# Annual Wisconsin Death Report, 2014 (P-01170-15)

# Technical Notes

## Reporting requirements

As specified in Chapter 69, Wisconsin Statutes, the following is a brief outline of the sequence of events that take place when a death occurs in Wisconsin:

- Within 24 hours after being notified of a death, the filing party (usually a funeral director) must create an electronic death record in the State Vital Records system and select a physician, coroner, or medical examiner responsible for completing and certifying the medical portion of the death record.

- The medical certifier has six days after pronouncement of the death to complete the medical portion of the record and electronically authenticate that portion of the record.

- Within two days after the medical certifier has verified the accuracy of the medical portion, the filing party must approve the death record and it will then be available in the State Vital Records system for the appropriate Register of Deeds. The Register of Deeds will review the record, and if the record is completed satisfactorily, approve it for filing with the State Vital Records Office. There should be no more than nine calendar days total from date of death until the Register of Deeds is notified of the death.

- There should be no more than 10 working days (not including weekends) from the time a Register of Deeds has received the record from the filing party to the time the Register of Deeds approves it. After the Register of Deeds has signed the electronic death record, the death record is ready for registration by the State Vital Records Office.

## Nature and source of the data

Data in the Annual Wisconsin Death Report, 2014 are based on information from all Wisconsin resident deaths in the 2014 calendar year. In 2013, the death certificate's standard format was subject to several changes. The State Vital Records Office started collecting death information electronically and also changed race and ethnicity classifications allowing more detailed inclusion of other races and multiple race designations.

## Cause-of-death classification

Causes of death are coded according to the World Health Organization's (WHO) *International Classification of Diseases—Tenth Revision* (ICD-10). This classification system is the current standard used by the National Center for Health Statistics (NCHS.) ICD-10 not only details disease classification but also provides definitions, tabulation lists, the format of the death certificate, and the rules for coding cause of death. Data presented on cause-of-death statistics are based solely on the underlying cause of death, which is defined as ''the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence that produced the fatal injury." All of the cause-of-death groupings used in the Annual Wisconsin Death Report, 2014 were recommended for state use by the NCHS and the WHO.

The Office of Health Informatics uses guidelines described in annual issues of part 2a of the NCHS Instruction Manual. Table 1 shows the list of ICD-10 codes used for ranking. For ease of presentation and use of data, some of the codes (list of the codes) used by the NCHS were combined.

## Population denominators

The 2014 population estimates used for computing rates are post-census estimates from the U.S. Census Bureau and are based on the 2010 census. All population estimates used for a single data year are based on population estimates of the same reference year. The minor civil division populations are based on estimates from the Wisconsin Department of Administration[1].

## Rates

Rates are measures of the frequency of occurrence of death in a defined population during a specified time interval. They are calculated by using the number of event (deaths) divided by the population of interest.  They are usually expressed in a base number of population (e.g., per 1,000). See Appendix Table 3 for Wisconsin population estimates as of July 1, 2014, used for rate calculation.

## Crude mortality rates

The crude mortality rate is the mortality rate from all causes of death for a population during a specified time period. The denominator is the population at the mid-point of the time period. To calculate a simple mortality rate, we need to know the number of deaths in a given population during a specified time period and the size of the population in which the deaths occurred. The basic formula is:

$$Crude\ Rate\ \ = \frac{Deaths\ occurring\ in\ a\ given\ population\ during\ a\ given\ time\ period}{Total\ number\ of\ people\ in\ population\ at\ mid-point\ in\ that\ time\ period}\ x(base)$$

## Age-adjustment

Consistent with standard methods, all rates calculated were age-adjusted using the 2000 U.S. census population as a reference. Age-adjustment allows for meaningful comparison between groups that have different age distributions.

## Race/Ethnicity

Beginning in 2013, race and ethnicity were reported separately. A total of 26 fields were created to classify race, in addition to the fields used for identifying Hispanic groups. This new classification made it difficult to calculate age-adjusted mortality rates by race and ethnicity. Therefore, to produce population estimates with race categories comparable with earlier mortality reports, the enumerated population data were bridged back to single-race categories consistent with the classic Bridged Race grouping from the U.S. Census[2].

## Missing values

In the Annual Wisconsin Death Report, 2014, data with missing values were excluded when percentages were calculated. Appendix Table 4 shows missing values for select fields of data. Missing data impact calculation of percentages.

