

Deaths: Final Data for 2017

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Abstract

Objectives—This report presents final 2017 data on U.S. deaths, death rates, life expectancy, infant mortality, and trends, by selected characteristics such as age, sex, Hispanic origin and race, state of residence, and cause of death.

Methods—Information reported on death certificates is presented in descriptive tabulations. The original records are filed in state registration offices. Statistical information is compiled in a national database through the Vital Statistics Cooperative Program of the National Center for Health Statistics. Causes of death are processed in accordance with the *International Classification of Diseases, 10th Revision*.

Results—In 2017, a total of 2,813,503 deaths were reported in the United States. The age-adjusted death rate was 731.9 deaths per 100,000 U.S. standard population, an increase of 0.4% from the 2016 rate. Life expectancy at birth was 78.6 years, a decrease of 0.1 year from the 2016 rate. Life expectancy decreased from 2016 to 2017 for non-Hispanic white males (0.1 year) and non-Hispanic black males (0.1), and increased for non-Hispanic black females (0.1). Age-specific death rates increased in 2017 from 2016 for age groups 25–34, 35–44, and 85 and over, and decreased for age groups under 1 and 45–54. The 15 leading causes of death in 2017 remained the same as in 2016 although, two causes exchanged ranks. Chronic liver disease and cirrhosis, the 12th leading cause of death in 2016, became the 11th leading cause of death in 2017, while Septicemia, the 11th leading cause of death in 2016, became the 12th leading cause of death in 2017. The infant mortality rate, 5.79 infant deaths per 1,000 live births in 2017, did not change significantly from the rate of 5.87 in 2016.

Conclusions—The age-adjusted death rate for the total, male, and female populations increased from 2016 to 2017 and life expectancy at birth decreased in 2017 for the total and male populations.

Keywords: mortality • cause of death • life expectancy • vital statistics

Highlights

Mortality experience in 2017

- In 2017, a total of 2,813,503 resident deaths were registered in the United States, yielding a crude death rate of 863.8 per 100,000 population.
- The age-adjusted death rate, which accounts for the aging of the population, was 731.9 deaths per 100,000 U.S. standard population.
- Life expectancy at birth was 78.6 years.
- The 15 leading causes of death in 2017 were:
 1. Diseases of heart (heart disease)
 2. Malignant neoplasms (cancer)
 3. Accidents (unintentional injuries)
 4. Chronic lower respiratory diseases
 5. Cerebrovascular diseases (stroke)
 6. Alzheimer disease
 7. Diabetes mellitus (diabetes)
 8. Influenza and pneumonia
 9. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
 10. Intentional self-harm (suicide)
 11. Chronic liver disease and cirrhosis
 12. Septicemia
 13. Essential hypertension and hypertensive renal disease (hypertension)
 14. Parkinson disease
 15. Pneumonitis due to solids and liquids
- In 2017, the infant mortality rate was 5.79 infant deaths per 1,000 live births.
- The 10 leading causes of infant death were:
 1. Congenital malformations, deformations and chromosomal abnormalities (congenital malformations)



2. Disorders related to short gestation and low birth weight, not elsewhere classified (low birth weight)
3. Newborn affected by maternal complications of pregnancy (maternal complications)
4. Sudden infant death syndrome (SIDS)
5. Accidents (unintentional injuries)
6. Newborn affected by complications of placenta, cord and membranes (cord and placental complications)
7. Bacterial sepsis of newborn
8. Diseases of the circulatory system
9. Respiratory distress of newborn
10. Neonatal hemorrhage

Trends

- The age-adjusted death rate increased 0.4% in 2017 after a decrease in 2016.
- Differences in mortality persisted between the non-Hispanic black and non-Hispanic white populations. The age-adjusted death rate has been 1.2 times greater for the non-Hispanic black population than for the non-Hispanic white population since 2008.
- The age-adjusted death rate for the non-Hispanic white population was 1.4 times greater than for the Hispanic population. This difference has remained unchanged since 2010.
- Life expectancy for the total population decreased 0.1 year from 78.7 in 2016 to 78.6 in 2017.
- Life expectancy for females was 5.0 years higher than for males. The difference in life expectancy between the sexes has narrowed since 1979, when it was 7.8 years, but it increased 0.1 year in 2017 from 2016, the second consecutive increase.
- In 2017 compared with 2016, life expectancy decreased for non-Hispanic white males (0.1 year) and non-Hispanic black males (0.1 year). Life expectancy for non-Hispanic white females, and Hispanic males and females remained unchanged. Life expectancy for non-Hispanic black females increased 0.1 year.
- The difference in life expectancy between the Hispanic and non-Hispanic white populations was 3.3 years in 2017, an increase of 0.1 year from 2016.
- The 15 leading causes of death in 2017 were the same as in 2016, although Chronic liver disease and cirrhosis and Septicemia exchanged ranks.
- Age-adjusted death rates increased significantly in 2017 from 2016 for 10 of the 15 leading causes of death, including unintentional injuries, Chronic lower respiratory diseases, stroke, Alzheimer disease, diabetes, Influenza and pneumonia, suicide, Chronic liver disease and cirrhosis, hypertension, and Parkinson disease. Significant decreases occurred in 2017 from 2016 for 1 of the 15 leading causes of death: cancer.
- Age-adjusted death rates increased in 2017 from 2016 for drug-induced causes (9.6%) and firearm-related injuries (1.7%).

- The decrease in life expectancy at birth for the total population in 2017 was mainly due to increases in mortality from unintentional injuries, suicide, diabetes, Alzheimer disease, and Influenza and pneumonia, with unintentional injuries making the largest contribution.
- The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations decreased by 0.1 year, from 3.7 years in 2016 to 3.6 years in 2017.
- Among external cause-of-injury deaths, unintentional poisoning has been the leading mechanism of injury mortality since 2011.
- The difference in the infant mortality rate of 5.79 infant deaths per 1,000 live births in 2017 from 5.87 in 2016 was not statistically significant.
- The 10 leading causes of infant death in 2017 remained the same as in 2016, although 4 causes changed ranks.

Introduction

This report presents detailed 2017 data on deaths and death rates according to a number of demographic and medical characteristics. These data provide information on mortality patterns among residents of the United States by such variables as age, sex, Hispanic origin and race, state of residence, and cause of death. Information on these mortality patterns is key to understanding changes in the health and well-being of the U.S. population (1). Companion reports present additional details on leading causes of death and life expectancy in the United States (2,3).

Mortality data in this report can be used to monitor and evaluate the health status of the United States in terms of current mortality levels and long-term mortality trends, as well as to identify segments of the U.S. population at greater risk of death from specific diseases and injuries. Differences in death rates among various demographic subpopulations, including race and ethnicity groups, may reflect subpopulation differences in factors such as socioeconomic status, access to medical care, and the prevalence of specific risk factors in a particular subpopulation.

Methods

Data in this report are based on information from all resident death certificates filed in the 50 states and the District of Columbia. More than 99% of deaths occurring in this country are believed to be registered (4). Tables showing data by state also provide information for Puerto Rico, Guam, U.S. Virgin Islands, American Samoa, and the Commonwealth of the Northern Mariana Islands (Northern Marianas). Cause-of-death statistics presented in this report are classified in accordance with the *International Classification of Diseases, 10th Revision (ICD-10)* (5–7). Selected causes are presented primarily based on their impact on public health and future planning. A discussion of the cause-of-death classification is provided in [Technical Notes](#) at the end of this report.

Mortality data on specific demographic and medical characteristics cover all 50 states and the District of Columbia.

Measures of mortality in this report include the number of deaths; crude, age-specific, and age-adjusted death rates; infant, neonatal, and postneonatal mortality rates; life expectancy; and rate ratios. Changes in death rates in 2017 compared with 2016 and differences in death rates across demographic groups in 2017 were tested for statistical significance. Unless otherwise specified, reported differences are statistically significant. Additional information on these statistical methods, random variation and relative standard error, the computation of derived statistics and rates, population denominators, and the definition of terms is presented in [Technical Notes](#).

