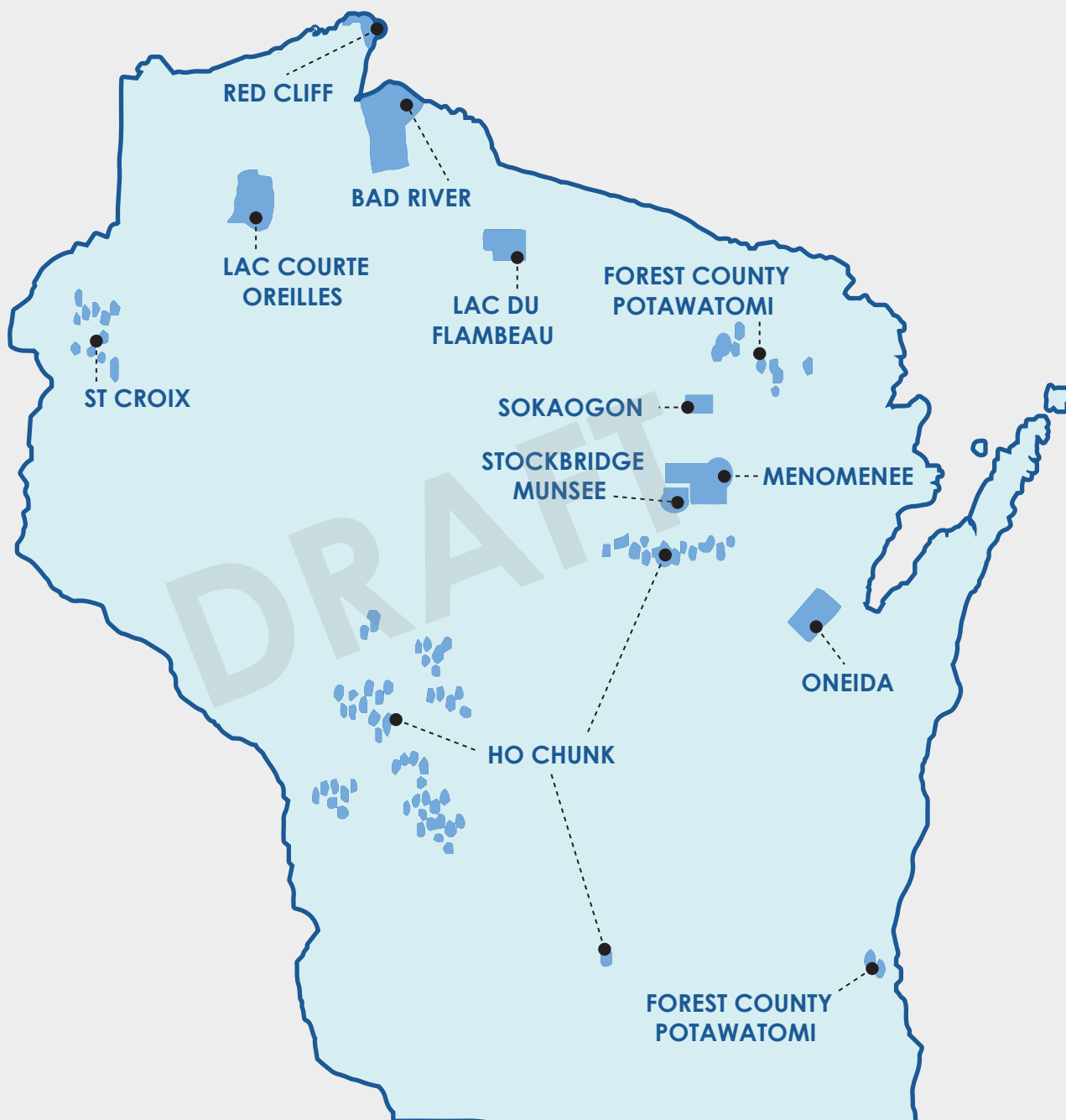
Wisconsin Judicare. Depicts general locations and is not a true reflection of the size of the land base.[299]

The State of Wisconsin was once Indian Territory. Explorers and settlers began arriving in the 17th century, bringing new illnesses that proved lethal to much of the Native population. European settlers displaced Native tribes, including driving Eastern tribes into Wisconsin, where competition for food and furs to trade mounted.[300] Both inter-tribal warfare, and warfare between the settlers and Tribal nations further depleted the Native population. The remaining Native people were further traumatized by the forced relocation of children to Christian boarding schools, where Native language and culture were prohibited, and students were often abused.[301] Up to 13 Indian schools operated in Wisconsin during the 19th century.[302]

A series of 19th century treaties between the tribes and the U.S. Government established the 11 Tribal reservations as they are known and recognized today. In spite of the efforts of early colonizers to annihilate and assimilate Indian tribes, Wisconsin boasts the largest concentration of tribes in one state east of the Mississippi River. These tribes include: Bad River Band of Lake Superior Chippewa, Ho-Chunk Nation, Lac Courte Oreilles Band of Lake Superior Chippewa, Lac du Flambeau Band of Lake Superior Chippewa, Menominee Tribe of Wisconsin, Oneida Nation, Forest County Potawatomi, Red Cliff Band of Lake Superior Chippewa, St. Croix Chippewa, Sokaogon Chippewa (Mole Lake), and Stockbridge-Munsee, in addition to other, non-federally-recognized tribes.[303]

Each tribe, as a sovereign nation, maintains a government-to-government relationship with the State of Wisconsin and the federal government to afford protections and address community participation. Also, each tribe has its own unique peoples, languages, and spiritual and health practices.

Native American/American Indian populations are broadly distributed across Wisconsin, with about 45% residing in metropolitan areas. The largest Native American/American Indian population concentration is in Milwaukee County, where approximately 14% of Wisconsin's Native American/American Indians live.[304]

HMONG AMERICANS IN WISCONSIN

The Hmong people are an ethnic Chinese group that fought alongside American forces during the Vietnam War. The Hmong fled their homes in Laos amid political persecution after the U.S. pulled out of Vietnam in 1975.

American churches and families began sponsoring these refugees to settle in the United States. About 200,000 Hmong, who came from a largely rural, farming culture, live in the U.S., mostly in Wisconsin, Minnesota and California.[305] Hmong are the minority group with the highest representation in the city of Wausau, making up nearly 12% of the overall population, and Hmong children account for nearly 25% of Wausau's public school enrollment.[305] Sizable Hmong populations can also be found in Appleton, Green Bay, Manitowoc, Oshkosh, and Sheboygan.

Like other immigrant groups, the Hmong have not had an easy time in their new surroundings. Poverty, underemployment, racism, and intergenerational tensions have occurred in their transition to life in Wisconsin. When included in comprehensive demographic data for Asian-Americans, the true picture of Hmong-American health may be missed.[306] The poverty rate among Wisconsin's Hmong population is higher than the general population[307], and health insurance rates are lower. [306] In a study of Hmong-American immigrants, half of participants reported low levels of health literacy and difficulty understanding instructions and materials. [306] Hmong-Americans experience higher rates of diabetes, and are less likely to get recommended vaccinations and cancer screenings.[306] These health literacy and health-related outcomes for Hmong-Americans may be due to differences between how health care providers and Hmong-Americans view medicine and the role of health care, underscoring the need for diverse cultural competency training for health care providers.[308]

In spite of the challenges of living in a foreign culture, the Hmong clan structure provides the ability to adapt and support their culture. Hmong communities have developed numerous support and aid groups, religious congregations, businesses, and schools, enriching all of Wisconsin.
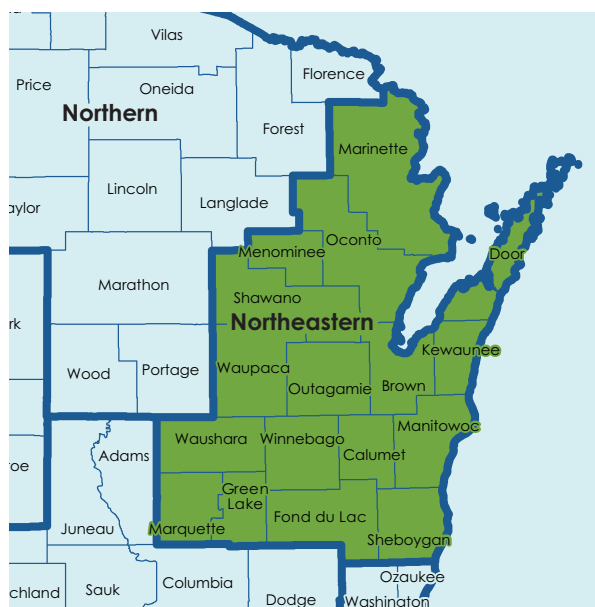
NORTHEASTERN REGION

The Northeastern region of Wisconsin includes the counties of Brown, Calumet, Door, Fond du Lac, Green Lake, Kewaunee, Manitowoc, Marinette, Marquette, Menominee, Oconto, Outagamie, Waupaca, Waushara, Winnebago, Shawano, and Sheboygan. The Northeastern region is home to Green Bay, the third-largest city in the state of Wisconsin, after Milwaukee and Madison, and the third-largest city on Lake Michigan's west shore, after Chicago and Milwaukee.

The abundance of trees and the Wolf River running through Northeastern Wisconsin helped create a major logging district in the 1800s. Logging had a permanent effect on Wisconsin's economy. The location of mills led to the growth of cities and towns and influenced the routes followed by railroads. By the late 1840s, Neenah, Oshkosh, and Appleton developed along the Wolf River as the logging industry was doing well. And, even during decades of strife and tragedy, the Menominee Nation was able to develop a logging and timber industry that remains successful today due to their highly-regarded sustainable forest management practices.

Northeastern Region[280]

Wisconsin's Northeastern region's proximity to fresh water, rich soils, and ample natural resources fueled the state's long historic development. This region not only continues its strong agricultural traditions, but now provides nearly one-half of Wisconsin's largest privately held companies. These companies include: transportation equipment and marine manufacturing; dairy product and other food and beverage manufacturing; pulp, paper, and paperboard manufacturing and converting; electrical machinery equipment manufacturing; and fabricated metal product manufacturing.

The percent of children in poverty is a measure that predicts both current and future health risk, as children in poverty may experience lasting effects on academic achievement, health, and income into adulthood. Child poverty in this region is the most disparate across counties, ranging from 6% to 43% in 2018.[285]

KEY Innovations

The origin of the ice cream sundae is controversial, but one story describes its invention in Two Rivers, Wisconsin in 1881.

The first successful electric commercial streetcar debuted in Appleton in 1886.

The first commercial clothes dryer was produced in Two Rivers in 1938.

The Menominee Nation, through the efforts of the Menominee Restoration Committee and the Menominee County Board of Supervisors, constructed the first Indian owned and operated health facility in the United States in 1977.

The Experimental Aircraft Association (EAA) was founded in 1953, and has grown to an international organization widely representing recreational aviation. The annual attendance at the international festival in Oshkosh, Wisconsin has reached up to 600,000.

SOUTHERN REGION

The Southern region includes the counties of Adams, Columbia, Crawford, Dane, Dodge, Grant, Green, Iowa, Juneau, Lafayette, Richland, Rock, Sauk, and Vernon. The Southern region is home to Madison, Wisconsin's State Capital. As the second-largest city in population after Milwaukee, Madison is located on an isthmus and the land surrounding four lakes. Dane County is the second most populous county in the state, and is defined as a metropolitan statistical area. The counties surrounding Dane in this region are considered micropolitan statistical areas. Vernon, Crawford, Richland, and Lafayette counties are considered rural areas.

Between 800 and 1,600 years ago, the southern part of what is now known as Wisconsin was home to the Woodland Indians who were the first to make pottery, domesticate plants, and build earthen burial mounds. These effigy mounds can be seen throughout the Southern region of Wisconsin yet today.

Over 800 to 1,000 years ago, the Oneota began farming corn, squash, and beans. They had a complex trade network that extended to both the Atlantic and the Gulf coasts. When the French arrived in the 1600s, the Ho Chunk were living in this area along the lakes. In addition, other Native American/American Indian tribes including the Miami, Menominee, Kickapoo and Mascouten Indians resided in this area. As settlers arrived, disease and displacement of the Native peoples ensued.

Although iron mining in Wisconsin had its beginnings in Sauk, Dodge and Jackson counties in the southern part of the state in the 1850s, discoveries of vast new deposits shifted focus to Northern Wisconsin by 1880.

Immigrants to Wisconsin's southern region found abundant water and land resources, helping ensure the foundation for Wisconsin's future economy, environment and quality of life. The Southern region has retained some of its settlers' historical employment and trade roots, including: mink fur farming, food and beverage service, manufacturing, and agriculture. The brewing industry remains strong and growing in the Southern region, where the number of micro-breweries and wineries continues to increase. Today's largest employers in the Southern region are in health care, life sciences, agriculture, advanced manufacturing, and information technology, as well as public employment in government and education.

Southern Region[280]

KEY Innovations

The first American Kindergarten originated in Watertown, WI in 1856.

Stephen M. Babcock, a University of Wisconsin (UW) professor, invented the first method of measuring butterfat in milk in 1890.

A UW professor, W.H. King, invented the round silo in 1910.

In 1929, UW professor Harry Steenbock patented UV irradiation of foods to fortify them with Vitamin D.

Governor Philip La Follette signed the first unemployment compensation law in 1932, which became a model for the nation.

A UW professor, Edwin Witte, headed the group that developed Social Security. The Social Security Act passed in 1935.

Warfarin, the most widely used blood clot drug in the world, was created at the UW in 1948.

The method for determining who was compatible for bone marrow transplants was developed by a UW professor, Fritz Bach, in 1968.

Trek, founded in 1975 in Waterloo Wisconsin, is the largest U.S. bicycle company.

Exact Sciences' Cologuard test, which screens stool DNA for colorectal cancer markers, was approved by the FDA in 2014.

SOUTHEASTERN REGION

The Southeastern region of Wisconsin includes eight counties: Washington, Ozaukee, Jefferson, Waukesha, Milwaukee, Walworth, Racine and Kenosha. The Southeastern region is home to more than one-third of Wisconsin's population, and includes Wisconsin's largest city, Milwaukee. Milwaukee and its surrounding counties are considered metropolitan, while Jefferson and Walworth counties are considered micropolitan.

