

Annual Wisconsin Death Report, 2015

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 certified 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, 2015 are based on information from all Wisconsin resident deaths in the 2015 calendar year. In 2013, the death certificates 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 inclusion of other races and multiple race designations.

Cause-of-death classification

Causes of death for deaths 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 of the cause-of-death groupings used in the Annual Wisconsin Death Report, 2015 were recommended for state use by the National Center for Health Statistics and the World Health Organization.

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 2015 report uses 2014 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 except for 2015 which was not available at the time of drafting this report. The minor civil division populations are based from estimates from the Wisconsin Department of Administration¹.

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:

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

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 Race Bridge Race grouping from the U.S. Census².

Missing values

In the Annual Wisconsin Death Report, 2015, 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.

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, 2015

Leading Causes Of Deaths (Over Age 1)	Total Number Of Deaths
All deaths	50,865
Diseases of the heart (I00-I09,I11,I20-I51)	11,463
Malignant neoplasms/cancer (C00-C97)	11,424
Unintentional injuries (C01-X59,Y85-Y86)	3,171
Chronic lower respiratory diseases (J40-J47)	2,840
Cerebrovascular diseases (I60-I69)	2,615
Alzheimer's disease (G30)	2,085
Diabetes mellitus (E10-E14)	1,382
Influenza and pneumonia (J09-J18)	1,046
Nephritis, nephrotic syndrome and nephrosis (N00-N12,N17-N19, N25-N27)	994
Intentional self-harm/suicide (U03,X60-Y84,Y87.0)	874
Parkinson's disease (G20-G21)	600
Chronic liver disease and cirrhosis (K70,K73-K74)	592
Septicemia (A40-A41)	513
Hypertension (I10,I12,I15)	484
Pneumonitis due to solids and liquids (J69)	405
Benign neoplasms (D00-D48)	365
Assault/homicide (U01-U02, X85-Y09, Y87.1)	240
Aortic aneurysm and dissection (I70)	235
Certain conditions originating in the perinatal period (P00-P96)	159
Congenital malformations (Q00-Q99)	118
Atherosclerosis (I70)	117
Enterocolitis C. Difficile (A04.7)	110
Anemias (D50-D64)	97
Cholelithiasis and other disorders of gallbladder (K80-K82)	88
Nutritional deficiencies (E40-E64)	70
Peptic ulcer (K25-K28)	69
Viral hepatitis (B15-B19)	50
Hernia (K40-K46)	44
Complications of medical and surgical care (Y40-Y84,Y88)	29
HIV (B20-B24)	18
Infections of kidney (N10-N12, N13.6, N15.1)	17
Pneumoconiosis and chemical effects (J60-J66, J68)	12
Pregnancy, childbirth and the puerperium (O00-O99)	10
Acute bronchitis and bronchiolitis (J20-J21)	9

Hyperplasia of prostate (N40)	9
Diseases of appendix (K35-K38)	7
Meningitis (G00-G03)	6
Legal intervention (Y35, Y89.0)	5
Tuberculosis (A16, A19)	5
Inflammatory diseases of female pelvic organs (N70-N76)	1
Shigellosis and amebiasis (A03,A06)	1
All other codes	8,486

Leading Causes For Infants (Under Age 1)	Total Number Of Deaths
All deaths	328
Short gestation/low birth weight (P07)	81
Congenital malformations (Q00-Q99)	77
Placenta/cord/membrane (P02)	18
Maternal pregnancy complication (P01)	16
Unintentional injuries(V01-X59)	15
Sudden infant death syndrom (R95)	12
Necrotizing enterocolitis (P77)	10
Bacterial sepsis (P36)	10
Circulatory disease (I00-I99)	9
Respiratory distress (P22)	7
Atelectasis/lung collapse (P28)	7
Slow fetal growth/malnutrition (P05)	6
Septicemia (A40-A41)	6
Labor complication (P03)	6
Pneumonia/influenza (J09-J18)	5
Birth hypoxia/asphyxia (P20-P21)	5
Homicide(U01,X85-X99,Y00-Y09)	4
Neonatal bleeding (P50-P52,P54)	4
Hydrops fetalis/oedema (P83)	4
Diarrhea & gastroenteric illnesses (A09)	3
Non-infective gastroenteritis (K29,K50-K55)	3
Maternal health effects (P00)	3
Hematologic disease (P60-P61)	2
Neonatal aspiration (P24)	2
Chronic bronchitis (J40-J42)	1
Acute bronchitis (J20-J21)	1
Musculo-dystrophia (G12)	1
Anoxic brain damage (G93)	1
Meningitis (G00,G03)	1