The populations used to calculate death rates shown in this report for 1991–2017 were produced under a collaborative arrangement with the U.S. Census Bureau. Populations for 2010–2017 and the intercensal period 2001–2009 are consistent with the 2010 census (8–16). Reflecting the latest guidelines issued in 1997 by the Office of Management and Budget (OMB), the 2000 and 2010 censuses included an option for persons to report more than one race as appropriate for themselves and household members (17); see [Technical Notes](#) for details on multiple-race reporting and methods used to bridge responses for those who report more than one race. Beginning with deaths occurring in 2003, some states allowed for multiple-race reporting on the death certificate. Multiple-race data for these states are bridged to single-race categories; see [Technical Notes](#). Use of the bridged-race process will be discontinued once all states collect data on race according to 1997 OMB guidelines for the full data year. This report presents mortality statistics for Hispanic, non-Hispanic white, non-Hispanic black, non-Hispanic American Indian or Alaska Native (AIAN), and non-Hispanic Asian or Pacific Islander (API) persons.

The population data used to compute death rates by race and Hispanic origin in this report are based on special estimation procedures and are not true counts (see “Race and Hispanic origin” in [Technical Notes](#)). This is the case even for the 2000 and 2010 populations. The estimation procedures used to develop these populations contain some error. Smaller population groups are affected much more than larger population groups (18). Data presented in this report and other mortality tabulations are available from the National Center for Health Statistics (NCHS), National Vital Statistics System website: <https://www.cdc.gov/nchs/deaths.htm>. Availability of mortality microdata is described in [Technical Notes](#).

Detailed death data are included in [Tables 1–15](#) of this report. This report also includes supplemental Internet [Tables I–1](#) through [I–20](#).

Results and Discussion

Deaths and death rates

In 2017, a total of 2,813,503 resident deaths were registered in the United States—69,255 more deaths than in 2016. The crude death rate for 2017 (863.8 deaths per 100,000 population) was 1.7% higher than the 2016 rate (849.3) ([Tables A, 1, 2, 7, and 9](#)).

The age-adjusted death rate in 2017 was 731.9 deaths per 100,000 U.S. standard population—0.4% higher than the rate of 728.8 in 2016 ([Tables A and 1](#)). Age-adjusted death rates should be viewed as relative indexes rather than as actual measures of mortality risk. They are constructs that show what the level of mortality would be if no changes occurred in the age composition of the population from year to year. (For a discussion of age-adjusted death rates, see [Technical Notes](#).) Thus, age-adjusted death rates are better indicators than unadjusted (crude) death rates for examining changes in the risk of death over a period of time when the age distribution of the population is changing. Age-adjusted death rates also are better indicators of relative risk when comparing mortality across geographic areas or between sex or race subgroups of the population that have different age distributions; see [Technical Notes](#). Since 1980, the age-adjusted death rate has decreased significantly every year except for 1983, 1985, 1988, 1993, 1999, 2005, 2010, 2013, 2015, and 2017 ([Figure 1](#)) (19).

Death rates by race and Hispanic origin

In 2017, age-adjusted death rates for the major race and ethnicity groups ([Table 1](#)) were:

- Non-Hispanic white population: 755.0 deaths per 100,000 U.S. standard population
- Non-Hispanic black population: 881.0
- Hispanic population: 524.7

In 2017, the age-adjusted death rate for the non-Hispanic black population was 1.2 times that for the non-Hispanic white population. The rate for the non-Hispanic white population was 1.4 times that for the Hispanic population ([Table B](#)). From 2016 to 2017, the age-adjusted rate for the non-Hispanic white population increased 0.8%, while the rate for the non-Hispanic black population did not significantly change. The difference between the Hispanic and non-Hispanic white populations has generally been widening since 2006, with the exception of 2009, 2012, and 2016 ([Table 1, Figure 2](#)) (19).

From 2016 to 2017, the age-adjusted death rate increased for non-Hispanic white females (0.9%) and non-Hispanic white males (0.6%) ([Tables A and 1](#)). For non-Hispanic black females, the age-adjusted death rate decreased 0.8%. Observed changes in age-adjusted rates for non-Hispanic black male and Hispanic male and female populations were not statistically significant.

Mortality for Hispanic persons may be somewhat understated because of net underreporting of Hispanic origin on the death certificate (by an estimated 3%), while data for the non-Hispanic white and non-Hispanic black populations are not affected by problems of underreporting (20,21); see [Technical Notes](#). Misclassification of Hispanic origin on the death certificate is relatively stable across age groups (20). Rates for the non-Hispanic AIAN population should be interpreted with caution because of the high percentage of racial misclassification on death certificates (33%). Rates for non-Hispanic API are affected much less by underreporting on the death certificate (3%) (20).

Table A. Percent change in death rates and age-adjusted death rates in 2017 from 2016, by age, race and Hispanic origin, and sex: United States

[Based on death rates on an annual basis per 100,000 population, and age-adjusted rates per 100,000 U.S. standard population; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Age group (years)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	Percent change																	
Crude rate	1.7	1.9	1.5	2.2	2.4	2.0	1.5	2.2	0.9	2.6	1.5	3.9	2.7	3.0	2.4	2.1	2.2	2.1
Age-adjusted rate	0.4	0.4	0.4	0.8	0.6	0.9	-0.2	0.2	-0.8	0.0	-1.1	0.9	0.2	0.8	-0.3	-0.2	0.0	-0.5
Under 1 ⁵	-2.8	-2.4	-3.4	-5.6	-4.8	-6.7	-1.3	1.0	-4.0	-6.6	-15.1	5.3	5.5	1.8	10.4	-0.7	-2.2	1.1
1-4	-4.0	-1.4	-7.9	-6.3	-0.4	-13.1	-3.4	-7.1	1.9	-11.7	-12.8	-10.6	-8.2	18.1	-35.4	0.0	1.9	-2.3
5-14	1.5	4.0	-3.4	0.8	1.4	0.0	4.5	11.2	-4.0	11.2	12.3	9.4	-5.4	-5.1	-8.1	-0.9	4.1	-7.8
15-24	-1.2	-1.5	0.0	-0.1	-1.3	2.7	-3.1	-2.1	-6.8	-3.1	-0.9	-7.6	-3.5	-5.9	3.7	0.8	0.5	2.0
25-34	2.9	2.9	2.8	4.1	3.9	4.3	1.7	1.7	1.0	5.5	4.0	8.4	3.1	2.6	3.0	0.8	1.0	-0.2
35-44	1.6	2.1	0.5	2.0	2.4	1.3	2.3	3.1	1.1	5.1	4.7	5.6	-6.6	-7.0	-5.9	1.8	2.8	-0.8
45-54	-1.0	-0.3	-2.1	-0.8	-0.6	-1.1	-0.9	1.3	-3.8	1.6	2.1	0.7	3.0	3.4	2.3	0.5	2.0	-2.1
55-64	0.2	0.0	0.5	0.7	0.4	1.1	0.4	0.5	0.1	1.0	-2.0	5.6	-3.9	-3.2	-4.8	-1.7	-2.1	-1.2
65-74	0.1	0.2	0.1	0.3	0.3	0.3	0.1	0.7	-0.7	-1.9	-2.6	-0.9	0.2	1.4	-1.2	-0.4	-1.7	1.4
75-84	0.0	-0.1	-0.1	0.1	-0.1	0.3	-0.6	-0.5	-0.8	0.2	1.4	-1.2	0.7	1.4	-0.2	-0.5	0.8	-1.9
85 and over	1.4	1.1	1.5	1.9	1.6	2.1	-0.6	-1.2	-0.3	-3.1	-7.9	0.1	1.0	1.5	0.7	0.2	0.1	0.3

0.0 Quantity more than zero but less than 0.05.

¹Includes deaths for origin not stated.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Includes Aleut and Eskimo persons.