A variety of Native American/American Indian tribes, including the Potawatami, Menominee, Winnebago, Ho-Chunk, Sauk, Ottawa, and Ojibwe, populated the Southeastern region of Wisconsin for approximately 13,000 years prior to the arrival of trappers and settlers beginning in the 1600s. The history of Wisconsin's first residents is still apparent at local treasures such as Aztalan State Park, where an

Southeastern Region[280]

ancient Mississippian village thrived between 1000-1300 C.E. Settlers brought disease and displacement, and the last remaining tribes were forcibly removed in the 1840s.

Southeastern Wisconsin was attractive to settlers due to the many streams and rivers, and land that the Native Americans/American Indians had farmed for centuries. The first industries to take hold in the region included wood and flour mills, which were quickly followed by blacksmiths, cobblers, tailors, wagon makers, general stores, dairies, cheese factories, breweries, saloons, and inns.

The first major cash crop in the region was wheat, though wheat disease infestation and a loss of labor during the Civil War contributed to the reduction of wheat farming. Dairy farming quickly increased, with the Wisconsin Dairymen's Association starting in 1872 in Watertown. In Waukesha, mineral springs were discovered in the 1870s, and bottling of these waters began, giving rise to Waukesha's bottling and beverage businesses. While retaining some historical roots of factory and agricultural employers, the largest employers in the Southeastern region are now primarily in health care, finance, and insurance.

Wisconsin's Southeastern region has the highest poverty rate of all of Wisconsin's public health regions (14%).[294] This rate remained unchanged following the recovery from the 2008 world-wide recession[295], and was more than 4 percentage points higher in 2017 than in 2000.[282] When reviewed separately, the poverty rate is slightly higher for females than for males in the region.[294] One in five children in the Southeastern region is living in poverty.[294] Just over one in 10 people in the Southeastern region is living with a disability.[296]

KEY Innovations

The factory system of cheesemaking was introduced at Lake Mills in the 1840s.

The grain thresher was invented in Racine in 1843.

By 1856, Milwaukee was home to more than two dozen breweries, including Pabst, Schlitz, Blatz, and Miller.

The modern typewriter was invented in 1867 in Milwaukee.

The first steam-propelled automobile was invented in Racine in 1871.

Malted milk was invented in Racine in 1883.

Harley-Davidson began producing motorcycles in 1901.

The blender was invented in Racine in 1922.

BLACK/AFRICAN AMERICAN RESIDENTS OF SOUTHERN AND SOUTHEASTERN WISCONSIN

Some of the first Black/African Americans in Wisconsin were enslaved people. In the early 1700s, there were about 100 enslaved people in Wisconsin.[309] While the Northwest Ordinance of 1787 prohibited slavery in the Territory, early settlers from the southern U.S. often brought enslaved people with them. But not all Black/African Americans in Wisconsin at this time were enslaved; notable Black/African American fur traders were well known to many White settlers.[310]

By 1840, there were fewer than 200 free Black/African American people living in Wisconsin. Black/African American settlements in Wisconsin increased after the Fugitive Slave Act was passed in 1850. This Act encouraged White Northerners to return escaped, previously enslaved people back to their owners in the South for profit. Since many Wisconsin residents disagreed with the Fugitive Slave Act, many Black/African Americans from the South came to Wisconsin to settle, hoping that the state would welcome them as free and equal citizens.

One of the earliest and largest Black/African American settlements was in the Cheyenne Valley near the location of Hillsboro in Vernon County. About 150 Black/African American settlers, many of whom were freed from enslavement, came to the Valley to farm.[311] Algie Shivers, the son of an enslaved person who came to Wisconsin via the Underground Railroad, lived his entire life in Vernon County and built many of the historic round barns in Vernon County.[312]

In 1852, Joshua Glover escaped from his captors in St. Louis.[313] He traveled north on foot, reaching Racine, the site of publication of two abolitionist newspapers (the American Freeman and Waukesha Freeman). Mr. Glover found a job at a sawmill and a place to live, and settled down.

In March 1854, slave catchers found out where Mr. Glover was living, captured him, and took him to jail in Milwaukee. Abolitionists, led by Sherman Booth, the founder of the American Freeman newspaper, stormed the jail and freed Mr. Glover. Mr. Glover traveled for the next month between Underground Railroad safe houses, until he was put on a steamer to Canada to finally be free. As a result of this history, Racine was one of the first communities where people freed from enslavement would establish themselves;[314] the population of Black/African American people is double the Wisconsin average here.[315]

The town of Lake Ivanhoe in Walworth County was established by prominent Black/African American Chicago community leaders in 1926 as a Black resort community.[316] Many descendants of these founders still reside in the area today.

With the onset of World War II, there was a sudden increased need for factory goods. Black/African Americans from the South moved to Southeastern Wisconsin in the early 1940s to work in the resulting factories, primarily in Milwaukee and Beloit.[317] As more Black/African Americans moved in, redlining resulted in segregated housing, and consequently, schools.[43] Once the Fair Housing Act passed in 1968, White flight to the suburbs began in earnest. Today, Milwaukee is the most segregated city in the U.S., with Black/African Americans primarily living north of the Menomonee River, Hispanic/Latinos living to the south, and Whites living in the surrounding lakefront and suburbs. Approximately 60% of Wisconsin's Black/African American population resides in Milwaukee County.[318]

METHODS

This report was designed to incorporate Public Health Accreditation Board (PHAB) standards and measures. Needs assessment activities were guided by adapting the framework from the National Association of County and City Health Officials (NACCHO) Mobilizing for Action through Planning and Partnership (MAPP) guide, aiming to identify and build upon the existing strengths in Wisconsin's communities and determine the largest needs throughout the state.[319]

The MAPP framework was also used for the Title V Maternal and Child Health (MCH) Needs Assessment to align with the State Health Assessment. The Title V MCH Needs Assessment was included in the State Health Assessment. Priorities for the State Health Assessment included:

1. Expanding diversity of partners.

2. Improving qualitative data collection.

3. Strengthening the process for identifying existing state assets and resources to address health issues.

4. Ensuring preliminary findings are distributed to the population-at-large, and public input is received.

5. Addressing health disparities consistently throughout the report and continuing to work to understand health inequities.

Data collection and analysis processes for each of the four MAPP assessments are detailed in this section. Data from these four assessments were supplemented with additional national data sources where state level data were lacking. Together, the four MAPP assessments helped to answer the following overarching questions:

1. What health conditions exist in the community (state)?

2. Why do these health conditions exist?

3. What assets are available in the community (state)?

4. What is the quality of life in the community (state)?

5. What are the strengths and weaknesses of the public health system?

6. What forces affect how to take action?

MAPP 1: COMMUNITY HEALTH STATUS ASSESSMENT

The first MAPP assessment is the Community Health Status Assessment. The purpose of the assessment was to collect and interpret numerical measurements, or quantitative data, that provide insights into health status, quality of life, or risk factors for illness and death in Wisconsin communities. Each numerical measurement, or indicator, was selected because it captures an important aspect of health in Wisconsin. An indicator can be a direct measurement of how much a health condition affects a community — for example, the number or rate of new diabetes cases each year. An indicator can also be a measure of social, economic, environmental, or behavioral factors that have been shown to affect health — for example, employment or poverty rates.

The Division of Public Health (DPH) selected and analyzed indicators from January 2019 to September 2019 to understand what health conditions are affecting Wisconsin communities and to identify reasons that health differs across the state and among groups. The use of standard indicators also allowed DPH to compare the health of Wisconsinites to the rest of the nation to determine possible areas for improvement. The driving question for this assessment was "what health conditions exist in the community (state)?"

The County Health Rankings and Roadmaps Model served as the framework for the Community Health Status Assessment.[320] The County Health Rankings and Roadmaps Model was utilized for this assessment because partners, including local health departments throughout Wisconsin, were very familiar with the model. Rural/urban designation was based on the Wisconsin Office of Rural Health definition using the U.S. Office of Management and Budget's Core-Based Statistical Areas.[321] Using the model, the initial selection of indicators addressed each of the following topics:

1. Health outcomes

    a. Mortality – Causes of death

    b. Morbidity – Causes of illness, injury or disability

2. Factors that shape health

    a. Social determinants of health – the community factors such as social connection, safety, and community resources where people live, learn, work, pray, and play that affect health

    b. Physical environment – the environmental factors such as healthy water, soil, air, homes, and businesses where people live, learn, work, pray, and play that affect health

    c. Health care delivery and public health systems – the systems that prevent, identify, and treat injury, illness, and death that support people to be healthy

    d. Health behaviors – the activities that people do and choices that people make that affect their health

A group of DPH epidemiologists worked with representatives from each DPH bureau and office to identify potential indicators of health status, quality of life, and risk of illness or death. National (Healthy People 2020)[322] indicators and additional potential indicators within the County Health Rankings and Roadmaps Model were compiled.The initial indicator list had over 150 entries, and considered 20 topic areas. Meetings were then held with staff from every bureau and office in DPH to review and edit the potential indicators. The State Health Assessment external advisory committee provided input as well. A team met to review all of this feedback and narrowed the list to 71 indicators. The epidemiology team and bureau and office staff prepared data for each of these 71 indicators.

The guiding principles for selection of the final indicators were:

1. Provide a high-level snapshot of health.

2. Represent a broad set of topic areas.

3. Allow for examination by gender, age, geography, race/ethnicity, etc. where feasible.

4. Illustrate health equity issues from multiple perspectives.

5. Align with indicators selected by other similar processes.

6. Use at a local level (when possible).

WISCONSIN STATE HEALTH ASSESSMENT CORE INDICATORS

HEALTH OUTCOMES

MORTALITY
Leading causes of death by age (by race/ethnicity and sex when possible)

MORBIDITY AND QUALITY OF LIFE

1. Preterm birth
2. Severe maternal morbidity
3. Overweight/obesity
4. Adults with hypertension with blood pressure under control (18+ years)
5. Adults with diagnosed diabetes whose A1c value is >9% (18+)
6. Cancer diagnoses
7. Influenza-associated hospitalizations
8. Rate of newly identified HCV cases
9. STD rate
10. General health
11. Mental health (poor mental health days)
12. Self-harm / suicide attempt hospitalizations
13. Drug-related hospitalizations
14. Alcohol-related motor vehicle injuries (non-fatal)
15. Falls
16. Occupational injuries
17. Asthma
18. Carbon monoxide poisoning rates
19. Incidence of newly lead-poisoned children
20. Heat stress rates
21. Arthritis
22. Dementia

FACTORS THAT SHAPE OUR HEALTH

SOCIAL DETERMINANTS OF HEALTH

1. High school graduation rates
2. Poverty rates
3. Employment among working-age adults
4. Homelessness and/or housing insecurity
5. Food insecurity
6. Adverse childhood experiences
7. Transportation
8. Social support
9. Community connectivity
10. People 65+ living alone
11. Health literacy
12. Racial discrimination
13. Incarceration or probation
14. Childcare

HEALTH BEHAVIORS

1. Binge drinking in past 30 days
2. Heavy drinking
3. Tobacco use (all ages)
4. Fruit/vegetable consumption
5. Sugar-sweetened beverage consumption
6. Meeting physical activity guidelines
7. Breastfeeding at 6 months of age
8. Opioid misuse in the past year
9. Risky sexual behavior

HEALTH CARE DELIVERY AND PUBLIC HEALTH SYSTEMS

1. Health insurance coverage
2. Did not receive care due to cost
3. Population in provider shortage areas (or providers/population)
4. Receipt of first trimester prenatal care
5. Receipt of dental visit in past year
6. % newly diagnosed persons linked to HIV medical care within one month of diagnosis
7. % of cardiac-related events with bystander-initiated CPR/AED used prior to EMS arrival
8. Opioid prescriptions
9. % of children current with 4:3:1:3:3:1:4 series by 24 months
10. % of 13 year olds current on HPV series
11. Influenza immunization receipt
12. Prevalence of childhood lead testing rates
13. Colorectal cancer screening
14. Breast/cervical cancer screening
15. Referral to Birth to 3 services
16. % of health care providers, clinics, or organizations that are patient-centered medical home recognized
17. Public health funding

PHYSICAL ENVIRONMENT

1. Radon
2. Air Quality (ozone)
3. Fine particulate matter
4. Well water data
5. Fluoridated drinking water
6. Children exposed to secondhand smoke (3-11 years)
7. Access to exercise opportunities
8. Limited access to healthy foods
9. Alcohol outlet density

MAPP 2: COMMUNITY HEALTH THEMES AND STRENGTHS ASSESSMENT

The second assessment of the MAPP framework is the Community Health Themes and Strengths Assessment. The aim of the assessment was to collect information about issues that are important to community members. The assessment answers:

- What is the quality of life in the community?

- What health conditions exist?

- What assets are available in the community?

The Community Health Themes and Strengths Assessment has two parts: the community survey and community conversations. The community survey was developed electronically to gather insight from Wisconsin residents about their communities. The community survey was distributed directly to residents through the DHS website, and also was sent to DPH personnel who then sent the survey to community partners, with community partners sending the survey to community members. The survey included questions about the physical environment, social environment, health behaviors, social determinants of health (economic, social, and physical conditions), health care, and systems. The survey was open for responses from May 1 to June 12, 2019; 401 Wisconsinites completed the full-length survey during this time. In addition, DPH staff collected responses via iPads for a shorter version of the survey at Maternal and Child Health (MCH)/children and youth with special health care needs-related conferences around the state. There were 94 Wisconsinites who responded to the shortened survey. All of the community survey responses were analyzed via Dedoose, a qualitative analysis platform.

Community conversations were community dialogue sessions that took place throughout the state with community members to obtain more in-depth information about their lived experiences in their communities. Some of the conversations were hosted by DPH staff and community groups that regularly convene community members, while others were hosted by local health departments, who received mini-grants to host conversations with community members and groups within their jurisdictions. Much of this outreach was done in collaboration with local partners, and the engagement effort was geared towards more marginalized and underserved communities or populations experiencing multiple health disparities. Populations or groups of interest included communities of color, including two different tribal nations; refugee and immigrant populations; LGBTQ+ communities; Amish and Mennonite communities; older adults; rural residents; veterans; persons living with disabilities; and persons experiencing poverty, poor mental health, addiction, or homelessness. There were 74 community conversations, which were equally distributed across the five Wisconsin public health regions. Two additional community conversations occurred between a few members of DPH leadership and two different tribal communities.

During the community conversations, community members were asked very broad questions to encourage community members to tell their own stories, lead their own narrative, and provide meaningful responses. Sample questions included:

- What communities do you belong to?

