

Technical Notes

Annual Wisconsin Death Report, 2017 (P-01170-19)

Reporting Requirements

As specified in Wis. Stat. ch. 69, 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 who is 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 certified the accuracy of the medical portion, the filing party must approve the death record. 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 business days (not including weekends) from the time the 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 2017 Annual Wisconsin Death Report are based on information from all Wisconsin resident deaths in the 2017 calendar year. In 2013, the death certificate 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 detail with the inclusion of other races and multiple race designations.

Due to differences in cutoff dates and out-of-state reporting, U.S. rates for 2017 were from provisional data available from the National Center for Health Statistics. Provisional rate estimates were not available separated by sex.

Cause-of-Death Classification

Causes of death are coded according to the World Health Organization's *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 the cause-of-death groupings used in the 2017 Annual Wisconsin Death Report were recommended for state use by the National Center for Health Statistics and the World Health Organization.

The Office of Health Informatics (OHI) uses the 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 used by the NCHS were combined.

Population Denominators

The 2017 report uses 2017 population estimates for computing rates. These population estimates 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 events (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, 2017, 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:

$$\text{Crude Rate} = \frac{\text{Deaths occurring in a given population during a given time period}}{\text{Total number of people in population at midpoint in that time period}} \times 100,000$$

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 years or 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 2017 Annual Wisconsin Death Report, data with missing values were excluded when percentages were calculated. Table 4 in the Appendix shows missing values for selected fields of data. Missing data have an impact on percentage calculation.

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 2016.

² http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm, accessed on November 2016

Appendix—Tables and Map

Table 1. Leading Causes of Death by ICD-10 Classification, 2017

Leading Causes of Death (Over Age 1) and ICD-10 Classification	Total Number of Deaths
All deaths	52,265
Heart disease (I01,I05-I09,I11,I13,I20-I51)	11,812
Cancers (C00-C97)	11,286
Unintentional injuries (V01-V99,W00-W99,X00-X59,Y85-Y86)	3,682
Chronic lower respiratory diseases (J40-J47)	2,829
Stroke (I60-I69)	2,506
Alzheimer's disease (G30)	2,419
Diabetes (D10-D14)	1,428
Pneumonia/influenza (J09-J18)	968
Kidney inflammation (N00-N07,N17-N19,N25-N27)	918
Suicide (U03,Y870,X60-X84)	915
Chronic liver disease (K70, K73-K77)	866
Parkinson's disease (G20-G21)	689
Septicemia (A40-A41)	551
High blood pressure (I10,I12,I15)	502
Pulmonary inflammation (J69)	453
In situ cancer (D00-D48)	354
Aneurysm of the aorta (I71)	251
Homicide (Y871,X85-X99,Y00-Y09)	196
Nutritional deficiencies (E40-E64)	128
Congenital diseases (Q00-Q99)	121
Anemia (D50-D64)	109
Atherosclerosis (I70)	107
Enterocolitis due to Clostridium difficile (A04)	90
Gall bladder disease (K80-K82)	85
Ulcer (K25-K28)	74
Hernia (K40-K46)	40
Viral hepatitis (B15-B19)	32
Complication of care (Y40-Y84, Y88)	31
HIV (B20-B24)	28
Pneumoconiosis (J60-J66,J68)	14
Pregnancy-related (O00-O99)	12
Appendicitis (K35-K38)	10
Perinatal disease (P00-P99)	2
All other causes	8,757

(Table 1 continued)

Leading Causes of Death for Infants (Under Age 1) and ICD-10 Classification	Total Number of Deaths
All deaths	414
Congenital malformations (Q00-Q99)	82
Short gestation/low birth weight (P07)	82
Maternal pregnancy complication (P01)	28
Unintentional injuries (V01-X59)	25
Placenta/cord/membrane (P02)	15
Sudden infant death syndrome (R95)	15
Bacterial sepsis (P36)	8
Circulatory disease (I00-I99)	7
Atelectasis/lung collapse (P28)	7
Neonatal bleeding (P50-P52,P54)	7
Necrotizing enterocolitis (P77)	7
Homicide (U01,X85-X99,Y00-Y09)	7
Anoxic brain damage (G93)	4
Birth hypoxia/asphyxia (P20-P21)	4
Respiratory distress (P22)	4
Chronic respiratory disease (P27)	4
Hydrops fetalis/oedema (P83)	4
Septicemia (A40-A41)	3
Diarrhea and gastroenteric illnesses (A09)	2
In situ cancers (D00-D48)	2
Blood forming disorders (D50-D84)	2
Pneumonia/influenza (J09-J18)	2
Congenital pneumonia (P23)	2
Cancers (C00-C97)	1
Dehydration/low volemia (E87)	1
Meningitis (G00,G03)	1
Acute bronchitis (J20-J21)	1
Chronic bronchitis (J40-J42)	1
Hernia/intestinal obstruction (K40-K46,K56)	1
Kidney failure (N17-N19,N25,N27)	1
Labor complication (P03)	1
Toxins in placenta/milk (P04)	1
Trauma during birth (P10-P15)	1
All other causes	81