⁴Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

⁵Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

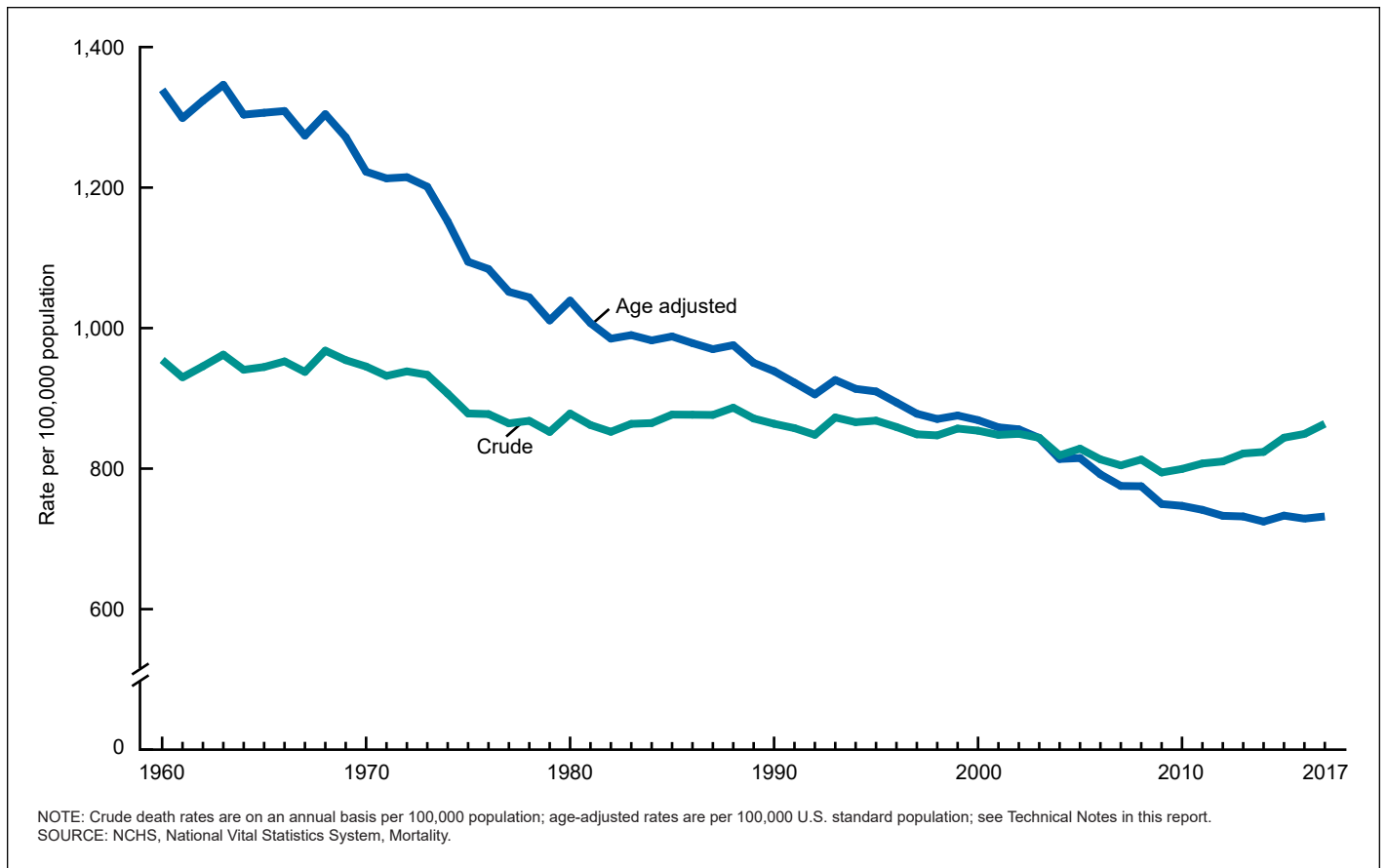


Figure 1. Crude and age-adjusted death rates: United States, 1960–2017

Death rates by age and sex

For the total population, age-specific death rates increased significantly from 2016 to 2017 for age groups 25–34, 35–44, and 85 and over. Rates decreased significantly for age groups under 1 and 45–54. Changes in rates for other age groups were not significant (Tables A, 5, and 7; Figure 3).

The age-adjusted death rate for males was 1.4 times the rate for females in 2017 (Table B). The male-to-female death rate ratio was unchanged from the ratio in 2016.

Death rates for males increased significantly for age groups 25–34, 35–44, and 85 and over. Changes in rates for males in other age groups were not statistically significant. Death rates for females increased significantly for age groups 25–34 and 85 and over. Rates decreased significantly for age groups under 1, 1–4, and 45–54. Changes in rates for females in other age groups were not statistically significant.

Race and ethnicity—For the total non-Hispanic white population in 2017 compared with 2016, age-specific death rates increased significantly for age groups 25–34, 35–44, 55–64, and 85 and over. Rates decreased significantly for age groups under 1 and 1–4 (Tables A and 2). Rates for non-Hispanic white males increased for age groups 25–34, 35–44, and 85 and over. The rates decreased for the age group under 1. Rates for non-Hispanic white females increased for age groups 25–34, 55–64, and 85 and over. The rates decreased for age groups under 1 and 1–4.

For the total non-Hispanic black population in 2017 compared with 2016, age-specific death rates increased for the age group 35–44. Rates for non-Hispanic black males increased for age groups 5–14 and 35–44. For non-Hispanic black females, rates decreased for age groups 15–24 and 45–54.

For the non-Hispanic AIAN population, changes in age-specific death rates from 2016 to 2017 were not statistically significant.

For the total non-Hispanic API population, age-specific rates decreased from 2016 to 2017 for age groups 35–44 and 55–64. For non-Hispanic API females, the age-specific death rate decreased for age groups 1–4 and 55–64.

For the total Hispanic population in 2017 compared with 2016, age-specific death rates decreased for the age group 55–64. Rates for Hispanic males decreased for the age group 55–64. For Hispanic females, no significant changes in age-specific death rates were observed.

Other observed changes from 2016 to 2017 in age-specific rates by race and ethnicity and sex were not statistically significant.

Death rates for the non-Hispanic AIAN population are not adjusted for misclassification of race and ethnicity. Given that the rates for the non-Hispanic AIAN population are underestimated by about 33% (20), disparities in age-adjusted death rates should be interpreted with caution when making comparisons across racial and ethnic groups. For the non-Hispanic API population, death rates also are not adjusted for misclassification and are

Table B. Number of deaths, percentage of total deaths, death rates, and age-adjusted death rates for 2017, percent change in age-adjusted death rates in 2017 from 2016, and ratio of age-adjusted death rates by sex and by race and Hispanic origin for the 15 leading causes of death for the total population in 2017: United States

[Crude death rates are on an annual basis per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision (ICD-10)*; see Technical Notes. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards]

Rank ¹	Cause of death (ICD-10)	Number	Percent of total deaths, 2017	Crude death rate, 2017	Age-adjusted death rate				
					2017	Percent change 2016 to 2017	Ratio		
							Male to female	Non-Hispanic black ² to non-Hispanic white	Non-Hispanic white ² to Hispanic
...	All causes	2,813,503	100.0	863.8	731.9	0.4	1.4	1.2	1.4
1	Diseases of heart (I00-I09,I11,I13,I20-I51)	647,457	23.0	198.8	165.0	-0.3	1.6	1.2	1.5
2	Malignant neoplasms (C00-C97)	599,108	21.3	183.9	152.5	-2.1	1.4	1.1	1.5
3	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	169,936	6.0	52.2	49.4	4.2	2.1	0.8	1.7
4	Chronic lower respiratory diseases (J40-J47)	160,201	5.7	49.2	40.9	0.7	1.2	0.7	2.7
5	Cerebrovascular diseases (I60-I69)	146,383	5.2	44.9	37.6	0.8	1.0	1.4	1.1
6	Alzheimer disease (G30)	121,404	4.3	37.3	31.0	2.3	0.7	0.9	1.3
7	Diabetes mellitus (E10-E14)	83,564	3.0	25.7	21.5	2.4	1.6	2.1	0.7
8	Influenza and pneumonia (J09-J18)	55,672	2.0	17.1	14.3	5.9	1.3	1.1	1.3
9	Nephritis, nephrotic syndrome and nephrosis (N00-N07, N17-N19,N25-N27)	50,633	1.8	15.5	13.0	-0.8	1.4	2.2	1.0
10	Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	47,173	1.7	14.5	14.0	3.7	3.7	0.4	2.6
11	Chronic liver disease and cirrhosis (K70,K73-K74)	41,743	1.5	12.8	10.9	1.9	1.9	0.7	0.8
12	Septicemia (A40-A41)	40,922	1.5	12.6	10.6	-0.9	1.2	1.7	1.3
13	Essential hypertension and hypertensive renal disease (I10,I12,I15)	35,316	1.3	10.8	9.0	4.7	1.1	2.1	1.0
14	Parkinson disease (G20-G21)	31,963	1.1	9.8	8.4	5.0	2.3	0.5	1.5
15	Pneumonitis due to solids and liquids (J69)	20,108	0.7	6.2	5.1	-1.9	1.9	1.0	1.7
...	All other causes (residual)	561,920	20.0	172.5	...	...	...	...	...