- What is the most important or urgent issue facing your community right now?

- What does living your best life mean to you?

- Tell me about the quality of life in your community.

- What are some of the good things about your community that make life better for people who are part of it?

- What would make it easier to make healthy choices in your community?

Each community conversation was led by a facilitator, while a note taker recorded responses from community members. Responses from every community conversation were transcribed, coded, and analyzed to identify themes using Dedoose. Each data team member read the transcripts of participant responses and created codes. Themes were developed by analyzing all of the responses and reflecting repeated patterns associated with each question. A combination of a deductive and inductive content coding approach was used for analyzing responses gathered from community conversations. This means that analysts were both looking for specific ideas that they expected to see and looking for new ideas that they may not have been expecting. Analysts used the County Health Rankings and Roadmaps Model of health determinants as a framework for the deductive analysis. The themes and their definitions were developed and continuously adapted according to new responses. At least three analysts worked on each question and defined the themes using a sample of community conversations and then applied the themes to the remaining community conversations. Close to a third of the data was analyzed by multiple people to assess consistency of the application of themes. After the coding was complete, Dedoose analysis tools were used to look at how common each theme was across community conversations with different populations.

MAPP 3: PUBLIC HEALTH SYSTEM ASSESSMENT

The third MAPP assessment is the Public Health System Assessment (PHSA). This assessment was developed to align with the MAPP-recommended National Public Health Performance Standards (NPHPS) State Assessment Instrument, which uses the 10 Essential Public Health Services as a framework to assess the extent the Wisconsin public health system meets the standards for an optimal level of performance and capacity.

The Public Health System Assessment consisted of a maximum of 16 questions in three areas: 1) General delivery of the 10 Essential Public Health Services, 2) Health equity delivery of the 10 Essential Public Health Services, and 3) Public health system partner information. The general and health equity delivery questions aligned with the NPHPS State Assessment Instrument.

1. **General delivery of 10 Essential Public Health Services:** Each organization or program participating in the Public Health System Assessment selected the level of activity that was being provided within each of the 10 Essential Public Health Services. This was assessed using a 5-point, Likert-type or rating scale question: 1) No Activity, 2) Minimal Activity, 3) Moderate Activity, 4) Significant Activity, and 5) Optimal Activity (see Logic Operators Figure below).

   The design included logic operators or conditional rules (e.g., skip logic, conditional branching, or display logic). Any respondents who selected they were Moderately (3), Significantly (4), or Optimally (5) engaged in each of the 10 Essential Public Health Services were then prompted to answer the corresponding health equity delivery section (see point 2, below). Logic operators or conditional rules are shown below.

2. **Health equity delivery of 10 Essential Public Health Services:** Each organization or program that selected Moderate to Optimal activity for the general delivery of each of the 10 Essential Public Health Services was then asked to select at what level the Service was being provided in a way that incorporates health equity. The health equity delivery question used the same 5-point, Likert-type or rating scale format as the general delivery question: 1) No Activity, 2) Minimal Activity, 3) Moderate Activity, 4) Significant Activity, and 5) Optimal Activity (see Figure).
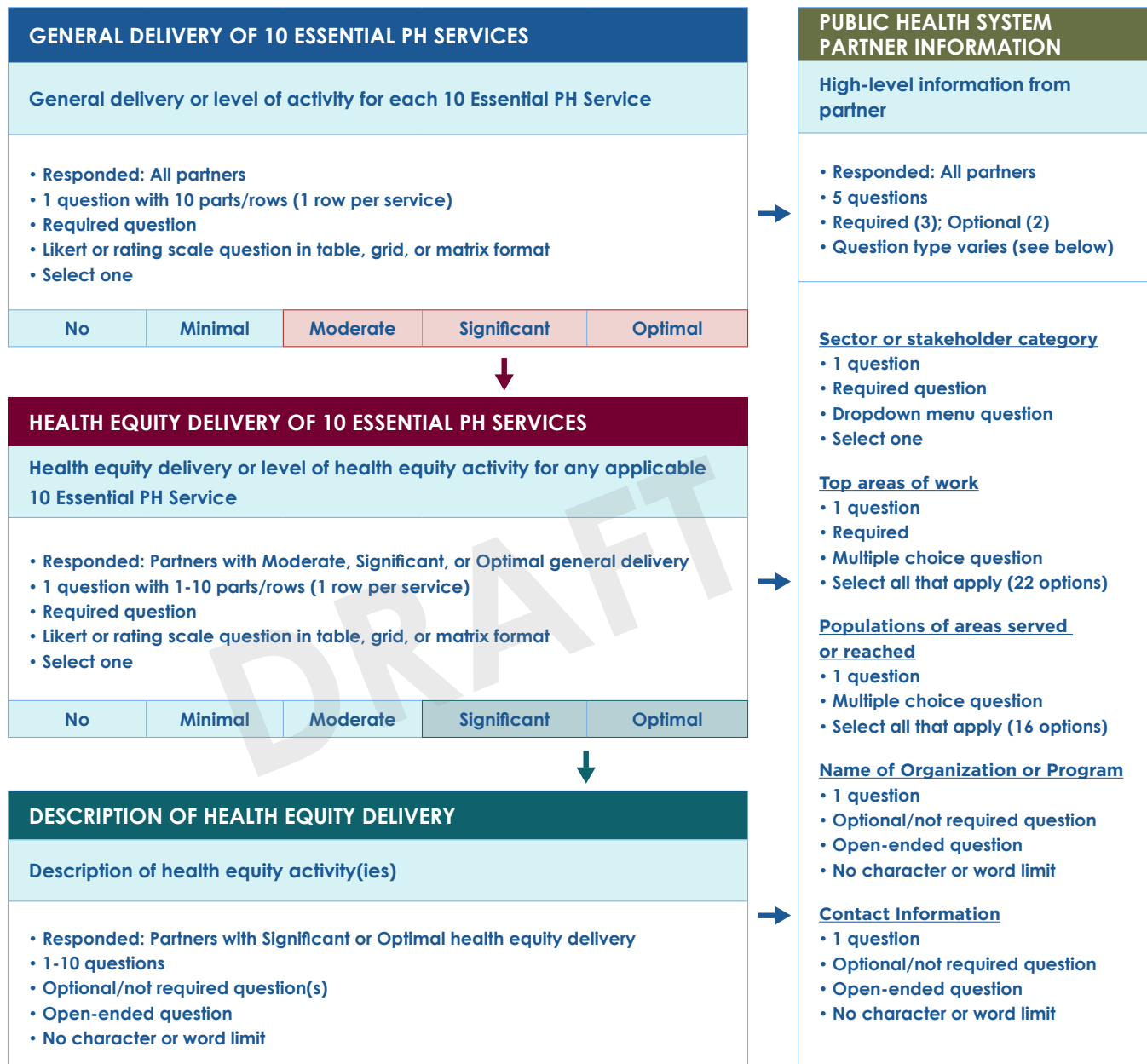
   Description of health equity delivery: Any respondents who selected they were Significantly (4) or Optimally (5) performing health equity within each of the 10 Essential Public Health Services were then prompted to describe how the organization or program was delivering that corresponding service in an equitable way. Logic operators or conditional rules are shown in the Figure.

3. **Public health system partner information:** Lastly, the Public Health System Assessment captured high-level information from each organization or program. The information included: sector or stakeholder category, topic areas of work, populations or areas served or reached, name of organization, and contact information. Below is the information that was gathered regarding public health system partners:

   - Sector or stakeholder category (select one): Government, Organization, Coalition, Business, Health care, Education, Community services, or Other

   - Topic areas of work (select all that apply): Aging, Chronic disease, Communicable disease and immunizations, Community health, Data and informatics, Disability and special health care needs, Emergency preparedness, Environmental and occupational health, Health care, HIV/AIDs, Injury and violence prevention, Maternal, child, and adolescent health, Mental health, Nutrition and physical activity, Oral health, Reproductive and sexual health, STD/STI (sexually transmitted disease/infection) prevention, Substance abuse prevention/treatment, Tobacco, Other (open-ended text box to specify), All of the above, and None of the above

   - Populations or areas served or reached (select all that apply): American Indian, Asian, Black/African American, Hispanic/Latino, White/Caucasian, Low socioeconomic status, Lesbian, gay, bisexual, and transgender people, People with disabilities, Seniors, Youth, Rural, Immigrants or refugees, Specific neighborhoods or census tracts, Other (open-ended text box to specify), All of the above, and None of the above.

   - Name of organization (open-ended text box): Name of organization or program completing the Public Health System Assessment.

   - Contact information (open-ended text box): First and last names of the person completing the PHSA.

FIGURE: LOGIC OPERATORS OR CONDITIONAL RULES

GENERAL DELIVERY OF 10 ESSENTIAL PH SERVICES

General delivery or level of activity for each 10 Essential PH Service

• Responded: All partners
• 1 question with 10 parts/rows (1 row per service)
• Required question
• Likert or rating scale question in table, grid, or matrix format
• Select one

No	Minimal	Moderate	Significant	Optimal

HEALTH EQUITY DELIVERY OF 10 ESSENTIAL PH SERVICES

Health equity delivery or level of health equity activity for any applicable 10 Essential PH Service

• Responded: Partners with Moderate, Significant, or Optimal general delivery
• 1 question with 1-10 parts/rows (1 row per service)
• Required question
• Likert or rating scale question in table, grid, or matrix format
• Select one

No	Minimal	Moderate	Significant	Optimal

DESCRIPTION OF HEALTH EQUITY DELIVERY

Description of health equity activity(ies)

• Responded: Partners with Significant or Optimal health equity delivery
• 1-10 questions
• Optional/not required question(s)
• Open-ended question
• No character or word limit

PUBLIC HEALTH SYSTEM PARTNER INFORMATION

High-level information from partner

• Responded: All partners
• 5 questions
• Required (3); Optional (2)
• Question type varies (see below)

Sector or stakeholder category
• 1 question
• Required question
• Dropdown menu question
• Select one

Top areas of work
• 1 question
• Required
• Multiple choice question
• Select all that apply (22 options)

Populations of areas served or reached
• 1 question
• Multiple choice question
• Select all that apply (16 options)

Name of Organization or Program
• 1 question
• Optional/not required question
• Open-ended question
• No character or word limit

Contact Information
• 1 question
• Optional/not required question
• Open-ended question
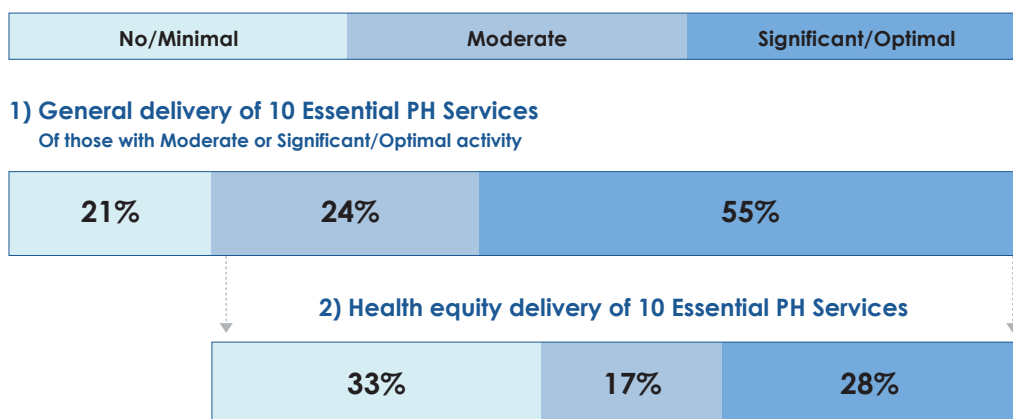• No character or word limit

DRAFT

The Public System Health Assessment, including the 16 questions and logic operators or conditional rules, were entered into the DPH electronic survey tool. An electronic survey tool provided an opportunity to reach more respondents, improve the validity of data collected (e.g., limit to one response or skip to corresponding question), lessen survey respondent burden (e.g., respond to survey at convenience), and decreased data entry error (e.g., no paper-based surveys being entered). All DPH staff were asked to assist in the survey distribution process using internal website postings, newsletters, factsheets, survey invitation templates, and reminder DPH emails. This approach was used to help reach the target audience: any partner, group, or agency that may deliver any of the 10 Essential Public Health Services, including traditional and non-traditional partners that make up our public health system. The PHSA responses were received between March 4–July 29, 2019.

Data analyzers summarized the survey results using both qualitative (descriptive) and quantitative (numbers) analysis. Qualitative analysis was primarily used to describe how public health system partners were delivering any of the 10 Essential Public Health Services with health equity (see point 2, above). Qualitative analysis was completed using Dedoose.

The other Public Health System Assessment sections primarily used quantitative analysis. The quantitative analysis was done in several forms:

- **Breakdown by level of activity:** The breakdown by level of activity was calculated for 1) General delivery of the 10 Essential Public Health Services and 2) Health equity delivery of the 10 Essential Public Health Services sections. For each question in these two sections, we calculated the percentage of respondents for each of the 5-point, Likert-type or rating scale options: 1) No Activity, 2) Minimal Activity, 3) Moderate Activity, 4) Significant Activity, and 5) Optimal Activity. We combined the two lowest and highest levels (No/Minimal combined No Activity and Minimal Activity; Significant/Optimal combined Significant Activity and Optimal Activity) for easier interpretation. Moderate Activity was not combined with other responses. The data excerpt below represents the breakdown by level of activity.

At what level does my organization or program...

No/Minimal	Moderate	Significant/Optimal

1) General delivery of 10 Essential PH Services
Of those with Moderate or Significant/Optimal activity

21%	24%	55%

2) Health equity delivery of 10 Essential PH Services

33%	17%	28%

- **Breakdown by average point value:** The breakdown by average point value represents the same sections and questions as noted above (breakdown by level activity), but provides another way to show the data. Instead of percentage, an average was calculated by assigning a numeric value to each of the 5-point, Likert-type or rating scale options (No Activity = 1 point, Minimal Activity = 2 points, Moderate Activity = 3 points, Significant Activity = 4 points, and Optimal Activity = 5 points). The average (out of 5.0) was calculated based on each question's number of responses.

- **General descriptive statistics:** Percentages and other general descriptive statistics were used to summarize all responses to questions within the Public health system partner information section.

Only complete responses were included in the analysis. Complete responses (n=370) were identified in the DPH survey platform, which indicates the respondent completed all required questions in their entirety and submitted the survey. Partial or incomplete responses (n=215) were excluded from the analysis.