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[1] Department of Administration, Wisconsin Minor Civil Division Population Estimates, Wisconsin Demographic Services Center. Available at http://www.doa.state.wi.us/Divisions/Intergovernmental-Relations/Demographic-Services-Center , accessed on November 2015.
[2] http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm, accessed on November 2015

## Appendix Tables and Map

**Appendix Table 1. Leading Causes of Death by ICD-10 Classification, Wisconsin, 2014**

| Leading Causes Of Deaths | Total Number Of Deaths (Over Age 1) |
|---|---:|
| All Causes | 49,757 |
| Cancers (C00-C97) | 11,277 |
| Heart Disease (I01,I05-I09,I11,I13,I20-I51) | 11,064 |
| Unintentional Injuries (V01-V99,W00-W99,X00-X59) | 2,868 |
| Chronic Pulmonary Disease (J40-J47) | 2,742 |
| Stroke (I60-I69) | 2,465 |
| Alzheimer Disease (G30) | 1,864 |
| Diabetes (E10-E14) | 1,331 |
| Pneumonia/Influenza (J09-J18) | 978 |
| Kidney Inflammation (N00-N07,N17-N19,N25-N27) | 961 |
| Suicide (U03,Y870,X60-X84) | 755 |
| Liver Disease (K70,K73-K77) | 732 |
| Parkinson Disease (G20-G21) | 615 |
| Septicemia (A40-A41) | 513 |
| High Blood Pressure (I10,I12,I15) | 459 |
| Pulmonary Inflammation (J69) | 392 |
| In Situ Cancer (D00-D48) | 380 |
| Aneurysm Of The Aorta (I71) | 253 |
| Homicide (Y871,X85-X99,Y00-Y09) | 158 |
| Atherosclerosis (I70) | 135 |
| Enterocolitis Difficile (A047) | 110 |
| Anemia (D50-D64) | 108 |
| Congenital Diseases (Q00-Q99) | 101 |
| Gall Bladder Disease (K80-K82) | 82 |
| Viral Hepatitis (B15-B19) | 73 |
| Nutritional Deficiencies (E40-E64) | 66 |
| Hernia (K40-K46) | 48 |
| Ulcer (K25-K28) | 47 |
| HIV (B20-B24) | 40 |
| Complication Of Care (Y40-Y84, Y88) | 29 |
| Pregnancy Related (O00-O99) | 15 |
| Appendicitis (K35-K38) | 12 |
| Pneumoconiosis (J60-J66,J68) | 5 |
| All Other Causes | 9,079 |

| Leading Causes For Infants (Under Age 1) | Total Number Of Deaths |
|---|---|
| All Causes | 380 |
| Short Gestation/Low Birth Weight (P07) | 92 |
| Congenital Malformations (Q00-Q99) | 87 |
| Unintentional Injuries (V01-X59) | 23 |
| Sudden Infant Death Syndrome (R95) | 21 |
| Placenta/Cord/Membrane (P02) | 17 |
| Maternal Pregnancy Complication (P01) | 14 |
| Neonatal Bleeding (P50-P52,P54) | 10 |
| Respiratory Distress (P22) | 6 |
| Bacterial Sepsis (P36) | 6 |
| Necrotizing Enterocolitis (P77) | 6 |
| Atelectasis/Lung Collapse (P28) | 5 |
| Circulatory Disease (I00-I99) | 5 |
| Diarrhea & Gastroenteric Illnesses (A09) | (<5) |
| Septicemia (A40-A41) | (<5) |
| Cancers (C00-C97) | (<5) |
| Blood Forming Disorders (D50-D84) | (<5) |
| Meningitis (G00,G03) | (<5) |
| Musculo-Dystrophia (G12) | (<5) |
| Anoxic Brain Damage (G93) | (<5) |
| Acute Upper Respiratory Infection (J00-J06) | (<5) |
| Pneumonia/Influenza (J09-J18) | (<5) |
| Kidney Failure (N17-N19,N25,N27) | (<5) |
| Maternal Health Effects (P00) | (<5) |
| Labor Complication (P03) | (<5) |
| Slow Fetal Growth/Malnutrition (P05) | (<5) |
| Birth Hypoxia/Asphyxia (P20-P21) | (<5) |
| Congenital Pneumonia (P23) | (<5) |
| Neonatal Aspiration (P24) | (<5) |
| Pulmonary Hemorrhage (P26) | (<5) |
| Hematologic Disease (P60-P61) | (<5) |
| Neonatal Diabetes (P70) | (<5) |
| Hydrops Fetalis/Oedema (P83) | (<5) |
| Homicide (U01,X85-X99,Y00-Y09) | (<5) |

Source: Office of Health Informatics, Division of Public Health, Department of Health Services.