... Category not applicable.

¹Rank based on number of deaths; see Technical Notes.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

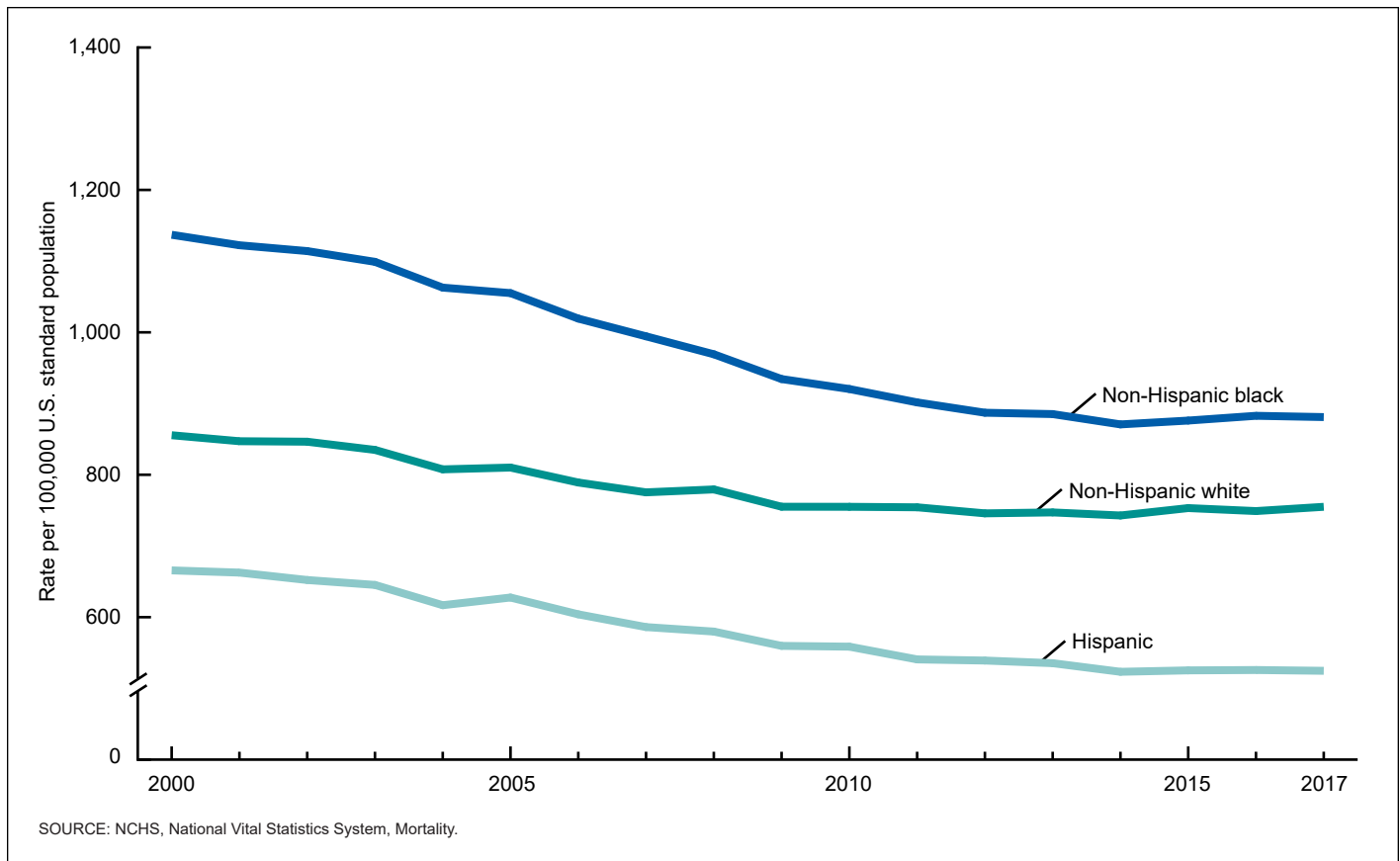


Figure 2. Age-adjusted death rates, by race and Hispanic origin: United States, 2000–2017

underestimated by about 3% due to underreporting on death certificates (20). Although the level of underestimation for this population is not as great as for the non-Hispanic AIAN population, caution should be exercised when interpreting rate disparities involving the non-Hispanic API population and other groups.

Death rates for the Hispanic population are not adjusted for misclassification ([Technical Notes](#)). Because these rates are both unadjusted for misclassification and underestimated by about 3.0% (20), caution should be exercised when interpreting rate disparities between Hispanic and non-Hispanic populations.

Expectation of life at birth and at specified ages

Life expectancy at birth represents the average number of years that a group of infants would live if the group was to experience throughout life the age-specific death rates present in the year of birth.

Life table data shown in this report for 2001–2017 are based on a revised methodology first presented with final data reported for 2008. The life table methodology was revised by changing the smoothing technique used to estimate the life table functions at the oldest ages. This revision improves on the methodologies used previously; see [Technical Notes](#).

The methods used to produce life expectancies by Hispanic origin are based on death rates adjusted for misclassification (see [Technical Notes](#)). In contrast, the age-specific and age-adjusted

death rates shown in this report for the Hispanic population are not adjusted for misclassification of Hispanic origin. Thus, this report shows Hispanic deaths and death rates as collected by the registration areas, and these match the deaths and death rates produced using the mortality data file.

Life tables were generated for both sexes and by each sex for the following populations:

- Total U.S. population
- Non-Hispanic white population
- Non-Hispanic black population
- Hispanic population

In 2017, life expectancy at birth for the U.S. population was 78.6 years, 0.1 year lower than 2016 ([Tables 3 and 4](#)). The general trend in U.S. life expectancy since 1900 has been one of improvement. However, decreases in life expectancy occurred in 2015 and 2017, and these were the only decreases in the last 20 years. In 2017, life expectancy for males (76.1 years) was 0.1 year lower than in 2016. Life expectancy for females (81.1 years) was the same as in 2016. From 1900 through the late 1970s, the gap in life expectancy between the sexes widened (3) from 2.0 to 7.8 years. The gap between sexes has narrowed since its peak in the 1970s. In 2017, the difference in life expectancy between the sexes increased for the second consecutive year to 5.0 years, a 0.1-year increase from 4.9 years in 2016.

Life expectancy figures by Hispanic origin have been available starting with data for 2006 (22). Life expectancy decreased by 0.1 year for the non-Hispanic white population (from 78.6 years