MAPP 4: FORCES OF CHANGE ASSESSMENT

The fourth MAPP assessment is Forces of Change. This assessment examines the forces (e.g., social, economic, political, technological, environmental, scientific, legal, ethical) that may affect Wisconsin and the opportunities and threats associated with those forces. The questions included:

- What has occurred recently that may affect our public health system or community?

- What may occur in the future?

- Are there any trends occurring that will have an impact?

- What characteristics of our state may pose an opportunity or threat?

- What may occur or has occurred that may pose a barrier to achieving the shared vision?

- What forces now and in the future can reinforce health equity in our communities?

This assessment aims to answer:

1. What trends, factors and events may affect the public health system?

2. What opportunities do these forces present?

3. What threats are present?

There were 29 assessments conducted by DPH staff between November 2018 and June 2019. Notably, these assessments occurred prior to the onset of the COVID-19 pandemic; no one identified such a pandemic threat in these assessments. Participants for the assessments were groups of people attuned to forces that may be affecting the health of the community and public health system. Over 400 individuals participated, comprising key partners, stakeholders, advisory boards, coalitions, and DPH staff to complete the assessment via partner meetings. The primary mechanism used to identify participants was the encouragement of DPH staff to reach out through existing partner relationships. The data from the Forces of Change assessments were analyzed using the same methods for the community conversations in MAPP 2.

1. Sign-on: Racism is a Public Health Crisis in Wisconsin. Accessed October 21, 2020. https://uwphi.pophealth.wisc.edu/match/match-wisconsin-healthiest-state-initiative/racism-is-a-public-health-crisis-in-wisconsin/

2. Wisconsin Department of Health Services. Wisconsin Department of Health Services website. Accessed December 6, 2020. https://www.dhs.wisconsin.gov/

3. Berman JD, Ebisu K. Changes in U.S. air pollution during the COVID-19 pandemic. *Sci Total Environ.* 2020;739:139864.

4. Robinson B. "Loneliness On The Job Is A Public Health Crisis": Former Surgeon General Reveals What This Means For You. *Forbes Magazine.* Published online January 3, 2020. Accessed November 6, 2020. https://www.forbes.com/sites/bryanrobinson/2020/01/03/loneliness-on-the-job-is-a-public-health-crisis-former-surgeon-general-reveals-what-this-means-for-you/

5. Wisconsin. AmeriCorps. Accessed November 6, 2020. https://www.nationalservice.gov/serve/via/states/wisconsin

6. Wisconsin Department of Health Services. *Wisconsin PRAMS Surveillance Report 2016-2017*; 2019. https://www.dhs.wisconsin.gov/publications/p02500.pdf

7. Wisconsin Economic Development Corporation. *Rural Voices for Prosperity: A Report of the Governor's Blue Ribbon Commission on Rural Prosperity.* https://wedc.org/wp-content/uploads/2020/12/Web_Governors-Blue-Ribbon-Commission-Report.pdf?_sm_au_=iVVMnk7rRM8F8N5TBLQtvK7BJGKjp

8. Steiner RJ, Sheremenko G, Lesesne C, Dittus PJ, Sieving RE, Ethier KA. Adolescent Connectedness and Adult Health Outcomes. *Pediatrics.* 2019;144(1). doi:10.1542/peds.2018-3766

9. Umberson D, Montez JK. Social relationships and health: a flashpoint for health policy. *J Health Soc Behav.* 2010;51 Suppl:S54-S66.

10. House JS, Landis KR, Umberson D. Social relationships and health. *Science.* 1988;241(4865):540-545.

11. Nieto FJ, Peppard PE, Engelman CD, et al. The Survey of the Health of Wisconsin (SHOW), a novel infrastructure for population health research: rationale and methods. *BMC Public Health.* 2010;10(1):785.

12. Health Affairs. Social Isolation And Health. Health Policy Brief. Accessed November 9, 2020. https://www.healthaffairs.org/do/10.1377/hpb20200622.253235/full/

13. World Health Organization. Violence against adults and children with disabilities. Disabilities and rehabilitation. Published July 11, 2012. Accessed November 9, 2020. https://www.who.int/disabilities/violence/en/

14. Poonwassie A, Charter A. An Aboriginal Worldview of Helping: Empowering Approaches. *Canadian Journal of Counselling.* 2001;35(1):63-73.

15. Lowe J. Balance and harmony through connectedness: the intentionality of Native American nurses. *Holist Nurs Pract.* 2002;16(4):4-11.

16. Ip S, Chung M, Raman G, et al. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Rep Technol Assess.* 2007;(153):1-186.

17. Centers for Disease Control and Prevention (CDC). Breastfeeding Report Card. Breastfeeding. Published September 17, 2020. Accessed January 27, 2021. https://www.cdc.gov/breastfeeding/data/reportcard.htm

18.   Great Lakes Inter-Tribal Council, Inc. *Aggregate Results From the Wisconsin Native Breastfeeding Survey 2017-2018.* (Lac du Flambeau, WI: Great Lakes Inter-Tribal Epidemiology Center, Great Lakes Inter-Tribal Council, Inc., ed.); 2019.

19.   Beauregard JL, Hamner HC, Chen J, Avila-Rodriguez W, Elam-Evans LD, Perrine CG. Racial Disparities in Breastfeeding Initiation and Duration Among U.S. Infants Born in 2015. *MMWR Morb Mortal Wkly Rep.* 2019;68(34):745-748.

20.   Wright R. Baby-Friendly Facilities A-Z and by State. Accessed November 9, 2020. https://www.babyfriendlyusa.org/for-parents/baby-friendly-facilities-by-state/

21.   *Early Learning Factsheet 2019: Wisconsin.* Center for American Progress; 2019. https://cdn.americanprogress.org/content/uploads/2019/09/12072632/Wisconsin.pdf

22.   *Access to Child Care in Wisconsin.* Early Childhood Advisory Council; 2018. https://dcf.wisconsin.gov/files/ecac/2018/12052018-access-to-child-care-in-wisconsin-ecac-presentation.pdf

23.   Child care costs in the United States. Economic Policy Institute. Published October 2020. Accessed November 9, 2020. https://www.epi.org/child-care-costs-in-the-united-states/#/WI

24.   Kelley M. P*aid Sick Leave and Emergency Family and Medical Leave Related to COVID-19.* Wisconsin Legislative Council; 2020. https://docs.legis.wisconsin.gov/misc/lc/issue_briefs/2020/covid_19/ib_fmla_msk_2020_27_03

25.   County Health Rankings & Roadmaps. Access to Exercise Opportunities. Wisconsin Summary Information. Accessed December 6, 2020. https://www.countyhealthrankings.org/app/wisconsin/2020/measure/factors/132/map

26.   Wisconsin Department of Public Instruction. Youth Risk Behavior Survey Data. Madison, WI; 2017. https://dpi.wi.gov/sspw/yrbs

27.   Wisconsin Department of Health Services. Behavioral Risk Factor Surveillance System Survey Data. Madison, WI; 2018.

28.   The Commonwealth Fund. Rising Obesity in the United States Is a Public Health Crisis. To the Point: Quick Takes on Health Care Policy and Practice. Accessed November 10, 2020. https://www.commonwealthfund.org/blog/2018/rising-obesity-united-states-public-health-crisis

29.   University of Wisconsin-Madison School of Medicine and Public Health. Obesity by Place — Wisconsin Health Atlas. Wisconsin Health Atlas. Accessed November 10, 2020. https://www.wihealthatlas.org/obesity/place

30.   County Health Rankings & Roadmaps. Accessed November 10, 2020. https://www.countyhealthrankings.org/app/wisconsin/2020/measure/factors/83/data?sort=sc-3

31.   County Health Rankings & Roadmaps. Accessed November 10, 2020. https://www.countyhealthrankings.org/app/wisconsin/2020/measure/factors/139/data?sort=sc-3

32.   County Health Rankings & Roadmaps. Accessed November 10, 2020. https://www.countyhealthrankings.org/app/wisconsin/2020/measure/factors/133/datasource?sort=sc-3

33.   Healthy Diet. World Health Organization. Accessed November 10, 2020. https://www.who.int/news-room/fact-sheets/detail/healthy-diet

34. Find a Farmers Market. Wisconsin Farmers Market Association. Accessed November 10, 2020.
http://www.wifarmersmarkets.org/find-a-farmers-market.aspx

35. Diabetes. Wisconsin Department of Health Services. Published August 12, 2019. Accessed November 10, 2020.
https://www.dhs.wisconsin.gov/diabetes/index.htm

36. Centers for Disease Control and Prevention (CDC). *National Diabetes Statistics Report, 2017.*
https://dev.diabetes.org/sites/default/files/2019-06/cdc-statistics-report-2017.pdf

37. WCHQ Reports. Wisconsin Collaborative for Healthcare Quality. Accessed November 10, 2020.
https://reports.wchq.org/measure-results/73

38. Wisconsin Collaborative for Healthcare Quality and the University of Wisconsin Health Innovation Program. *Wisconsin Health Disparities Report, 2019.*
https://www.wchq.org/pdfs/Disparities_Report_2019_9-20_FINAL.pdf

39. Wisconsin Department of Health Services, Bureau of Community Health Promotion, Chronic Disease Prevention Program. Diagnosed Diabetes by County, Behavioral Risk Factor Surveillance System (2012-2016). https://www.dhs.wisconsin.gov/publications/p01945.pdf

40. Wisconsin Department of Transportation. *MAPSS Performance Improvement Report.* WisDOT; 2020.
https://wisconsindot.gov/Documents/about-wisdot/performance/mapss/perf-report.pdf

41. Grosso E. *State of Wisconsin Profile of Persons Ages 65 and Older.* Bureau of Aging and Disability Resources. Source: U.S. Census, American Community Survey, 2014-2018 Estimates; 2020.

42. U.S. Census, 2013-2017 American Community Survey, Table B25702.

43. Foltman L, Jones M. How Redlining Continues to Shape Racial Segregation in Milwaukee. WisContext. Published February 28, 2019. Accessed November 11, 2020.
https://www.wiscontext.org/how-redlining-continues-shape-racial-segregation-milwaukee

44. American Public Health Association. COVID-19 and Health Equity — Exploring Disparities and Long-Term Health Impacts. COVID-19 Conversations. Published 2020. Accessed November 11, 2020.
https://www.covid19conversations.org/webinars/equity

45. Johnson A, Buford T. Early Data Shows African Americans Have Contracted and Died of Coronavirus at an Alarming Rate. ProPublica. Published April 3, 2020. Accessed November 11, 2020.
https://www.propublica.org/article/early-data-shows-african-americans-have-contracted-and-died-of-coronavirus-at-an-alarming-rate

46. Kowalik J. *COVID-19 Conversations.* City of Milwaukee Health Department; 2020.
https://covid19conversations.org/-/media/files/pdf/covid19/jeanette_kowalik.ashx?la=en&hash=CAE664023F7190DB6AC958CE270194E51A797C62

47. United States National Archive. Milwaukee County, Wisconsin 1938. University of Wisconsin-Milwaukee Libraries. Accessed December 4, 2020.
https://collections.lib.uwm.edu/digital/collection/agdm/id/3028/

48. Centers for Disease Control and Prevention (CDC). Health Effects of Gentrification. Healthy Places. Published June 8, 2017. Accessed November 11, 2020.
https://www.cdc.gov/healthyplaces/healthtopics/gentrification.htm

49. Frey WH. Black-white segregation edges downward since 2000, census shows. Brookings. Published December 17, 2018. Accessed November 11, 2020.
https://www.brookings.edu/blog/the-avenue/2018/12/17/black-white-segregation-edges-downward-since-2000-census-shows/

50. Maciag M. Gentrification in America Report. Governing: The Future of States and Localities. Published January 31, 2015. Accessed November 11, 2020. https://www.governing.com/gov-data/census/gentrification-in-cities-governing-report.html?_sm_au_=iVV6V7rVRJZTqPs7BLQtvK7BJGKjp

51. National Law Center on Homelessness & Poverty. *DON'T COUNT ON IT: How the HUD Point-in-Time Count Underestimates the Homelessness Crisis in America, 2017.* https://nlchp.org/wp-content/uploads/2018/10/HUD-PIT-report2017.pdf

52. Institute for Community Alliances. *Homeless Management Information System (HMIS) Report, 2019.* https://static1.squarespace.com/static/54ca7491e4b000c4d5583d9c/t/5f6e26a0ff215d7c804f8e03/1601054371028/2019+State+of+Homelessness+in+Wisconsin+Report+v2.pdf

53. United States Interagency Council on Homelessness. Homeless in Wisconsin Statistics 2018. Homeless Estimation by State. Accessed December 6, 2020. https://www.usich.gov/homelessness-statistics/wi/

54. Durso LE, Gates GJ. Serving Our Youth: Findings from a National Survey of Services Providers Working with Lesbian, Gay, Bisexual and Transgender Youth Who Are Homeless or At Risk of Becoming Homeless. *UCLA eScholarship.* Published online July 12, 2012. Accessed August 6, 2021. https://escholarship.org/uc/item/80x75033

55. Spivak C. Predicted surge comes true: Eviction filings jump over 40% in Milwaukee County and state. Milwaukee Journal Sentinel. Published June 15, 2020. Accessed November 11, 2020. https://www.jsonline.com/story/news/investigations/reports/2020/06/15/evictions-milwaukee-and-wisconsin-jump-over-40/3177897001/

56. Partnership for a Tobacco-Free Wisconsin. Wisconsin Retail Assessment Project, 2016-2019. https://www.tobaccofreewisconsin.org/retail-assessment.html

57. Rodriguez D, Carlos HA, Adachi-Mejia AM, Berke EM, Sargent JD. Predictors of tobacco outlet density nationwide: a geographic analysis. *Tob Control.* 2013;22(5):349-355.

58. Wisconsin Department of Health Services. *Tobacco Fact Sheet: Adults and Tobacco, 2018. Wisconsin Behavioral Risk Factor Surveillance System (BRFSS).* https://www.dhs.wisconsin.gov/publications/p43073.pdf

59. Wisconsin Department of Health Services, Division of Public Health, Tobacco Prevention and Control Program. *High School Snapshot: Youth Tobacco Survey, 2018.* https://www.dhs.wisconsin.gov/publications/p01624.pdf

60. Wisconsin Department of Health Services, Division of Public Health, Tobacco Prevention and Control Program. *Tobacco Use Costs Wisconsin, 2019.* https://www.dhs.wisconsin.gov/publications/p02415.pdf

61. Chen M-J, Grube JW, Gruenewald PJ. Community alcohol outlet density and underage drinking. *Addiction.* 2010;105(2):270-278.