**Appendix Table 2: Death and Death Rates, Wisconsin and U.S., Selected Years, 1999-2014**

| Year | Wisconsin | | | | U.S. | | | |
|------|-----------|-----------|--------|--------------------|-----------|-----------|--------|--------------------|
| | Deaths | Crude Rate | Age Adjusted Rate | (95% CI) | Deaths | Crude Rate | Age Adjusted Rate | (95% CI) |
| 1999 | 46,672 | 875.2 | 831.5 | (823.9 - 839.0) | 2,391,399 | 857.0 | 875.6 | (874.5 - 876.7) |
| 2000 | 46,461 | 866.2 | 820.1 | (812.6 - 827.6) | 2,403,351 | 854.0 | 869.0 | (867.9 - 870.1) |
| 2001 | 46,628 | 862.4 | 812.5 | (805.1 - 819.9) | 2,416,425 | 848.0 | 858.8 | (857.7 - 859.9) |
| 2002 | 46,981 | 862.8 | 806.1 | (798.7 - 813.4) | 2,443,387 | 849.5 | 855.9 | (854.8 - 857.0) |
| 2003 | 46,177 | 842.8 | 780.1 | (773.0 - 787.2) | 2,448,288 | 843.9 | 843.5 | (842.4 - 844.5) |
| 2004 | 45,600 | 827.0 | 760.0 | (753.0 - 767.1) | 2,397,615 | 818.8 | 813.7 | (812.7 - 814.7) |
| 2005 | 46,709 | 842.2 | 765.9 | (758.9 - 772.8) | 2,448,017 | 828.4 | 815.0 | (814.0 - 816.0) |
| 2006 | 46,153 | 827.5 | 745.3 | (738.5 - 752.2) | 2,426,264 | 813.1 | 791.8 | (790.8 - 792.8) |
| 2007 | 46,241 | 824.1 | 734.2 | (727.5 - 741.0) | 2,423,712 | 804.6 | 775.3 | (774.3 - 776.2) |
| 2008 | 46,815 | 829.9 | 730.3 | (723.7 - 737.0) | 2,471,984 | 812.9 | 774.9 | (774.0 - 775.9) |
| 2009 | 45,697 | 806.0 | 703.1 | (696.5 - 709.5) | 2,437,163 | 794.5 | 749.6 | (748.6 - 750.5) |
| 2010 | 47,308 | 831.9 | 719.0 | (712.5 - 725.6) | 2,468,435 | 799.5 | 747.0 | (746.0 - 747.9) |
| 2011 | 48,410 | 847.5 | 721.1 | (714.6 - 727.7) | 2,515,458 | 807.3 | 741.3 | (740.4 - 742.2) |
| 2012 | 48,384 | 844.9 | 707.8 | (701.4 - 714.2) | 2,543,279 | 810.2 | 732.8 | (731.9 - 733.7) |
| 2013 | 50,026 | 871.1 | 720.1 | (713.6 - 726.5) | 2,596,993 | 821.5 | 731.9 | (731.0 - 732.8) |
| 2014* | 50,137 | 872.3 | 711.0 | (701.3-720.7) | n/a | n/a | n/a | n/a |

Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2013 on CDC WONDER Online Database, released 2015.

Data are from the Multiple Cause of Death Files, 1999-2013,

http://wonder.cdc.gov/ucd-icd10.html

Note: 2014 data is based on the Wisconsin Office of Health Informatics data and not the National Center for Health Statistics online database.

**Appendix Table 3. Wisconsin Population Estimates as of July 1, 2014.**

| Age Group | Female | Male | Total |
|---|---|---|---|
| All Ages | 2,893,218 | 2,854,740 | 5,747,958 |
| 0-4 | 166,376 | 174,420 | 340,796 |
| 5-9 | 177,034 | 185,163 | 362,197 |
| 10-14 | 181,014 | 189,340 | 370,354 |
| 15-17 | 111,764 | 115,734 | 227,498 |
| 18-19 | 75,226 | 79,467 | 154,693 |
| 20-24 | 199,660 | 205,196 | 404,856 |
| 25-29 | 174,270 | 182,327 | 356,597 |
| 30-34 | 184,069 | 188,540 | 372,609 |
| 35-39 | 167,579 | 173,392 | 340,971 |
| 40-44 | 172,894 | 175,835 | 348,729 |
| 45-49 | 189,315 | 191,144 | 380,459 |
| 50-54 | 218,339 | 216,380 | 434,719 |
| 55-59 | 210,056 | 208,477 | 418,533 |
| 60-64 | 181,905 | 178,627 | 360,532 |
| 65-69 | 143,675 | 137,619 | 281,294 |
| 70-74 | 107,086 | 95,054 | 202,140 |
| 75-79 | 81,989 | 67,685 | 149,674 |
| 80-84 | 66,130 | 47,292 | 113,422 |
| 85-89 | 51,576 | 30,261 | 81,837 |
| 90-94 | 25,002 | 10,605 | 35,607 |
| 95+ | 8,259 | 2,182 | 10,441 |