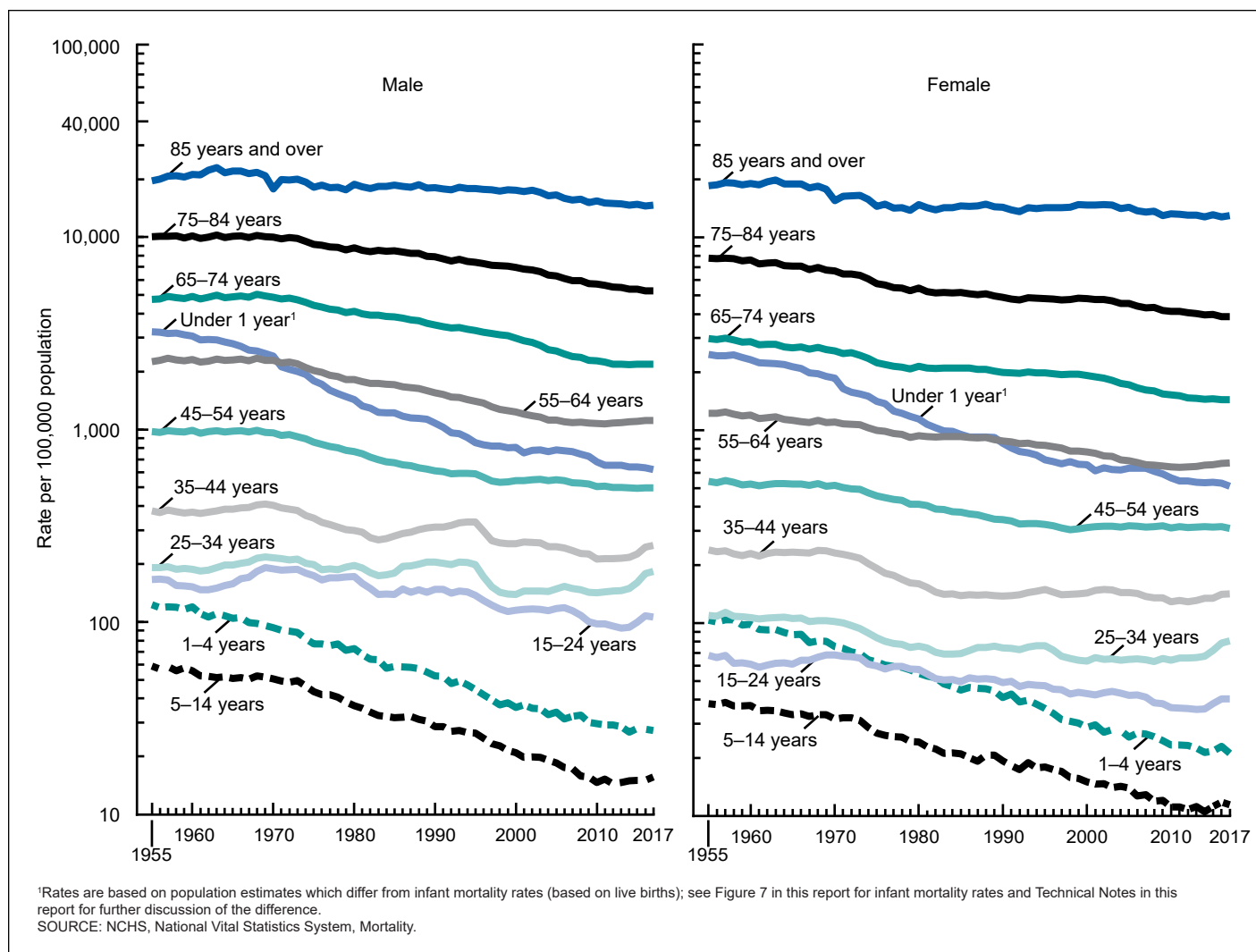


Figure 3. Death rates, by age and sex: United States, 1955–2017

in 2016 to 78.5 in 2017). Life expectancy for the non-Hispanic black population in 2017 (74.9) was the same as in 2016. The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations decreased by 0.1 year, from 3.7 years in 2016 to 3.6 years in 2017 (Table 4). The non-Hispanic white–non-Hispanic black gap generally narrowed from 2006 to 2014, but widened in 2015 and 2016 before decreasing in 2017.

Life expectancy for the Hispanic population (81.8) was the same as in 2016 (Tables 3 and 4). Life expectancy was 1.5 years higher in 2017 compared with 2006. The difference in life expectancy between the Hispanic and non-Hispanic white populations was 3.3 years in 2017, an increase of 0.1 year from 2016, but the same as in 2014 and 2015 (Table 4). Prior to 2014, the non-Hispanic white–Hispanic gap was widening gradually (Table 4; Figure 4).

Among the six Hispanic origin–race–sex groups in 2017, Hispanic females had the highest life expectancy at birth (84.3 years), followed by non-Hispanic white females (81.0), Hispanic males (79.1), non-Hispanic black females (78.1), non-Hispanic white males (76.1), and non-Hispanic black males (71.5) (Tables 3 and 4; Figure 5).

Life expectancy for two of the six Hispanic-origin–race–sex groups decreased in 2017 from 2016. Life expectancy decreased 0.1 year for both non-Hispanic white males and non-Hispanic black males (Table 4). Life expectancy for non-Hispanic black females increased by 0.1 year. Life expectancy for non-Hispanic white females and Hispanic males and females was unchanged.

Life expectancy for both males and females was higher by 3 years or more for the Hispanic population than for the non-Hispanic white and non-Hispanic black populations. Various hypotheses have been proposed to explain favorable mortality outcomes among Hispanic persons. The most prevalent hypotheses are the healthy migrant effect, which argues that Hispanic immigrants are selected for their good health and robustness; the “salmon bias” effect, which posits that U.S. residents of Hispanic origin may return to their country of origin to die or when ill; and the “cultural effect,” which argues that culturally influenced family structure, lifestyle behaviors, and social networks may confer a protective barrier against the negative effects of low socioeconomic and minority status (23,24).

Life tables shown in this report may be used to compare life expectancies at selected ages from birth to 100 years.

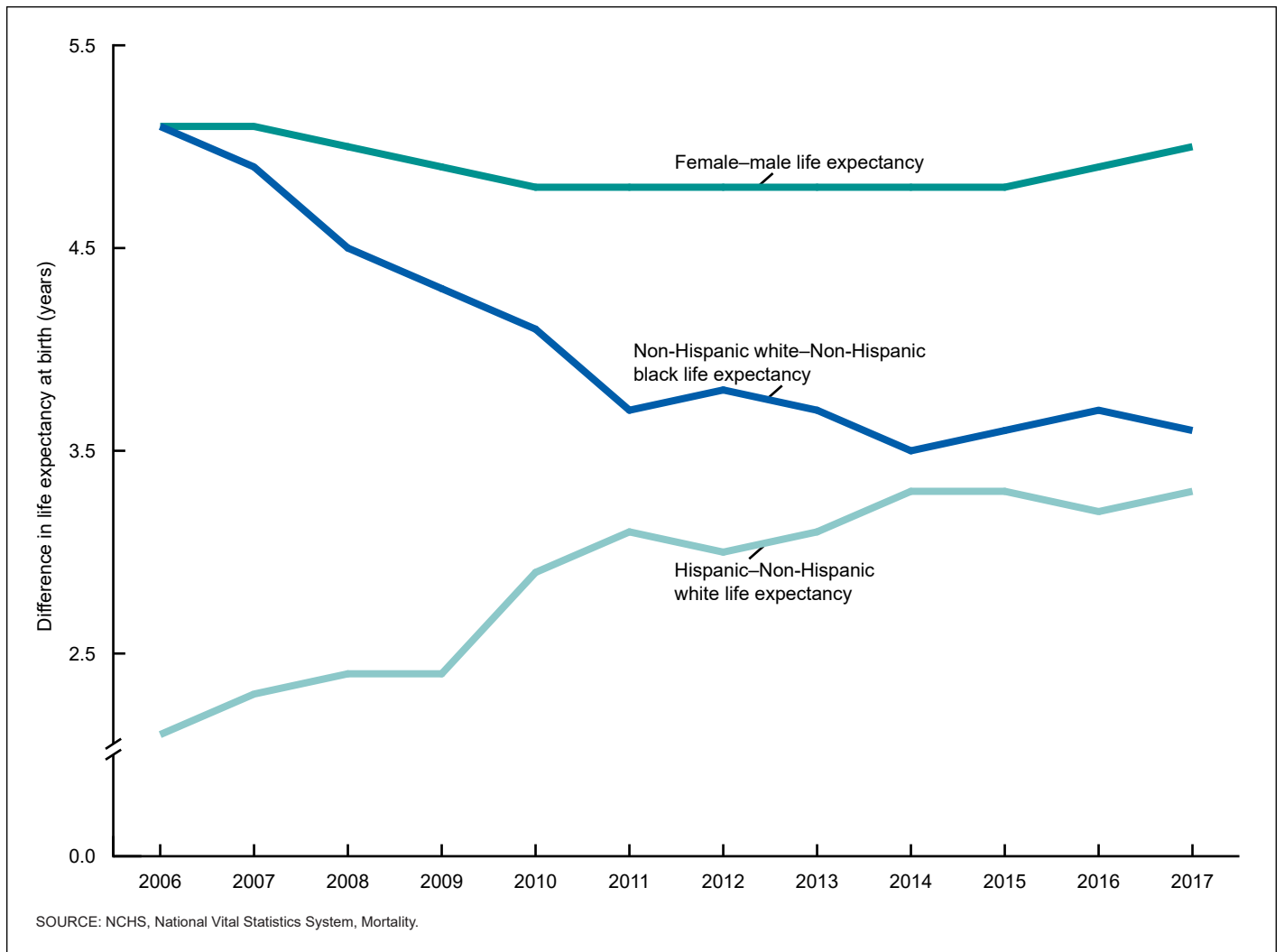


Figure 4. Differences in female-male, non-Hispanic white-non-Hispanic black, and Hispanic-non-Hispanic white life expectancy: United States, 2006-2017

For example, on the basis of mortality experienced in 2017, a person aged 50 could expect to live an average of 31.6 more years, for a total of 81.6 years. A person aged 65 could expect to live an average of 19.4 more years, for a total of 84.4 years, and a person aged 85 could expect to live an average of 6.6 more years, for a total of 91.6 years (Table 3). While life expectancy at some ages decreased from 2016 to 2017 (at ages 90 and 95), life expectancy increased at ages 55 and 75 (Table 3) (3,25).