62. Health Compass. Liquor Store Density: Wisconsin, 2018. Health Compass. Published 2020. Accessed November 13, 2020. http://www.healthcompassmilwaukee.org/indicators/index/view?indicatorId=298&localeId=52

63. United Health Foundation. Annual Report. America's Health Rankings. Published 2020. Accessed November 13, 2020. https://www.americashealthrankings.org/explore/annual/state/WI

64. National Institute on Alcohol Abuse and Alcoholism. Alcohol Use in the United States. Alcohol Facts and Statistics. Published October 2020. Accessed November 13, 2020. https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-facts-and-statistics

65. Chartier K, Caetano R. Ethnicity and Health Disparities in Alcohol Research. National Institute on Alcohol Abuse and Alcoholism. Accessed November 13, 2020. https://pubs.niaaa.nih.gov/publications/arh40/152-160.htm

66. World Population Review. Drunkest Cities In America. World Population Review. Accessed November 13, 2020. https://worldpopulationreview.com/us-city-rankings/drunkest-cities-in-america

67. Wisconsin Traffic Operations and Safety Laboratory. Quick Links - Crash Data. The WisTransPortal System. Published 2019. Accessed November 13, 2020. https://transportal.cee.wisc.edu/categories/crash-data.html

68. Centers for Disease Control and Prevention (CDC). Underage Drinking. Alcohol and Public Health. Published October 28, 2020. Accessed January 27, 2021. https://www.cdc.gov/alcohol/fact-sheets/underage-drinking.htm

69. WHO. Definition and typology of violence. Violence Prevention Alliance. Published November 21, 2011. Accessed January 27, 2021. https://www.who.int/violenceprevention/approach/definition/en/?_sm_au_=iVVMnk7rRM8F8N5TBLQtvK7BJGKjp

70. Office of Disease Prevention and Health Promotion. Crime and Violence. Healthy People 2020. Published October 8, 2020. Accessed November 13, 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/crime-and-violence

71. McCann A. States with the Biggest Bullying Problems. WalletHub. Published September 6, 2018. Accessed November 13, 2020. https://wallethub.com/edu/e/best-worst-states-at-controlling-bullying/9920

72. McCoy K. *2017 Wisconsin Youth Risk Behavior Survey Report.* Madison: Wisconsin Department of Public Instruction; 2018. https://dpi.wi.gov/sites/default/files/imce/sspw/pdf/yrbs-2017-final-summary-report.pdf

73. Cyberbullying During COVID-19. Stomp Out Bullying. Accessed November 13, 2020. https://www.stompoutbullying.org/blog/cyberbullying-during-covid-19

74. Wisconsin Department of Children and Families. *Wisconsin Child Abuse and Neglect Report, 2018.* https://dcf.wisconsin.gov/files/cwportal/reports/pdf/can.pdf

75. Elder Abuse Statistics & Facts. National Council on Aging (NCOA). Published May 17, 2015. Accessed November 13, 2020. https://www.ncoa.org/public-policy-action/elder-justice/elder-abuse-facts/

76. National Research Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect. *Elder Mistreatment: Abuse, Neglect, and Exploitation in an Aging America.* (Bonnie RJ, Wallace RB, eds.). National Academies Press (US); 2012.

77. Wisconsin Department of Health Services. *Wisconsin's Annual Report on Abuse, Neglect, and Financial Exploitation of Adults at Risk: 2019.* https://www.dhs.wisconsin.gov/publications/p00123-19.pdf

78. Dong X, Simon M, Mendes de Leon C, et al. Elder self-neglect and abuse and mortality risk in a community-dwelling population. *JAMA.* 2009;302(5):517-526.

79. Top 10 Scams Targeting Seniors. National Council on Aging (NCOA). Published May 15, 2015. Accessed November 13, 2020. https://www.ncoa.org/economic-security/money-management/scams-security/top-10-scams-targeting-seniors/

80. Elder Abuse Resource Information. Wisconsin Department of Health Services. Published May 24, 2017. Accessed November 13, 2020. https://www.dhs.wisconsin.gov/caregiver/elderabuse.htm

81. Southworth & Stamman LLC. Domestic Violence Statistics in Wisconsin. Southworth & Stamman, LLC, Attorneys at Law. Published May 7, 2018. Accessed November 16, 2020. https://www.wisdellslaw.com/blog/domestic-violence-statistics

82. Domestic Violence Statistics. National Domestic Violence Hotline. Accessed November 16, 2020. https://www.thehotline.org/stakeholders/domestic-violence-statistics/

83. Domestic Abuse Data. Wisconsin Department of Justice. Accessed November 16, 2020. https://www.doj.state.wi.us/dles/bjia/domestic-abuse-data

84. Krall S, Friedman L. *2018 Wisconsin Domestic Violence Homicide Report.* End Domestic Abuse Wisconsin (End Abuse) https://s3-us-east-2.amazonaws.com/edaw-webinars/wp-content/uploads/2019/09/24130226/2018-Wisconsin-Domestic-Violence-Homicide-Report-9.24.19-FINAL.pdf

85. Sexual Assault. RAINN. Published 2020. Accessed November 16, 2020. https://www.rainn.org/articles/sexual-assault

86. What Is Human Trafficking? Blue Campaign. Published May 24, 2013. Accessed November 16, 2020. https://www.dhs.gov/blue-campaign/what-human-trafficking

87. Wisconsin Department of Justice, Bureau of Justice Information and Analysis, Division of Criminal Investigation, Office of Crime Victim Services. *2019 Law Enforcement Assessment of Sex Trafficking in Wisconsin.* https://www.doj.state.wi.us/sites/default/files/ocvs/human%20trafficking/2019%20Law%20Enforcement%20Assessment%20of%20Sex%20Trafficking%20in%20Wisconsin%20-%20Final%20Report.pdf

88. National Police Violence Map. Mapping Police Violence. Accessed November 16, 2020. https://mappingpoliceviolence.org/

89. Homicide Mortality by State. Centers for Disease Control and Prevention (CDC). Published April 29, 2020. Accessed November 16, 2020. https://www.cdc.gov/nchs/pressroom/sosmap/homicide_mortality/homicide.htm

90. Violence Policy Center (VPC). *Black Homicide Victimization in the United States: An Analysis of 2016 Homicide Data;* 2019. https://vpc.org/studies/blackhomicide19.pdf

91. Elbow S. Deadly disparities: African-Americans increasingly targeted as gun homicides spike. The Capital Times. Published June 27, 2018. Accessed November 16, 2020. https://madison.com/ct/news/local/crime/deadly-disparities-african-americans-increasingly-targeted-as-gun-homicides-spike/article_2102bf98-8d30-5b18-8282-3716d2022018.html

92. Wing N. U.S. Gun Companies Manufactured A Record 11 Million Firearms In 2016. HuffPost. Published February 8, 2018. Accessed November 16, 2020. https://www.huffpost.com/entry/gun-manufacturing-2016_n_5a74c4a3e4b06ee97af2799c

93. Public Service Commission of Wisconsin. Wisconsin Broadband Map. Wisconsin Broadband Office. Accessed November 16, 2020. https://maps.psc.wi.gov/apps/WisconsinBroadbandMap/

94.   BroadbandNow. Internet Access in Wisconsin: Stats & Figures. BroadbandNow. Published September 1, 2020. Accessed November 16, 2020. https://broadbandnow.com/Wisconsin

95.   Office of Disease Prevention and Health Promotion. Environmental Quality. Healthy People 2020. Published October 8, 2020. Accessed November 17, 2020. https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Environmental-Quality

96.   United States Environmental Protection Agency (EPA). Health Effects of Ozone in the General Population. Ozone Pollution and Your Patients' Health. Accessed November 17, 2020. https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population

97.   United States Environmental Protection Agency (EPA). What is Ozone? Ozone Pollution and Your Patients' Health. Published March 21, 2016. Accessed November 17, 2020. https://www.epa.gov/ozone-pollution-and-your-patients-health/what-ozone

98.   Carbon Monoxide. Wisconsin Department of Health Services. Published January 2, 2018. Accessed November 17, 2020. https://www.dhs.wisconsin.gov/air/co.htm

99.   Carbon Monoxide Poisoning: Frequently Asked Questions. Centers for Disease Control and Prevention (CDC). Published July 20, 2020. Accessed November 17, 2020. https://www.cdc.gov/co/faqs.htm

100.   Wisconsin Dept. of Health Services, Division of Public Health, Bureau of Environmental and Occupational Health. Wisconsin Environmental Public Health Tracking Program, 2018. https://www.dhs.wisconsin.gov/epht/index.htm

101.   Centers for Disease Control and Prevention (CDC). Health Effects of Secondhand Smoke. Smoking & Tobacco Use. Published February 27, 2020. Accessed November 17, 2020. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/health_effects/index.htm

102.   Centers for Disease Control and Prevention (CDC). National Youth Tobacco Survey, 2018.

103.   United States Environmental Protection Agency (EPA). Particulate Matter (PM) Basics. Particulate Matter (PM) Pollution. Published 2016. Accessed November 17, 2020. https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM

104.   United States Environmental Protection Agency (EPA). Health and Environmental Effects of Particulate Matter (PM). Particulate Matter (PM) Pollution. Published 2016. Accessed November 17, 2020. https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm

105.   Wisconsin Dept. of Health Services, Division of Public Health, Bureau of Environmental and Occupational Health. Wisconsin Environmental Public Health Tracking Program, 2017. https://www.dhs.wisconsin.gov/epht/index.htm https://www.dhs.wisconsin.gov/stats/family-health-survey.htm

106.   Wisconsin Department of Natural Resources. *2019 Wisconsin Air Quality Trends.* https://dnr.wi.gov/files/PDF/pubs/am/AM574.pdf

107.   Radon Information for Wisconsin. Wisconsin Department of Health Services. Published August 11, 2014. Accessed November 17, 2020. https://www.dhs.wisconsin.gov/radon/index.htm

108.   Lowering Your Home's Radon Levels. Wisconsin Department of Health Services. Published December 18, 2013. Accessed November 17, 2020. https://www.dhs.wisconsin.gov/radon/reduce-radon.htm

109. What Is Asthma? Wisconsin Department of Health Services. Published August 6, 2014. Accessed November 17, 2020. https://www.dhs.wisconsin.gov/asthma/basics.htm

110. Romanet-Manent S, Charpin D, Magnan A, Lanteaume A, Vervloet D, EGEA Cooperative Group. Allergic vs nonallergic asthma: what makes the difference? *Allergy*. 2002;57(7):607-613.

111. About Asthma. U.S. Department of Housing and Urban Development. Accessed November 17, 2020. https://www.hud.gov/program_offices/healthy_homes/healthyhomes/asthma

112. Air Pollution and Asthma. Asthma and Allergy Foundation of America. Accessed November 17, 2020. https://www.aafa.org/air-pollution-smog-asthma/

113. Chhiba KD, Patel GB, Vu THT, et al. Prevalence and characterization of asthma in hospitalized and nonhospitalized patients with COVID-19. *J Allergy Clin Immunol*. 2020;146(2):307-314.e4.

114. Zhu Z, Hasegawa K, Ma B, Fujiogi M, Camargo CA Jr, Liang L. Association of asthma and its genetic predisposition with the risk of severe COVID-19. *J Allergy Clin Immunol*. 2020;146(2):327-329.e4.

115. University of Wisconsin-Madison. Wisconsin Water Facts. Wisconsin Water Library. Accessed November 18, 2020. https://waterlibrary.aqua.wisc.edu/water-facts/

116. Drinking Water. Wisconsin Department of Health Services. Published November 3, 2017. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/water/drinking.htm

117. Water Quality Issues. Wisconsin Department of Health Services. Published August 28, 2014. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/water/index.htm

118. Environmental Public Health Tracking: Water Data. Wisconsin Department of Health Services. Published July 11, 2016. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/epht/drinkingwater.htm

119. What is Lead Poisoning? Wisconsin Department of Health Services. Published January 27, 2015. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/lead/clppp-info.htm

120. United States Environmental Protection Agency (EPA). Learn about Lead. Lead. Published February 12, 2013. Accessed November 18, 2020. https://www.epa.gov/lead/learn-about-lead

121. Wisconsin Childhood Lead Poisoning Prevention Program, Christensen K, Coons M, Walsh R. *2016 Report on Childhood Lead Poisoning in Wisconsin*. Wisconsin Department of Health Services, Division of Public Health, Bureau of Environmental and Occupational Health; 2017. https://www.dhs.wisconsin.gov/publications/p01202-16.pdf

122. Lead-Safe Wisconsin. Wisconsin Department of Health Services. Published January 27, 2015. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/lead/index.htm

123. Hales D. 351,454 Children Lead Poisoned Across America. Modern Castle. Published November 1, 2019. Accessed November 18, 2020. https://moderncastle.com/blog/usa-lead-poisoning-children/

124. Wisconsin Department of Health Services. Healthy Homes and Lead Poisoning Surveillance System, 2014-2018.

125. Christensen K, Coons MJ, Walsh RO, Meiman JG, Neary E. Childhood Lead Poisoning in Wisconsin. *WMJ*. 2019;118(1):16-20.

126. Lynch EE, Meier HCS. The intersectional effect of poverty, home ownership, and racial/ethnic composition on mean childhood blood lead levels in Milwaukee County neighborhoods. *PLoS One*. 2020;15(6):e0234995.