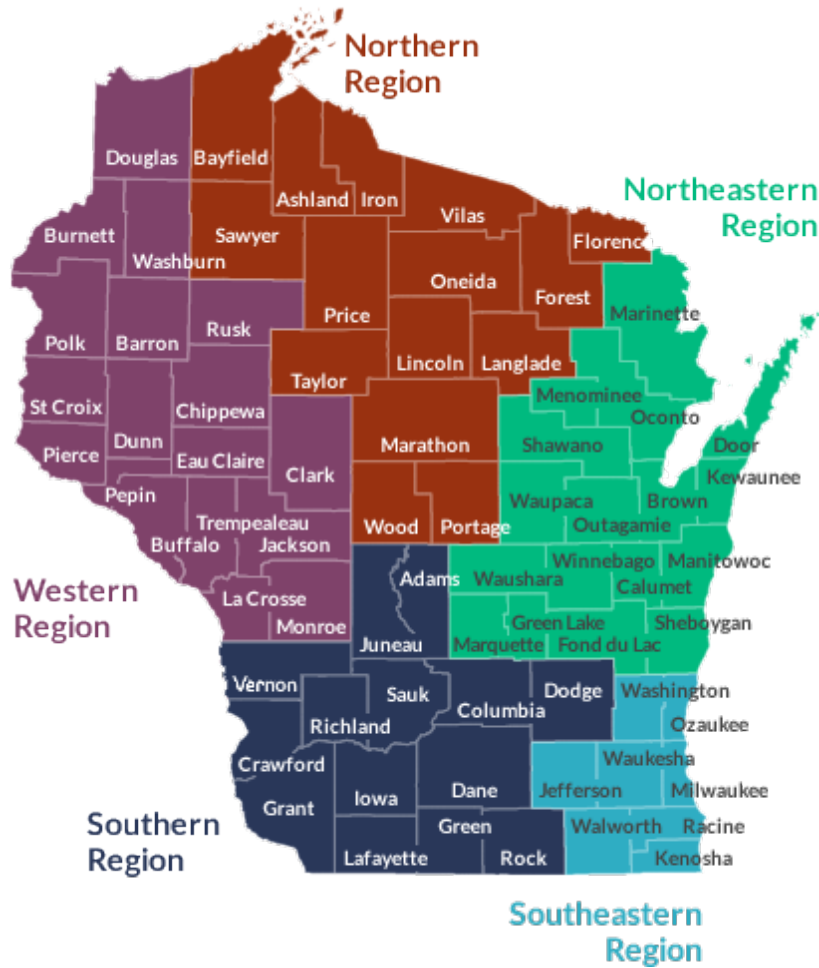Source: Office of Health Informatics, Division of Public Health, Department of Health Services.

**Appendix Table 4. Missing Values for Select Data Fields, Wisconsin, 2014**

| Data Field | Percent of Missing Values |
|---|---|
| Decedent's Sex | 0.0000% |
| County Where Death Occurred | 0.0499% |
| Decedent's County of Residence | 0.0519% |
| Decedent's Minor Civil Division of Residence | 0.0379% |
| Decedent's Zip Code of Residence | 0.0519% |
| Marital Status | 0.0000% |
| Decedent's Education | 0.0000% |
| Disposition of Body | 0.0000% |
| Was Autopsy Performed? | 0.0000% |
| Underlying Cause of Death | 0.9748% |
| Contributing Cause of Death 1 | 1.1602% |

| Data Field | Percent Reported |
|---|---|
| Did Injury Occur at Work? | 8.539% |
| Contributing Cause of Death 2 | 72.348% |
| Contributing Cause of Death 3 | 48.118% |
| Contributing Cause of Death 4 | 29.449% |
| Contributing Cause of Death 5 | 16.224% |
| Contributing Cause of Death 6 | 8.251% |
| Contributing Cause of Death 7 | 4.083% |
| Contributing Cause of Death 8 | 2.010% |
| Contributing Cause of Death 9 | 0.929% |
| Contributing Cause of Death 10 | 0.363% |
| Contributing Cause of Death 11 | 0.156% |
| Contributing Cause of Death 12 | 0.058% |
| Contributing Cause of Death 13 | 0.012% |
| Contributing Cause of Death 14 | 0.002% |

Source: Office of Health Informatics, Division of Public Health, Department of Health Services.

**Map 1. DHS Regions by County.**



Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics. *Annual Wisconsin Death Report, 2014, Technical Notes* (P-01170-15). November 2015.

Wisconsin
Department of Health Services