Leading causes of death

The 15 leading causes of death in 2017 accounted for 80% of all deaths in the United States (Table B). The leading causes of death in 2017 remained the same as in 2016, although Chronic liver disease and cirrhosis, the 12th leading cause of death in 2016, became the 11th leading cause in 2017, and Septicemia, the 11th leading cause of death in 2016, became the 12th leading cause in 2017. Causes of death are ranked according to the number of deaths; see Technical Notes for ranking procedures. By rank, the 15 leading causes of death in 2017 were:

1. Diseases of heart (heart disease)
2. Malignant neoplasms (cancer)
3. Accidents (unintentional injuries)
4. Chronic lower respiratory diseases
5. Cerebrovascular diseases (stroke)
6. Alzheimer disease
7. Diabetes mellitus (diabetes)
8. Influenza and pneumonia
9. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
10. Intentional self-harm (suicide)
11. Chronic liver disease and cirrhosis
12. Septicemia
13. Essential hypertension and hypertensive renal disease (hypertension)
14. Parkinson disease
15. Pneumonitis due to solids and liquids

Death rates vary greatly by age. As a result, the shifting age distribution of a population can significantly influence changes in crude death rates over time. Age-adjusted death rates, in contrast,

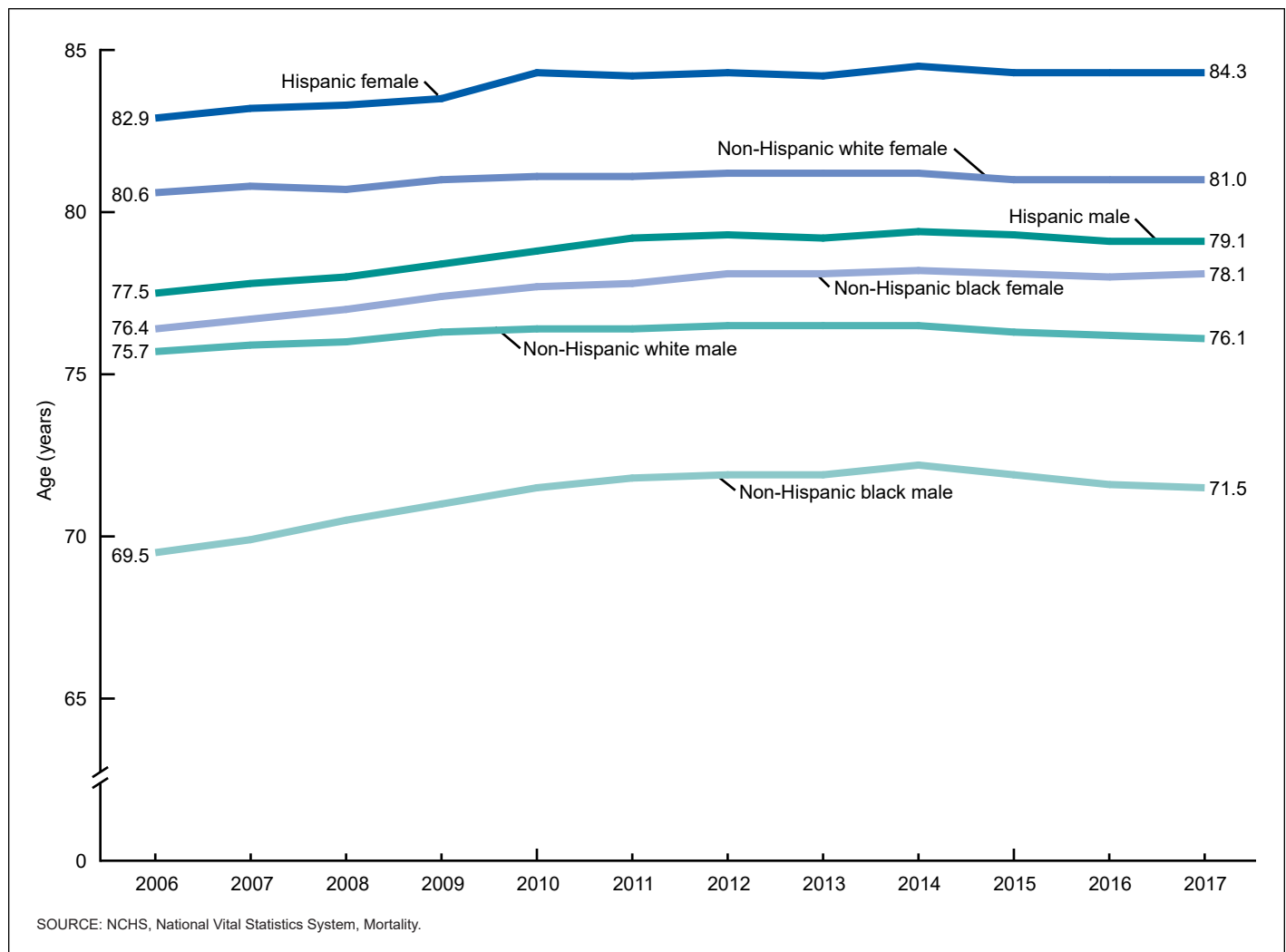


Figure 5. Life expectancy, by race and Hispanic origin and sex: United States, 2006–2017

eliminate the influence of such differences in the population age structure. Therefore, whereas causes of death are ranked according to the number of deaths, age-adjusted death rates are used to depict trends for leading causes of death in this report because they are better than crude rates for showing changes in mortality over time and among causes of death (Tables B and 5; Figure 6).

From 2016 to 2017, age-adjusted death rates increased significantly for 10 of the 15 leading causes of death and decreased for 1 of the 15 leading causes (Table B). The rate for the top leading cause of death, heart disease, decreased 0.3% in 2017 from 2016, but this change was not significant (Tables B and 5; Figure 6) (19). The rate for the second leading cause of death, cancer, decreased 2.1%, continuing a gradual but consistent downward trend since 1993. Deaths from these two diseases combined accounted for 44.3% of deaths in the United States in 2017 (Table B).

Leading causes of death that showed significant increases in 2017 from 2016 were unintentional injuries (4.2%), Chronic lower respiratory diseases (0.7%), stroke (0.8%), Alzheimer disease (2.3%), diabetes (2.4%), Influenza and pneumonia (5.9%), suicide (3.7%), Chronic liver disease and cirrhosis

(1.9%), hypertension (4.7%), and Parkinson disease (5.0%).

The observed changes from 2016 to 2017 in the age-adjusted death rates for heart disease, kidney disease, Septicemia, and Pneumonitis due to solids and liquids were not significant.

Assault (homicide), the 16th leading cause of death in 2017, dropped from among the 15 leading causes of death in 2010, but is still a major issue for some age groups. In 2017, the age-adjusted rate for homicide did not change. Homicide was among the 15 leading causes of death in 2017 for age groups under 1 year (13th), 1–4 (4th), 5–14 (5th), 15–24 (3rd), 25–34 (3rd), 35–44 (5th), and 45–54 (10th) (19).