127. Wisconsin Blood Lead Testing Data. Wisconsin Department of Health Services, 2015-19.

128. Wisconsin Blood Lead Screening Recommendations. Wisconsin Department of Health Services. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/lead/links/wibloodleadscreeningrecommendations.pdf

129. Minnesota Department of Health, Environmental Health Division. *Nitrate in Drinking Water.*; 2019. https://www.health.state.mn.us/communities/environment/water/docs/contaminants/nitratefctsht.pdf

130. Nitrate in Private Wells. Wisconsin Department of Health Services. Published March 9, 2018. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/water/nitrate.htm

131. USGS: Science for a Changing World. Nitrogen and Water. Water Science School. Accessed November 18, 2020. https://www.usgs.gov/special-topic/water-science-school/science/nitrogen-and-water?qt-science_center_objects=0

132. Wisconsin Department of Natural Resources. Laboratory Testing. Drinking Water. Accessed November 18, 2020. https://dnr.wisconsin.gov/topic/DrinkingWater/laboratories.html

133. Arsenic. Wisconsin Department of Health Services. Published December 29, 2017. Accessed November 18, 2020. https://www.dhs.wisconsin.gov/chemical/arsenic.htm

134. University of Wisconsin-Stevens Point, Center for Watershed Science and Education. Wisconsin Well Water Quality Viewer 2002-2018. https://www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx

135. Wisconsin Department of Natural Resources, Water Division, Bureau of Drinking Water & Groundwater. Public Wells with Arsenic Detects Greater Than or Equal to 10 ppb. Wisconsin Department of Natural Resources. Published December 2001. Accessed November 18, 2020. https://dnr.wi.gov/topic/Groundwater/images/arsenic/PbAsGt10.jpg

136. National Center for Chronic Disease Prevention and Health Promotion (CDC), Division of Oral Health. *Community Water Fluoridation.* https://www.cdc.gov/fluoridation/pdf/communitywaterfluoridationfactsheet.pdf

137. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion. Division of Oral Health: My Water's Fluoride web application. Atlanta, GA; 2017. http://www.cdc.gov/oralhealth/

138. Centers for Disease Control and Prevention (CDC). 2018 Water Fluoridation Statistics. Community Water Fluoridation. Published September 8, 2020. Accessed November 18, 2020. https://www.cdc.gov/fluoridation/statistics/2018stats.htm

139. Centers for Disease Control and Prevention (CDC). Climate Effects on Health. Climate and Health. Published August 21, 2020. Accessed December 6, 2020. https://www.cdc.gov/climateandhealth/effects/default.htm

140. Department of Forestry, Wisconsin Department of Natural Resources. Number of forest fires in Wisconsin 1929-1997. Wisconsin State Climatology Office. Accessed November 18, 2020. http://www.aos.wisc.edu/~sco/clim_impacts/WI-wildfires/wi-wildfire-freq.gif

141. Department of Forestry, Wisconsin Department of Natural Resources. Number of acres destroyed by forest fires in Wisconsin 1929-1997. Wisconsin State Climatology Office. Accessed November 18, 2020. http://www.aos.wisc.edu/~sco/clim_impacts/WI-wildfires/wi-wildfire-acres.gif

142. What Climate Change Means for Wisconsin. United States Environmental Protection Agency. Published August 2016. Accessed November 18, 2020. https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-wi.pdf

143. PBS Wisconsin Education. How is Climate Change Affecting Ice Cover on Madison Lakes? Climate Wisconsin: Stories from a State of Change. Accessed November 18, 2020. https://climatewisconsin.org/story/ice-cover.html

144. Mathewson P. Under the Lens: Is Wisconsin seeing more heavy rain events? Clean Wisconsin. Published March 10, 2020. Accessed November 19, 2020. https://www.cleanwisconsin.org/under-the-lens-is-wisconsin-seeing-more-heavy-rain-events/

145. Gordon S. The "100-Year Flood" Concept Is Showing Its Age: Data Gaps, Climate Change Effects And Human Development Challenge Misunderstood Concept. WisContext. Published October 19, 2017. Accessed November 19, 2020. https://www.wiscontext.org/100-year-flood-concept-showing-its-age

146. Nelson Institute for Environmental Studies | Wisconsin Department of Natural Resources. Trends and Projections. Wisconsin Initiative on Climate Change Impacts. Accessed January 27, 2021. https://wicci.wisc.edu/wisconsin-climate-trends-and-projections/

147. National Oceanic and Atmospheric Administration. Wisconsin Tornado and Severe Weather Statistics. National Weather Service. Accessed November 19, 2020. https://www.weather.gov/grb/WI_tornado_stats

148. Kapela A. Annual Number of Tornadoes in Wisconsin (1950-present). Wisconsin State Climatology Office. Accessed November 19, 2020. http://www.aos.wisc.edu/~sco/seasons/graphics/WI-tornado_no-t-s-fscale-bar.gif

149. Crimmins A, Balbus J, Gamble JL, et al. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.* U.S. Global Change Research Program, Washington, DC; 2016. https://health2016.globalchange.gov/high/ClimateHealth2016_ExecSummary_Standalone.pdf

150. Baker HS, Millar RJ, Karoly DJ, et al. Higher CO2 concentrations increase extreme event risk in a 1.5 °C world. *Nat Clim Chang.* 2018;8(7):604-608.

151. U.S. Census Bureau; American Community Survey, 2013-2017 American Community Survey 5-Year Estimates, Table S2301; using data.census.gov. Accessed April 8, 2020. https://data.census.gov/cedsci/table?q=S2301&tid=ACSST5Y2017.S2301

152. State of Wisconsin Department of Workforce Development. BLS Data: Wisconsin April Unemployment Rate 14.1 Percent - 385,900 Private-Sector Jobs Lost from March-April. Mar 21, 2020. https://dwd.wisconsin.gov/news/2020/unemployment/200521-april-state.pdf

153. State of Wisconsin Department of Workforce Development. DWD Releases Information On Unemployment Data. July 13, 2020. https://dwd.wisconsin.gov/news/2020/pdf/200713-ui-data.pdf

154. St. Hilaire A. In reversal, feds say Wisconsinites on disability can get pandemic unemployment. FOX6 News Milwaukee. Published July 27, 2020. Accessed November 19, 2020. https://www.fox6now.com/news/in-reversal-feds-say-wisconsinites-on-disability-can-get-pandemic-unemployment

155. Schneider G, Hinrichs E. Lives on hold: Pandemic exposes failures of Wisconsin unemployment insurance system. MinnPost. Published July 8, 2020. Accessed November 19, 2020. https://www.minnpost.com/politics-policy/2020/07/lives-on-hold-pandemic-exposes-failures-of-wisconsin-unemployment-insurance-system/

156. COWS. *The State of Working Wisconsin, 2012.* https://www.cows.org/_data/documents/1280.pdf

157. COWS. *The State of Working Wisconsin, 2016.* https://www.cows.org/_data/documents/1799.pdf

158. U.S. Bureau of Labor Statistics. Alternative Measures of Labor Underutilization, Wisconsin, 2019. Midwest Information Office. Published March 6, 2020. Accessed December 6, 2020. https://www.bls.gov/regions/midwest/news-release/laborunderutilization_wisconsin.htm

159. Conroy T. 5 Crucial Differences Between Job Growth In Rural And Urban Wisconsin. WisContext. Published November 14, 2017. Accessed November 19, 2020. https://www.wiscontext.org/5-crucial-differences-between-job-growth-rural-and-urban-wisconsin

160. U.S. Bureau of Economic Analysis. Business Proprietorship in Metro and Non-Metro Wisconsin, 2015. Infogram. Accessed November 19, 2020. https://infogram.com/business-proprietorship-in-metro-and-non-metro-wisconsin-2015-1gv02gk5n0llm1x

161. Quillian L, Pager D, Hexel O, Midtbøen AH. Meta-analysis of field experiments shows no change in racial discrimination in hiring over time. *Proc Natl Acad Sci U S A.* 2017;114(41):10870-10875.

162. Survey of the Health of Wisconsin (SHOW): Improving Health in Wisconsin through Research, Community Engagement, and Education. Survey of the Health of Wisconsin (SHOW). Accessed November 19, 2020. https://show.wisc.edu/

163. U.S. Department of Labor, Bureau of Labor Statistics. Persons with a Disability: Labor Force Characteristics. Bureau of Labor Statistics: News Release. Published February 26, 2020. Accessed November 19, 2020. https://www.bls.gov/news.release/pdf/disabl.pdf

164. Oliver PE. The Wisconsin Racial Disparities Project. University of Wisconsin System. Published 2020. Accessed December 6, 2020. https://www.ssc.wisc.edu/~oliver/racial-disparities/

165. Couloute L, Kopf D. Out of Prison & Out of Work: Unemployment among formerly incarcerated people. Prison Policy Initiative. Published July 2018. Accessed November 19, 2020. https://www.prisonpolicy.org/reports/outofwork.html

166. State of Wisconsin, Department of Corrections, Division of Adult Institutions, Office of the Secretary-Research and Policy Unit. *Data Trend Series: Prison Admissions: 2000-2018;* 2019. https://doc.wi.gov/DataResearch/InteractiveDashboards/DAIAdmissions2000to2018.pdf

167. Wisconsin Department of Revenue, Division of Research & Policy. Wisconsin Economic Outlook; 2019. https://www.revenue.wi.gov/DORReports/WI-econoutlook-charts-Mar19.pdf

168. United States Department of Labor, U.S. Bureau of Labor Statistics. County Employment and Wages in Wisconsin — Third Quarter 2019. United States Department of Labor, U.S. Bureau of Labor Statistics, Midwest Information Office. Published March 25, 2020. Accessed November 20, 2020. https://www.bls.gov/regions/midwest/news-release/countyemploymentandwages_wisconsin.htm

169. Williams N. Household Income in Wisconsin in 2017. American Community Survey, US Census Bureau. Accessed November 20, 2020. https://crowe.wisc.edu/household-income-in-wisconsin-in-2017/

170. Carlisle Larsen J. Wisconsin Considered One Of The Worst States For Racial Disparities. Wisconsin Public Radio. Published January 16, 2017. Accessed November 20, 2020. https://www.wpr.org/wisconsin-considered-one-worst-states-racial-disparities

171. Wilson V, Williams J. Racial and ethnic income gaps persist amid uneven growth in household incomes. Economic Policy Institute: Working Economics Blog. Published September 11, 2019. Accessed November 20, 2020. https://www.epi.org/blog/racial-and-ethnic-income-gaps-persist-amid-uneven-growth-in-household-incomes/

171a. Bureau of Labor Statistics, U.S. Department of Labor, Survey of Occupational Injuries and Illnesses, 2017. https://www.bls.gov/iif/soii-data.htm

172. Wahlberg D. 75 in Wisconsin died from farm activities in 2017-18, new report says. Wisconsin State Journal. Published August 4, 2020. Accessed November 20, 2020. https://madison.com/wsj/news/local/health-med-fit/75-in-wisconsin-died-from-farm-activities-in-2017-2018-new-report-says/article_f79cd15d-b000-5545-a8a0-d0c9a0552e61.html

173. U.S. Department of Health & Human Services. Poverty Guidelines. Office of the Assistant Secretary for Planning and Evaluation (ASPE). Published November 23, 2015. Accessed December 6, 2020. https://aspe.hhs.gov/poverty-guidelines

174. Fass S. *Measuring Poverty in the United States.* National Center for Children in Poverty (NCCP); 2009. https://www.nccp.org/wp-content/uploads/2020/05/text_876.pdf

175. U.S. Census Bureau; American Community Survey, 2017 American Community Survey 1-Year Estimates, Table S1701; using data.census.gov. Accessed April 8, 2020. https://data.census.gov/cedsci/table?q=S1701&tid=ACSST1Y2017.S1701

176. U.S. Census Bureau; Current Population Survey, 2000-2018, Annual Social and Economic Supplement; using data.census.gov. https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-hinc.html

177. Rural health for Wisconsin: Introduction. Rural Health Information Hub. Accessed November 20, 2020. https://www.ruralhealthinfo.org/states/wisconsin

178. U.S. Commission on Civil Rights. *Public Education Funding Inequity in an Era of Increasing Concentration of Poverty and Resegregation: Briefing Report;* 2018. https://www.usccr.gov/pubs/2018/2018-01-10-Education-Inequity.pdf

179. Wisconsin Department of Public Instruction. Wisconsin Department of Instruction Data Dashboard (WISEDash), 2017-2018. https://wisedash.dpi.wi.gov/Dashboard/dashboard/16840

180. America's Promise Alliance. What's the high school graduation rate in your state? GradNation. Published 2020. Accessed December 6, 2020. https://gradnation.americaspromise.org/state-activation#/WI

181. National Center for Education Statistics (NCES). *The Condition of Education: Public High School Graduation Rates;* 2018. https://nces.ed.gov/programs/coe/pdf/Indicator_COI/coe_coi_2018_05.pdf

182. Morsy L, Rothstein R. Mass incarceration and children's outcomes: Criminal justice policy is education policy. Economic Policy Institute. Published December 15, 2016. Accessed November 20, 2020. https://www.epi.org/publication/mass-incarceration-and-childrens-outcomes/

183. Office of Disease Prevention and Health Promotion. Access to Health Services. Healthy People 2020. Published October 8, 2020. Accessed November 20, 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services

184. Wisconsin Dept. of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Family Health Survey, 2018. https://www.dhs.wisconsin.gov/stats/family-health-survey.htm

185. Kaiser Family Foundation (KFF). Health Insurance Coverage of the Total Population. State Health Facts. Published October 23, 2020. Accessed November 20, 2020. https://www.kff.org/other/state-indicator/total-population/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

186. Kaiser Family Foundation (KFF). Access to Dental Care in Medicaid: Spotlight on Nonelderly Adults. Medicaid. Published March 17, 2016. Accessed November 20, 2020. https://www.kff.org/medicaid/issue-brief/access-to-dental-care-in-medicaid-spotlight-on-nonelderly-adults/

187. American Dental Association and Health Policy Institute. *Dentist Participation in Medicaid or CHIP*. https://www.ada.org/~/media/ADA/Science%20and%20Research/HPI/Files/HPIGraphic_0318_1.pdf?la=en

188. American Dental Association Statement on Regular Dental Visits. American Dental Association. Published June 10, 2013. Accessed November 20, 2020. https://www.ada.org/en/press-room/news-releases/2013-archive/june/american-dental-association-statement-on-regular-dental-visits

189. Wisconsin Department of Health Services, Division of Care and Treatment Services, Bureau of Prevention Treatment and Recovery. *2019 Wisconsin Behavioral Health System Gaps Report*. University of Wisconsin-Madison, Population Health Institute; 2020. https://ritf.wisconsin.gov/ritffiles/BH%20Gaps%20Study%20Report%205-6-20.pdf

190. Wisconsin Department of Health Services, Division of Public Health, Bureau of Aging and Disability Resources. *Percent of the Projected Population Ages 60 and Older, 2015-2040*. Wisconsin Department of Administration, Demographic Services; 2018. https://www.dhs.wisconsin.gov/publications/p01803.pdf

191. Association of American Medical Colleges (AAMC). *Wisconsin Physician Workforce Profile;* 2018. https://www.aamc.org/system/files/2019-12/state-physician-Wisconsin-2019%5B1%5D.pdf