Appendix Table 2. Drug overdose and Poisoning Cause of Deaths, ICD10 Classification, 2017

Poisoning	Definition	Number
Drug Overdose	Underlying cause of death in (('X40'<=UCOD<='X44') OR ('X60'<= UCOD <='X64') OR (DEATH='X85') OR ('Y10'<= UCOD <='Y14')	1,171
Opium	T40.0	0
Opioids	Any Secondary Causes mentioning T40-.0-T40.4, T40.6	916
Heroin Only	T40.1	109
Prescription Drugs	T40.2-40.4	701
Cocaine Only	T40.5	60
Benzodiazepine	T42.4	32
Psychostimulants Only	T43.6	33
Narcotic Unspecified	T40.6	22
Combination of Drugs*	One or more (Prescription drug, Heroin, Cocaine, Benzodiazepine, Psychostimulants, Narcotics unspecified).	539
Drug Unspecified	T50.9 (drug unspecified)	453
Missing T-code	or missing T-code	121

*Note: Computation of combination of drugs changed in 2016 to include "T40.6- Unspecified Narcotics."

Appendix Table 3. Wisconsin Population Estimates as of July 1, 2017.

Age Group	Female	Male	Total
All Ages	2,904,358	2,874,471	5,778,829
0	32,693	34,210	66,903
1-4	130,997	137,029	268,026
5-9	172,026	180,342	352,368
10-14	179,340	188,165	367,505
15-17	111,600	116,254	227,854
18-19	74,122	77,165	151,287
20-24	197,167	203,453	400,620
25-29	176,068	188,397	364,465
30-34	179,820	184,972	364,792
35-39	179,948	184,700	364,648
40-44	161,978	165,517	327,495
45-49	178,563	181,396	359,959
50-54	199,722	198,369	398,091
55-59	215,570	211,571	427,141
60-64	195,246	190,601	385,847
65-69	163,321	156,782	320,103
70-74	120,488	110,244	230,732
75-79	86,787	72,543	159,330
80-84	64,846	48,339	113,185
85+	84,056	44,422	128,478

Appendix Table 4. Missing Values for Select Data Fields, Wisconsin, 2017

Data Field	Percent of Missing Values 2015	Percent of Missing Values 2016	Percent of Missing Values 2017
Decedent's Sex	0.00%	0.00%	0.00%
County Where Death Occurred	0.02%	0.05%	0.02%
Decedent's County of Residence	0.01%	0.02%	0.00%
Decedent's Minor Civil Division of Residence	0.02%	0.00%	0.00%
Decedent's Zip Code of Residence	0.01%	0.02%	0.08%
Marital Status	0.02%	0.00%	0.00%
Decedent's Education	0.00%	0.00%	0.00%
Disposition of Body	0.00%	0.00%	0.00%
Was Autopsy Performed?	0.03%	0.00%	0.001%
Underlying Cause of Death	0.00%	0.00%	0.38%
Contributing Cause of Death 1	0.18%	1.48%	1.87%
Did Injury Occur at Work?	90.76%	89.97%	89.78%
Contributing Cause of Death 2	73.61%	25.91%	25.67%
Contributing Cause of Death 3	50.44%	48.30%	48.03%
Contributing Cause of Death 4	30.89%	67.23%	66.48%
Contributing Cause of Death 5	17.53%	80.78%	80.06%
Contributing Cause of Death 6	9.16%	89.33%	88.90%
Contributing Cause of Death 7	4.63%	94.31%	94.06%
Contributing Cause of Death 8	2.29%	97.07%	96.97%
Contributing Cause of Death 9	1.12%	98.55%	98.56%
Contributing Cause of Death 10	0.46%	99.34%	99.33%
Contributing Cause of Death 11	0.20%	99.72%	99.73%
Contributing Cause of Death 12	0.08%	99.87%	99.89%
Contributing Cause of Death 13	0.03%	99.94%	99.97%
Contributing Cause of Death 14	0.00%	99.98%	99.99%

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

Map 1. DHS Regions by County.