Although Human immunodeficiency virus (HIV) disease has not been among the 15 leading causes of death since 1997 (26), it is still considered a major public health problem for some age groups. Historically, for all ages combined, HIV disease mortality reached its highest level in 1995 after a period of increase from 1987 through 1994. Subsequently, the rate for this disease decreased an average of 33.0% per year from 1995 through 1998, and 6.4% per year from 1999 through 2017 (19,27). In 2017, HIV disease was among the 15 leading causes of death for age groups 15–24 (15th), 25–34 (9th), 35–44 (10th), 45–54 (14th), and 55–64 (14th).

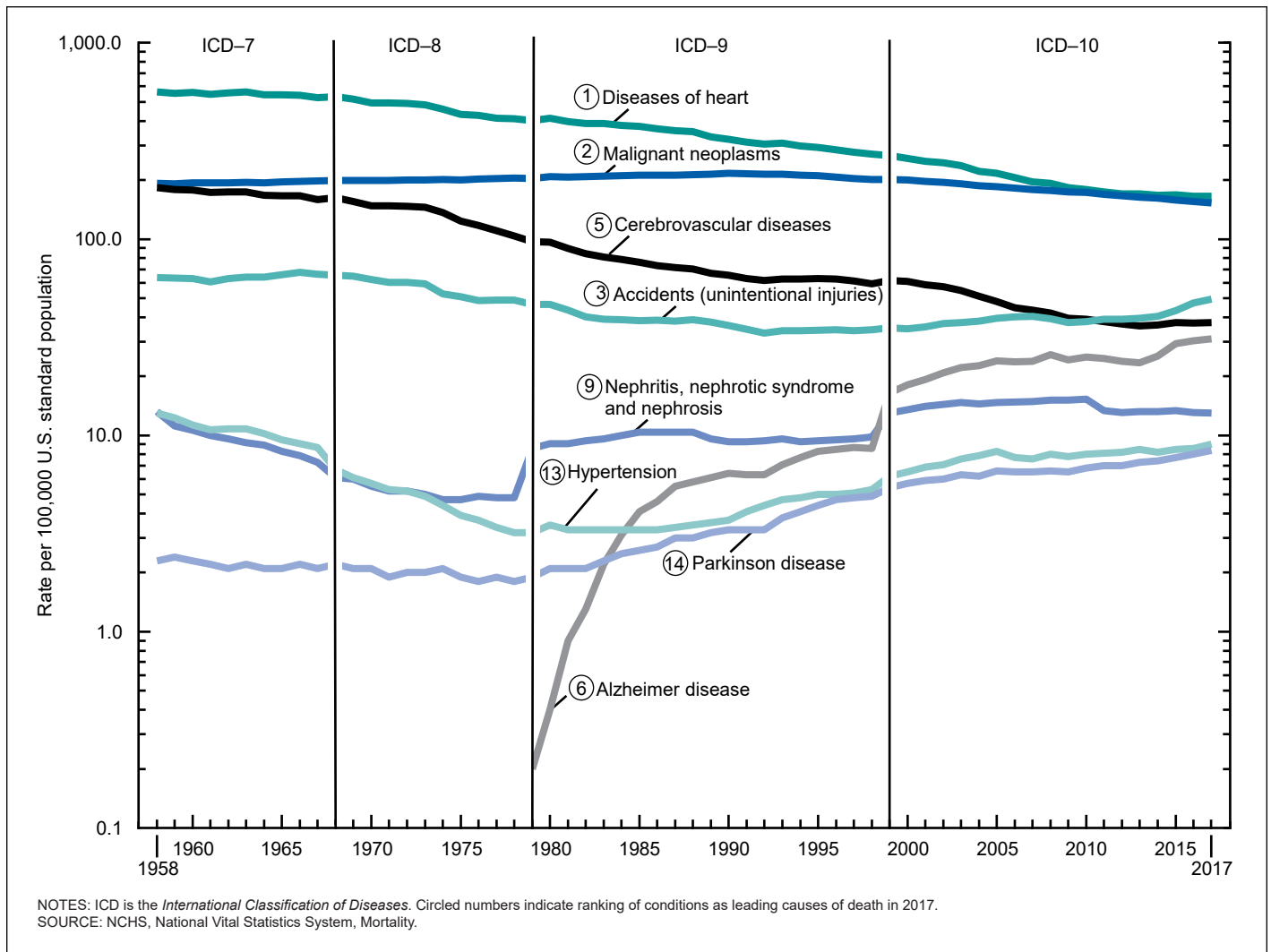


Figure 6. Age-adjusted death rates for selected leading causes of death: United States, 1958–2017

Enterocolitis due to *Clostridium difficile* (*C. difficile*)—a predominantly antibiotic-associated inflammation of the intestines caused by *C. difficile*, a gram-positive, anaerobic, spore-forming bacillus—is of growing concern. The disease is often acquired in hospitals or other health care facilities with long-term patients or residents (28,29). The number of deaths from *C. difficile* climbed from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (19,27). In 2017, the number of deaths from *C. difficile* was 6,118. In 2017, the age-adjusted death rate for this cause was 1.6 deaths per 100,000 U.S. standard population, a decrease of 11.1% from the rate in 2016 (1.8). In 2017, *C. difficile* ranked as the 19th leading cause of death for the population aged 65 and over. Approximately 87% of deaths from *C. difficile* occurred among people aged 65 and over (Table 6).

The relative risk of death in one population group compared with another can be expressed as a ratio. Ratios based on age-adjusted death rates show that males have higher rates than females for 13 of the 15 leading causes of death (Table B), with rates for males being at least twice as great as those for females for 3 of these leading causes. The largest ratio was for suicide

(3.7). Other large ratios were evident for Parkinson disease (2.3), unintentional injuries (2.1), Chronic liver disease and cirrhosis and Pneumonitis due to solids and liquids (1.9 each), heart disease and diabetes (1.6 each), cancer and kidney disease (1.4 each), Influenza and pneumonia (1.3), Chronic lower respiratory diseases and Septicemia (1.2 each), and hypertension (1.1). Age-adjusted rates were lower for males than for females for one leading cause, Alzheimer disease (0.7).

Age-adjusted death rates for the non-Hispanic black population were higher than for the non-Hispanic white population for 8 of the 15 leading causes of death (Table B). The largest ratios were for kidney disease (2.2) and hypertension and diabetes (2.1 each). Other causes for which the ratio was high include Septicemia (1.7), stroke (1.4), heart disease (1.2), and cancer and Influenza and pneumonia (1.1 each). For six of the leading causes, age-adjusted rates were lower for the non-Hispanic black population than for the non-Hispanic white population. The smallest non-Hispanic black-to-non-Hispanic white ratio was for suicide (0.4); that is, the risk of dying from suicide was more than two times greater for the non-Hispanic white population than for the non-Hispanic black population.

Other conditions with a low non-Hispanic black-to-non-Hispanic white ratio were Parkinson disease (0.5), Chronic lower respiratory diseases and Chronic liver disease and cirrhosis (0.7 each), unintentional injuries (0.8), and Alzheimer disease (0.9).

Leading causes of death in 2017 for the total population and for specific subpopulations are further detailed in a companion *National Vital Statistics Report* on leading causes by age, race, Hispanic origin, and sex (2).

Age-adjusted death rates for the non-Hispanic white population were higher than for the Hispanic population for 11 of the 15 leading causes of death (Table B). The largest ratios were for Chronic lower respiratory diseases (2.7) and suicide (2.6). Other causes for which the ratio was high include unintentional injuries and Pneumonitis due to solids and liquids (1.7 each); heart disease, cancer, and Parkinson disease (1.5 each); Alzheimer disease, Influenza and pneumonia, and Septicemia (1.3 each); and stroke (1.1). Age-adjusted rates were lower for the non-Hispanic white population than for the Hispanic population for diabetes (0.7) and Chronic liver disease and cirrhosis (0.8).

Other select causes

Drug-induced mortality

In 2017, a total of 73,990 persons died of drug-induced causes in the United States (Tables 5, 6, 8, and I-1). This category includes deaths from poisoning and medical conditions caused by use of legal or illegal drugs, as well as deaths from poisoning due to medically prescribed and other drugs. It excludes deaths indirectly related to drug use, as well as newborn deaths due to the mother's drug use. (For a list of drug-induced causes, see [Technical Notes](#).)