192. Primary Care Health Professional Shortage Areas (HPSAs). Kaiser Family Foundation (KFF). Published November 5, 2020. Accessed November 21, 2020. https://www.kff.org/other/state-indicator/primary-care-health-professional-shortage-areas-hpsas/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

193. Wisconsin Department of Health Services, Division of Public Health, Wisconsin Primary Care Office. *Number of Primary Care Physician FTEs Needed to Remove Shortages for the Resident Population;* 2019. https://www.dhs.wisconsin.gov/publications/p0/p00460.pdf

194. Wisconsin Office of Rural Health. *Health Professional Shortage Areas: Primary Health Care*. Health Resources and Services Administration, Geospatial Data Warehouse; 2020. http://worh.org/sites/default/files/HPSA_Primary_Feb%202020.pdf

195. Wisconsin Office of Rural Health. *Health Professional Shortage Areas: Dental Health Care*. Health Resources and Services Administration, Geospatial Data Warehouse; 2020. http://worh.org/sites/default/files/HPSA_Dental_Feb%202020.pdf

196. Wisconsin Office of Rural Health. *Health Professional Shortage Areas: Mental Health Care.* Health Resources and Services Administration, Geospatial Data Warehouse; 2020. http://worh.org/sites/default/files/HPSA_Mental_Feb%202020.pdf

197. Wisconsin Department of Health Services, Division of Public Health, Wisconsin Primary Care Office. *Number of Psychiatrist FTEs Needed to Remove Shortages for the Resident Population;* 2019. https://www.dhs.wisconsin.gov/publications/p0/p00376.pdf

198. University of Wisconsin-Madison. Technical Reports, Issue Briefs, Program and Policy Evaluations. Population Health Institute: Translating Research for Policy and Practice. Published 2020. Accessed December 6, 2020. https://uwphi.pophealth.wisc.edu/publications-2/evaluation-reports-2/

199. U.S. Department of Health & Human Services. National Healthcare Quality and Disparities Reports: Wisconsin. Agency for Healthcare Research and Quality (AHRQ). Accessed November 22, 2020. https://nhqrnet.ahrq.gov/inhqrdr/Wisconsin/dashboard

200. Schorr P. Small Wisconsin hospitals cope amid a statewide rural health crisis. Wisconsin State Journal. Published September 30, 2019. Accessed November 22, 2020. https://madison.com/wsj/news/local/health-med-fit/small-wisconsin-hospitals-cope-amid-a-statewide-rural-health-crisis/article_28f7cfcb-0ff9-54e3-bb5a-0331ea3c7dd9.html

201. Wisconsin largely avoids rural hospital closures, but faces challenges. Wisconsin Health News. Published February 13, 2020. Accessed November 22, 2020. https://wisconsinhealthnews.com/2020/02/13/wisconsin-largely-avoids-rural-hospital-closures-but-faces-challenges/

202. Foutz J, Artiga S, Garfield R. The Role of Medicaid in Rural America. Kaiser Family Foundation (KFF). Published April 25, 2017. Accessed November 22, 2020. https://www.kff.org/medicaid/issue-brief/the-role-of-medicaid-in-rural-america/

203. Gujral K, Basu A. *Impact of Rural and Urban Hospital Closures on Inpatient Mortality.* National Bureau of Economic Research; 2019. doi:10.3386/w26182

204. Wisconsin Office of Rural Health. *Drive Time to Emergency Care.* Wisconsin Department of Health Services, HRSA Data Warehouse, State Offices of Rural Health, and Wisconsin Legislative Technology Services Bureau; 2017. http://worh.org/sites/default/files/Drive%20Time%20to%20Emergency%20Care.pdf

205. About Us. Wisconsin Primary Health Care Association (WPHCA). Accessed December 6, 2020. https://www.wphca.org/page/AboutUs

206. Rural Health Clinics (RHCs). Rural Health Information Hub. Accessed November 22, 2020. https://www.ruralhealthinfo.org/topics/rural-health-clinics

207. The Need Continues. Wisconsin Association of Free & Charitable Clinics (WAFCC). Accessed November 22, 2020. https://www.wafcclinics.org/the-need-continues.html

208. Wisconsin Primary Health Care Association (WPHCA). *Wisconsin Community Health Centers, 2020.* https://cdn.ymaws.com/www.wphca.org/resource/resmgr/files/member_map_2020.pdf

209. Wisconsin Office of Rural Health. *Rural Health Clinics.* Wisconsin Department of Health Services; 2017. http://worh.org/sites/default/files/RHCs%20July%202017.pdf

210. Wisconsin's ~95 Free & Charitable Clinics. Wisconsin Association of Free & Charitable Clinics (WAFCC). Accessed November 22, 2020. https://www.wafcclinics.org/find-a-clinic.html

211. What Works? Social and Economic Opportunities to Improve Health for All. County Health Rankings & Roadmaps. Accessed November 22, 2020. https://www.countyhealthrankings.org/reports/what-works-social-and-economic-opportunities-to-improve-health-for-all

212. Wisconsin Region of Narcotics Anonymous. Accessed November 22, 2020. https://wisconsinna.org/

213. Homepage. Cancer Support Community. Accessed November 22, 2020. https://www.cancersupportcommunity.org/

214. Integrating Social Needs Care into the Delivery of Health Care to Improve the Nation's Health. The National Academies of Sciences, Engineering, Medicine. Accessed November 22, 2020. https://www.nationalacademies.org/our-work/integrating-social-needs-care-into-the-delivery-of-health-care-to-improve-the-nations-health

215. Public Welfare Expenditures. Urban Institute. Published October 20, 2017. Accessed November 22, 2020. https://www.urban.org/policy-centers/cross-center-initiatives/state-and-local-finance-initiative/state-and-local-backgrounders/public-welfare-expenditures

216. Centers for Disease Control and Prevention (CDC). What Would Happen If We Stopped Vaccinations? Vaccines & Immunizations. Published September 28, 2020. Accessed November 23, 2020. https://www.cdc.gov/vaccines/vac-gen/whatifstop.htm

217. Centers for Disease Control and Prevention (CDC). Vaccine-Preventable Adult Diseases. Vaccine Information for Adults. Published November 6, 2019. Accessed November 23, 2020. https://www.cdc.gov/vaccines/adults/vpd.html

218. Wisconsin Dept. of Health Services, Division of Public Health. Wisconsin Immunization Registry, 2018.

219. Wisconsin Department of Health Service, Bureau of Communicable Disease. Wisconsin Electronic Disease Surveillance System (WEDSS), 2018.

220. Centers for Disease Control and Prevention (CDC). Selecting Viruses for the Seasonal Influenza Vaccine. Influenza (Flu). Published October 26, 2020. Accessed November 23, 2020. https://www.cdc.gov/flu/prevent/vaccine-selection.htm

221. Centers for Disease Control and Prevention (CDC). Vaccine Effectiveness: How Well Do the Flu Vaccines Work? Influenza (Flu). Published August 31, 2020. Accessed November 23, 2020. https://www.cdc.gov/flu/vaccines-work/vaccineeffect.htm

222. Centers for Disease Control and Prevention (CDC). HPV Fact Sheet. Human Papillomavirus (HPV). Published August 5, 2020. Accessed November 23, 2020. https://www.cdc.gov/std/hpv/stdfact-hpv.htm

223. American Sexual Health Association. Cervical Cancer Overview. National Cervical Cancer Coalition (NCCC). Accessed November 23, 2020. https://www.nccc-online.org/hpvcervical-cancer/cervical-cancer-overview/

224. Piana R. Researchers Examine the Rise in HPV-Related Oropharyngeal Cancers. The ASCO Post. Published October 10, 2019. Accessed November 23, 2020. https://ascopost.com/issues/october-10-2019/researchers-examine-the-rise-in-hpv-related-oropharyngeal-cancers/

225. Office of Disease Prevention and Health Promotion, Office of the Assistant Secretary for Health, Office of the Secretary, U.S. Department of Health and Human Services (ODPHP). Increase the proportion of adolescents who get recommended doses of the HPV vaccine. Healthy People 2030. Accessed November 23, 2020.
https://health.gov/healthypeople/objectives-and-data/browse-objectives/vaccination/increase-proportion-adolescents-who-get-recommended-doses-hpv-vaccine-iid-08

226. What is prenatal care and why is it important? National Institute of Child Health and Human Development. Accessed November 23, 2020.
https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care

227. Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Interactive Statistics on Health (WISH) data query system, Birth Counts Module. Accessed November 13, 2020. https://www.dhs.wisconsin.gov/wish/index.htm

228. Wisconsin Dept. of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Interactive Statistics on Health (WISH) data query system, Birth Counts Module, 2017. http://dhs.wisconsin.gov/wish/

229. Landy R, Pesola F, Castañón A, Sasieni P. Impact of cervical screening on cervical cancer mortality: estimation using stage-specific results from a nested case-control study. *Br J Cancer.* 2016;115(9):1140-1146.

230. Duffy SW, Tabar L, Olsen AH, et al. Absolute numbers of lives saved and overdiagnosis in breast cancer screening, from a randomized trial and from the Breast Screening Programme in England. *J Med Screen.* 2010;17(1):25-30.

231. Wisconsin Department of Health Services. Behavioral Risk Factor Surveillance System Survey Data. Madison, WI.

232. Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics, Wisconsin Cancer Reporting System. *Wisconsin Cancer Statistical Fact Sheet, Racial and Ethnic Disparities;* 2017. https://www.dhs.wisconsin.gov/publications/p01794.pdf

233. Zauber AG. The impact of screening on colorectal cancer mortality and incidence: has it really made a difference? *Dig Dis Sci.* 2015;60(3):681-691.

234. Mental Illness. National Institute of Mental Health (NIH). Published November 2020. Accessed November 23, 2020. https://www.nimh.nih.gov/health/statistics/mental-illness.shtml

235. Mental Health By the Numbers. National Alliance on Mental Illness (NAMI). Published September 2019. Accessed November 23, 2020. https://www.nami.org/mhstats

236. Depression in Adults: Screening. U.S. Preventive Services Task Force. Published January 26, 2016. Accessed November 23, 2020.
https://www.uspreventiveservicestaskforce.org/uspstf/document/RecommendationStatementFinal/depression-in-adults-screening

237. Wisconsin Collaborative for Health Quality. Screening for Clinical Depression. Measure Results. Accessed November 23, 2020. https://reports.wchq.org/measure-results/306

238. Caldwell S, Herlitzke T, Brooks M. *Wisconsin School SBIRT Implementation Project, 2018-2019 Report.* Wisconsin Department of Health Services, Wisconsin Safe & Healthy Schools Center, University of Wisconsin-La Crosse; 2019.
https://www.wishschools.org/SBIRT/School%20SBIRT%20Implementation_2018-2019%20FINAL%20REPORT.pdf

239. McNeely J, Kumar PC, Rieckmann T, et al. Barriers and facilitators affecting the implementation of substance use screening in primary care clinics: a qualitative study of patients, providers, and staff. *Addict Sci Clin Pract.* 2018;13(1):8.

240. America's Health Rankings. Explore Drug Deaths in the United States. Annual Report. Accessed November 23, 2020. https://www.americashealthrankings.org/explore/annual/measure/Drugdeaths/state/ALL

241. Opioids. Wisconsin Department of Health Services. Published November 30, 2020. Accessed January 27, 2021. https://www.dhs.wisconsin.gov/opioids/index.htm

242. Substance Use: Drug Overdose Deaths Dashboard. Wisconsin Department of Health Services. Published January 24, 2021. Accessed January 27, 2021. https://www.dhs.wisconsin.gov/aoda/drug-overdose-deaths.htm

243. Opioids: Standing Order for Naloxone. Wisconsin Department of Health Services. Published January 4, 2021. Accessed January 27, 2021. https://www.dhs.wisconsin.gov/opioids/standing-order.htm

244. Opioids: NARCAN® Direct Program - Map. Wisconsin Department of Health Services. Published February 4, 2020. Accessed November 23, 2020. https://www.dhs.wisconsin.gov/opioids/narcan-direct-map.htm

245. Wisconsin Dept. of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Interactive Statistics on Health (WISH) data query system, Opioid-Related Hospital Encounters Module, 2018. https://www.dhs.wisconsin.gov/wish/index.htm

246. Knowing the Signs Can Help Prevent Drug Overdose Deaths. Wisconsin Department of Health Services. Published August 31, 2020. Accessed January 27, 2021. https://www.dhs.wisconsin.gov/news/releases/083120.htm

247. Wahlberg D. Opioid overdose increase in Madison, state linked to COVID-19 stress. WiscNews. Published August 7, 2020. Accessed November 23, 2020. https://www.wiscnews.com/news/state-and-regional/opioid-overdose-increase-in-madison-state-linked-to-covid-19-stress/article_8df3702a-29b6-5388-aacc-f22a517366e1.html

248. Wisconsin Department of Public Instruction. *Wisconsin 2017 Youth Risk Behavior Survey, Special Topic: Suicide and Help Seeking;* 2018. https://dpi.wi.gov/sites/default/files/imce/sspw/pdf/yrbssuicidehelpseeking.pdf

249. Substance Abuse and Mental Health Services Administration (SAMHSA). *Behavioral Health Barometer: Wisconsin, Volume 4: Indicators as Measured through the 2015 National Survey on Drug Use and Health, the National Survey of Substance Abuse Treatment Services, and the Uniform Reporting System.* https://www.samhsa.gov/data/sites/default/files/Wisconsin_BHBarometer_Volume_4.pdf

250. Wisconsin Department of Health Services. Suicide. Healthy Wisconsin. Accessed November 23, 2020. https://healthy.wisconsin.gov/content/suicide

251. Wisconsin Dept. of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Interactive Statistics on Health (WISH) data query system, Mortality Module, 2018. https://www.dhs.wisconsin.gov/wish/index.htm

252. Prevent Suicide Wisconsin. *Suicide in Wisconsin: Impact and Response;* 2020. https://www.dhs.wisconsin.gov/publications/p02657.pdf

253. Ross Adkins N, Corus C. Health Literacy for Improved Health Outcomes: Effective Capital in the Marketplace. *J Consum Aff*. 2009;43(2):199-222.