Acute upper respiratory infection (J00-J06)	1
Hernia/intestinal obstruction (K40-K46,K56)	1
Pulmonary hemorrhage (P26)	1
Emphysema (P25)	1
Cystic fibrosis (E84)	1
Congenital pneumonia (P23)	1
Neonatal diabetes (P70)	1
Kidney failure (N17-N19,N25,N27)	1

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, 1999-2015

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	875.6	(874.5 - 876.7)
2000	46,461	866.2	820.1	(812.6 - 827.6)	2,403,351	854	869.0	(867.9 - 870.1)
2001	46,628	862.4	812.5	(805.1 - 819.9)	2,416,425	848	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	(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	(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	50,291	873.5	712.1	(705.8-718.5)	2,626,418	823.7	789.7	(789.4 - 789.9)
2015*	51251	891.6	725.9	(716.1; 735.7)				

Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2014 on CDC WONDER Online Database, released 2016.

Data are from the Multiple Cause of Death Files, 1999-2014,

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

Note: 2015 data is based on the Wisconsin Office of Health Informatics data and not the National Center for Health Statistics online database. Because of differences in cutoff dates and out-of-state reporting, federal data sources numbers are not identical than Wisconsin numbers.

Appendix Table 3. Drug overdose and Poisoning Cause of Deaths, ICD10 Classification, 2015

Poisoning	Definition	Number
Drug Overdose	Underlying cause of death in (('X40'<=UCOD<='X44') OR ('X60'<= UCOD <='X64') OR (DEATH='X85') OR ('Y10'<= UCOD <='Y14')	872
Opium	T40.0	0
Opioids	Any Secondary Causes mentioning T40-.0-T40.4, T40.6	614
Heroin only	T40.1	139
Prescription Drugs	T40.2-40.4	175
Cocaine only	T40.5	29
Benzodiazepine	T42.4	39
Psychostimulants only	T43.6	11
Narcotic unspecified	T40.6	11
Combination of drugs	One or more (Prescription drug, Heroin, Cocaine, Benzodiazepine, Psychostimulants, Unspecified narcotics)	133
Drug unspecified	T50.9 or missing T-code	434
Total		872

Appendix Table 4. 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 5. Missing Values for Select Data Fields, Wisconsin, 2015

Data Field	Percent of Missing Values	
	2014	2015
Decedent's Sex	0.0000%	0.00000%
County Where Death Occurred	0.0499%	0.0195%
Decedent's County of Residence	0.0519%	0.0137%
Decedent's Minor Civil Division of Residence	0.0379%	0.01756%
Decedent's Zip Code of Residence	0.0519%	0.01366%
Marital Status	0.0000%	0.0176%
Decedent's Education	0.0000%	0.0000%
Disposition of Body	0.0000%	0.0000%
Was Autopsy Performed?	0.0000%	0.03317%
Underlying Cause of Death	0.9748%	0.00000%
Contributing Cause of Death 1	1.1602%	0.18147%
Did Injury Occur at Work?	8.54%	9.22%
Contributing Cause of Death 2	72.35%	73.61%
Contributing Cause of Death 3	48.12%	50.44%
Contributing Cause of Death 4	29.45%	30.89%
Contributing Cause of Death 5	16.22%	17.53%
Contributing Cause of Death 6	8.25%	9.16%
Contributing Cause of Death 7	4.08%	4.63%
Contributing Cause of Death 8	2.01%	2.29%
Contributing Cause of Death 9	0.93%	1.12%
Contributing Cause of Death 10	0.36%	0.46%
Contributing Cause of Death 11	0.16%	0.20%
Contributing Cause of Death 12	0.06%	0.08%
Contributing Cause of Death 13	0.01%	0.03%
Contributing Cause of Death 14	0.00%	0.00%

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

Map 1. DHS Regions by County.