254. Guttmacher Institute. *State Facts About Unintended Pregnancy: Wisconsin;* 2014. https://www.guttmacher.org/sites/default/files/factsheet/wi_5.pdf

255. Wisconsin Data. Power to Decide. Published 2020. Accessed November 25, 2020. https://powertodecide.org/what-we-do/information/national-state-data/wisconsin

256. Centers for Disease Control and Prevention (CDC). Diseases & Related Conditions. Sexually Transmitted Disease (STDs). Published June 25, 2019. Accessed November 25, 2020. https://www.cdc.gov/std/general/default.htm

257. AIDSVu. Rates of Persons Living with HIV, 2018. Local Data: Wisconsin. Accessed November 25, 2020. https://aidsvu.org/local-data/united-states/midwest/wisconsin/

258. World Health Organization (WHO). What is Quality of Care and why is it important? Maternal, Newborn, Child and Adolescent Health, and Ageing. Published 2020. Accessed November 25, 2020. https://www.who.int/teams/maternal-newborn-child-adolescent-health-and-ageing/quality-of-care

259. Centers for Disease Control and Prevention (CDC). Maternal Mortality. National Center for Health Statistics. Published November 9, 2020. Accessed November 25, 2020. https://www.cdc.gov/nchs/maternal-mortality/index.htm

260. Almendrala A. The U.S. Is The Only Developed Nation With A Rising Maternal Mortality Rate. HuffPost. Published May 19, 2014. Accessed November 25, 2020. https://www.huffpost.com/entry/us-maternal-mortality-rate_n_5340648?guccounter=2

261. Gibson C., Rohan AM, Gillespie KH. Severe Maternal Morbidity During Delivery Hospitalizations. *WMJ*. 2017; 116(5):259-264 Accessed November 25, 2020. https://www.wismed.org/wisconsin

262. Wisconsin Department of Health Services, Maternal Mortality and Morbidity. *Wisconsin Maternal Mortality Review: Recommendations Report.;* 2018. https://www.dhs.wisconsin.gov/publications/p02108.pdf

263. United Health Foundation. International Comparison. America's Health Rankings. Published 2020. Accessed November 25, 2020. https://www.americashealthrankings.org/learn/reports/2018-annual-report/findings-international-comparison

264. Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics. *Annual Wisconsin Birth and Infant Mortality Report, 2017;* 2019. https://www.dhs.wisconsin.gov/publications/p01161-19.pdf

265. Wisconsin Collaborative for Healthcare Quality. Statewide results Ischemic Vascular Disease: Blood Pressure Control, 2019. https://reports.wchq.org/statewide-results

266. Centers for Disease Control and Prevention (CDC). Explore by Location. Chronic Disease Indicators. Accessed November 25, 2020. https://nccd.cdc.gov/cdi/rdPage.aspx?rdReport=DPH_CDI.ExploreByLocation&rdRequestForwarding=Form

267. Agency for Healthcare Research and Quality (AHRQ). Defining the PCMH. Patient Centered Medical Home Resource Center. Accessed November 25, 2020. https://pcmh.ahrq.gov/page/defining-pcmh

268. NCQA Report Cards. National Committee for Quality Assurance (NCQA). Published 2018. Accessed November 25, 2020.
https://reportcards.ncqa.org/#/practices/grid?state=Wisconsin

269. 346 Joint Commission Accredited Organizations (2,178 sites) with Primary Care Medical Home (PCMH) Certification as of 05/04/2020. Joint Commission.
https://www.jointcommission.org/-/media/tjc/documents/accred-and-cert/certification/certification-by-setting/primary-care-medical-home/pcmh-certified-list.pdf

270. American Hospital Association (AHA). Becoming a Culturally Competent Health Care Organization. AHA/HRET Guides. Published 2020. Accessed November 25, 2020.
https://www.aha.org/ahahret-guides/2013-06-18-becoming-culturally-competent-health-care-organization

271. Public Health Reaching Across Sectors (PHRASES). *Motivating The Public To Support Public Health: A Toolkit For Communicating With Non-Experts.* de Beaumont Foundation, The Aspen Institute; 2020.
https://www.phrases.org/wp-content/uploads/2020/07/Public-Health-Communications-Toolkit-Final_.pdf

272. Centers for Disease Control and Prevention (CDC). 10 Essential Public Health Services. Public Health Professionals Gateway. Published September 22, 2020. Accessed November 27, 2020.
https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html

273. Meit M, Knudson A, Dickman I, Brown A, Hernandez N, Kronstadt, J. *An Examination of Public Health Financing in the United States.* (Prepared by NORC at the University of Chicago.) Washington, DC: The Office of the Assistant Secretary for Planning and Evaluation; 2013.
https://www.norc.org/PDFs/PH%20Financing%20Report%20-%20Final.pdf

274. Peacock J. The Growing Strain on Public Health Department Budgets. Wisconsin Budget Project Blog. Published June 9, 2016. Accessed November 27, 2020.
http://www.wisconsinbudgetproject.org/the-growing-strain-on-public-health-department-budgets

275. NORC at the University of Chicago. *Wisconsin: Promising Practices in Coordination of State and Local Public Health.* Association of State and Territorial Health Officials (ASTHO) and the National Association of County and City Health Officials (NACCHO); 2012.
https://www.astho.org/Research/Major-Publications/Wisconsin-Case-Study/#:~:text=Wisconsin's%20public%20health%20system%20has,health%20services%20throughout%20the%20state.&text=These%20local%20health%20departments%20operate%20independently%20from%20DPH.

276. State Health Agency Finds Behavioral Health Challenges are Compounded by COVID-19. Wisconsin Department of Health Services. Published July 22, 2020. Accessed November 27, 2020.
https://www.dhs.wisconsin.gov/news/releases/072220.htm

277. Healthy Wisconsin Alliance, Inc. Stop the COVID Spread! Coalition. Wisconsin Hospital Association. Accessed December 6, 2020. https://www.wha.org/stopthecovidspread

278. Cushman W. "Infodemic" complicates Wisconsin's public health fight against coronavirus. Channel 3000. Published November 6, 2020. Accessed December 6, 2020.
https://www.channel3000.com/infodemic-complicates-wisconsins-public-health-fight-against-coronavirus/?fbclid=IwAR25zjMhB9-EsJYzxs33515LxFaOTvfGiyJDQ5KhsxrDKRJtKxVUOCvdWVs

279. Centers for Disease Control and Prevention (CDC). Earned Income Tax Credits. Office of the Associate Director for Policy and Strategy. Published June 1, 2020. Accessed December 6, 2020.
https://www.cdc.gov/policy/hst/hi5/taxcredits/index.html

280. Local Public Health. Wisconsin Department of Health Services. Published July 15, 2020. Accessed November 27, 2020. https://www.dhs.wisconsin.gov/lh-depts/counties.htm

281. Population of Counties in Wisconsin (2020). Accessed October 21, 2020. https://worldpopulationreview.com/us-counties/states/wi

282. U.S. Census, 2000 Census, Summary File 3, Tables P087, P159A-P159I.

283. U.S. Census American Community Survey (ACS), 2008-12 Five-year file, Tables B17001-B17001I.

284. US Census Bureau. SAIPE State and County Estimates for 2018. Accessed October 23, 2020. https://www.census.gov/data/datasets/2018/demo/saipe/2018-state-and-county.html

285. County Health Rankings & Roadmaps. Accessed October 23, 2020. https://www.countyhealthrankings.org/app/wisconsin/2020/measure/factors/24/map?sort=sc-3

286. American Amish. Wisconsin Amish. Exploring Amish Culture and Communities. Accessed October 23, 2020. https://amishamerica.com/wisconsin-amish/

287. Amish Population 2020. World Population Review. Published 2020. Accessed November 27, 2020. https://worldpopulationreview.com/state-rankings/amish-population?_sm_au_=iVVLVPkGM5LJZbnFBLQtvK7BJGKjp

288. Brown JR. Wisconsin Amish. Josh Brown. Accessed November 27, 2020. https://www.joshuarbrown.com/wisconsin-amish.html?_sm_au_=iVVLVPkGM5LJZbnFBLQtvK7BJGKjp

289. Payne M, Rupar CA, Siu GM, Siu VM. Amish, Mennonite, and Hutterite Genetic Disorder Database. *Paediatr Child Health*. 2011;16(3):e23-e24.

290. United States Census Bureau. QuickFacts: Florence County, Wisconsin. Accessed November 27, 2020. https://www.census.gov/quickfacts/fact/table/florencecountywisconsin,US/PST045219

291. United States Census Bureau. QuickFacts: Iron County, Wisconsin. Accessed November 27, 2020. https://www.census.gov/quickfacts/fact/table/ironcountywisconsin,US/PST045219

292. United States Census Bureau. QuickFacts: Forest County, Wisconsin. Accessed November 27, 2020. https://www.census.gov/quickfacts/fact/table/forestcountywisconsin,US/PST045219

293. Wisconsin Blue Book. *Population and Political Subdivisions;* 2019-2020. https://docs.legis.wisconsin.gov/misc/lrb/blue_book/2019_2020/190_population_and_political_subdivisions.pdf

294. U.S. Census American Community Survey (ACS), 2013-17 Five-year file, Tables B17001, B17001A-B17001I.

295. U.S. Census American Community Survey (ACS), 2008-12 Five-year file, Tables B17001, B17001A-B17001I.

296. U.S. Census, American Community Survey, 2012-2012 and 2013-2017 Five-year Estimates, Table S1810.

297. U.S. Census, American Community Survey, 2013-2017, Table C24010.

298. United States Department of Agriculture. 2001 Milk Production. Marketing Service Bulletin. Published February 2002. Accessed January 3, 2020. https://www.fmmacentral.com/?_sm_au_=iVVj0vn8v35QNT2VBLQtvK7BJGKjp

299. Map of Wisconsin Indian Tribes. Accessed November 2, 2020. http://www.judicare.org/Content/Map_of_Wisconsin_Indian_Tribes.cfm

300. Colonialism Transforms Indian Life. Wisconsin Historical Society. Accessed December 2, 2020. https://www.wisconsinhistory.org/turningpoints/tp-008/?action=more_essay

301. Boarding Schools and the History of ICWA. Kids Matter Inc. Published 2016. Accessed December 2, 2020. https://kidsmatterinc.org/boarding-schools-and-the-history-of-icwa/

302. Indian Schools in Wisconsin. Wisconsin Historical Society. Published August 3, 2012. Accessed December 2, 2020. https://www.wisconsinhistory.org/Records/Article/CS2096

303. Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Health Information and Policy. *Wisconsin Minority Health Report, 2001-2005 (PPH 5716).*; 2008. https://www.dhs.wisconsin.gov/publications/p4/p45716.pdf

304. Native Milwaukee. Encyclopedia of Milwaukee. Published 2016. Accessed December 2, 2020. https://emke.uwm.edu/entry/native-milwaukee/

305. Jones T. In Wausau, Hmong at another crossroads. Chicago Tribune. https://www.chicagotribune.com/news/ct-xpm-2003-06-16-0306160145-story.html. Published June 16, 2003. Accessed November 2, 2020.

306. Stratis Health. Hmong in Minnesota. Culture Care Connection. Accessed November 2, 2020. http://www.culturecareconnection.org/matters/diversity/hmong.html

307. Vang CY. Making Ends Meet: Socioeconomic Trends in the U.S. *Hmong Studies Journal.* 2012;13(2):1-20.

308. Fadiman A. *The Spirit Catches You and You Fall Down: A Hmong Child, Her American Doctors, and the Collision of Two Cultures.* Farrar, Straus and Giroux; 1997.

309. Slavery in Wisconsin. Wisconsin Historical Society. Published August 3, 2012. Accessed December 6, 2020. https://www.wisconsinhistory.org/Records/Article/CS1784

310. Black History in Wisconsin. Wisconsin Historical Society. Published August 3, 2012. Accessed December 6, 2020. https://www.wisconsinhistory.org/Records/Article/CS502

311. Marker 383: African American Settlers of the Cheyenne Valley. Wisconsin Historical Markers. Accessed December 6, 2020. http://www.wisconsinhistoricalmarkers.com/2013/07/marker-383-african-american-settlers-of.html

312. Driftless Wisconsin, Inc. The Round Barns of Vernon County. Driftless Wisconsin. Published March 21, 2015. Accessed December 6, 2020. https://driftlesswisconsin.com/the-round-barns-of-vernon-county/

313. A Journey from Slavery to Freedom: A Brief Biography of Joshua Glover. Wisconsin Historical Society. Published December 18, 2014. Accessed December 6, 2020. https://www.wisconsinhistory.org/Records/Article/CS4368

314. Winter A. Racine County had significant role in helping runaway slaves. The Journal Times. Published February 3, 2002. Accessed December 6, 2020. https://journaltimes.com/news/local/racine-county-had-significant-role-in-helping-runaway-slaves/article_7a3b6f90-98ba-5266-bfcb-7ae04bb9d9ce.html

315. United States Census Bureau. QuickFacts: Racine County, Wisconsin. Accessed December 6, 2020. https://www.census.gov/quickfacts/racinecountywisconsin

316. Schmelz LM. Building A Dream. Lisa Schmelz website. Accessed December 6, 2020. http://lisaschmelz.com/yahoo_site_admin/assets/docs/Lake_Ivanhoe.239125009.pdf

317. African American Migration: World War II and Its Effect on Blacks. Wisconsin Historical Society. Published August 3, 2012. Accessed December 6, 2020. https://www.wisconsinhistory.org/Records/Article/CS434

318. Demographics & Data. Milwaukee Citywide Policy Plan. Accessed December 6, 2020. https://city.milwaukee.gov/ImageLibrary/Groups/cityDCD/planning/plans/Citywide/plan/Data.pdf

319. National Association of County and City Health Officials (NACCHO). Mobilizing for Action through Planning and Partnerships (MAPP). NACCHO Programs. Published 2020. Accessed November 27, 2020. https://www.naccho.org/programs/public-health-infrastructure/performance-improvement/community-health-assessment/mapp

320. How Healthy is your County? County Health Rankings & Roadmaps. Published 2020. Accessed November 27, 2020. https://www.countyhealthrankings.org/

321. Wisconsin Office of Rural Health. *Rural Wisconsin Health*. http://worh.org/sites/default/files/Rural%20WI%20Health%202017_0.pdf

322. Office of Disease Prevention and Health Promotion (ODPHP). Leading Health Indicators. Healthy People. Published October 8, 2020. Accessed February 8, 2021. https://www.healthypeople.gov/2020/Leading-Health-Indicators

The artwork above was created by Wisconsin students depicting their vision of what 'Painting the Picture of Wisconsin's Health' meant to them.

Painting the picture of

WISCONSIN'S
HEALTH