In 2017, the age-adjusted death rate for drug-induced causes for the total population increased significantly, by 9.6% from 20.8 in 2016 to 22.8 in 2017 (Tables 5, 10, and I-1). For males in 2017, the age-adjusted death rate for drug-induced causes was 2.0 times the rate for females. The rate for drug-induced causes increased 10.5% for males and 7.0% for females in 2017 from 2016. The age-adjusted death rate for non-Hispanic white males was 14.4% higher than for non-Hispanic black males and 122.6% higher than for Hispanic males. The rate for non-Hispanic white females was 60.8% higher than for non-Hispanic black females and 265.5% higher than for Hispanic females.

Among the major race-ethnicity-sex groups, the age-adjusted death rates for drug-induced causes increased significantly in 2017 from 2016 for non-Hispanic white males (9.0%), non-Hispanic white females (7.5%), non-Hispanic black males (22.9%), non-Hispanic black females (14.7%), and Hispanic males (13.5%). The rate for Hispanic females did not change significantly.

Alcohol-induced mortality

In 2017, a total of 35,823 persons died of alcohol-induced causes in the United States (Tables 5, 6, 8, and I-2). This category includes deaths from dependent and nondependent use of alcohol, as well as deaths from accidental poisoning by alcohol. It excludes unintentional injuries, homicides, and other

causes indirectly related to alcohol use, as well as deaths due to fetal alcohol syndrome. For a list of alcohol-induced causes, see [Technical Notes](#).

The age-adjusted death rate for alcohol-induced causes for the total, male, and female populations did not change significantly from 2016 to 2017 (Tables 5, 10, and I-2). For males, the age-adjusted death rate for alcohol-induced causes in 2017 was 2.7 times the rate for females. The age-adjusted death rate for non-Hispanic white males was 35.8% higher than for non-Hispanic black males and 12.4% lower than for Hispanic males. The rate for non-Hispanic white females was 69.4% higher than for non-Hispanic black females and 74.3% higher than for Hispanic females.

Among the major race-ethnicity-sex groups, the age-adjusted rate for alcohol-induced death increased significantly in 2017 from 2016 for non-Hispanic white males (2.8%). The rates for non-Hispanic white females, non-Hispanic black males, non-Hispanic black females, Hispanic males, and Hispanic females did not change significantly.

Firearm-related mortality

In 2017, 39,773 persons died from firearm-related injuries in the United States (Tables 5, 6, 8, and I-3). In 2017, the age-adjusted death rate for firearm-related injuries for the total population increased significantly, by 1.7% from 11.8 in 2016 to 12.0 in 2017 (Tables 5, 10, and I-3). For males in 2017, the age-adjusted death rate for firearm-related injuries was 6.1 times the rate for females. The rate for firearm-related mortality increased 2.0% for males from 2016 to 2017. The rate for females in 2017 was unchanged from 2016. The age-adjusted death rate for non-Hispanic white males was 54.9% lower than for non-Hispanic black males and 73.9% higher than for Hispanic males. The rate for non-Hispanic white females was 15.6% lower than for non-Hispanic black females and 111.1% higher than for Hispanic females.

Among the major race-ethnicity-sex groups, the age-adjusted death rates for firearm-related injuries increased significantly in 2017 from 2016 for non-Hispanic white males (3.2%). The rates for non-Hispanic white females, non-Hispanic black males, non-Hispanic black females, Hispanic males, and Hispanic females did not change significantly.

Effect on life expectancy of changes in mortality by age and cause of death

Changes in mortality by age and cause of death can have a major effect on life expectancy. In other words, year-to-year changes in life expectancy may be influenced by changes in age-specific rates for certain causes, particularly for younger age groups. Life expectancy at birth for the total population decreased by 0.1 year in 2017 from 2016 primarily because of increases in mortality from unintentional injuries, suicide, diabetes, Alzheimer disease, and Influenza and pneumonia. The decrease in life expectancy for the total population was slightly offset by decreases in mortality from cancer, heart disease, Viral hepatitis, HIV disease, and Septicemia. Life expectancy at birth for males decreased 0.1 year due to increases in mortality

from unintentional injuries, suicide, diabetes, and hypertension. These increases were offset somewhat by decreases in mortality from cancer, Septicemia, Chronic lower respiratory diseases, Viral hepatitis, and HIV disease. For the female population, life expectancy remained unchanged due to increases in mortality from unintentional injuries, Alzheimer disease, Influenza and pneumonia, Chronic lower respiratory diseases, and Nutritional deficiencies, which were offset by decreases in mortality from cancer, heart disease, Certain conditions originating in the perinatal period, congenital malformations, and Viral hepatitis. (For a discussion of the major causes contributing to the change in life expectancy, see [Technical Notes](#).)

Life expectancy for the non-Hispanic white population in 2017 decreased 0.1 year to 78.5 years ([Table 4](#)). This decrease was due to increases in mortality from unintentional injuries, suicide, Alzheimer disease, Influenza and pneumonia, and diabetes. These increases in mortality were offset to some extent by decreases for cancer, Certain conditions originating in the perinatal period, Viral hepatitis, congenital malformations, and Septicemia.

Life expectancy for the non-Hispanic black population remained unchanged in 2017 due to increases in mortality from unintentional injuries, stroke, suicide, diabetes, and hypertension, which were offset somewhat by decreases for cancer, Certain conditions originating in the perinatal period, Septicemia, heart disease, and HIV disease.

Life expectancy for the Hispanic population in 2017 remained unchanged due to increases in mortality from unintentional injuries, diabetes, Alzheimer disease, hypertension, and suicide, which were offset somewhat by decreases for cancer, heart disease, Viral hepatitis, Chronic liver disease and cirrhosis, and In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior.

The difference in life expectancy between the male and female populations increased 0.1 year in 2017 to 5.0 years ([Table 4](#)). The widening in the male–female life expectancy gap was due primarily to greater increases in mortality for the male population for unintentional injuries, suicide, diabetes, heart disease, and Certain conditions originating in the perinatal period (data not shown).

Life table partitioning analysis indicates that the difference in 2017 of 3.3 years in life expectancy between the Hispanic and non-Hispanic white populations is mostly explained by lower mortality for the Hispanic population from cancer, heart disease, unintentional injuries, Chronic lower respiratory diseases, and suicide. (For a discussion of the major causes contributing to the difference in life expectancy, see [Technical Notes](#).)

Injury mortality by mechanism and intent

In 2017, a total of 243,039 deaths were classified as injury-related ([Table 11](#)). Injury data are presented using the external cause-of-injury mortality matrix for ICD–10, as jointly conceived by the International Collaborative Effort (ICE) on Injury Statistics and the Injury Control and Emergency Health Services section, known as ICEHS, of the American Public Health Association (30,31). The ICD codes for injuries have two essential dimensions: the mechanism of the injury and its manner or intent.

The mechanism involves the circumstances of the injury (e.g., fall, motor vehicle traffic, or poisoning). The manner or intent involves whether the injury was purposefully inflicted (where it can be determined) and, when intentional, whether the injury was self-inflicted (suicide) or inflicted upon another person (assault). In other report tables showing cause of death, the focus is on manner or intent, with subcategories showing selected mechanisms. The matrix has two distinct advantages for the analysis of injury mortality data: It contains a comprehensive list of mechanisms, and data can be displayed by mechanism with subcategories of intent, or vice versa. Four major mechanisms of injury in 2017—poisoning, motor-vehicle traffic, firearm, and fall—accounted for 78.7% of all injury deaths ([Table 11](#)). A total of 75,354 deaths occurred as the result of poisonings in 2017, accounting for 31.0% of all injury deaths ([Table 11](#)). The age-adjusted death rate for poisoning increased significantly, by 8.4% from 21.4 deaths per 100,000 U.S. standard population in 2016 to 23.2 in 2017. The majority of poisoning deaths were either unintentional (86.0%) or suicides (8.7%). However, 5.1% of poisoning deaths were of undetermined intent. The age-adjusted death rate for unintentional poisoning increased 10.4%, from 18.2 in 2016 to 20.1 in 2017, and has more than quadrupled since 1999 (data prior to 2017 are not shown but are available through CDC WONDER at: <https://wonder.cdc.gov/>). Motor vehicle traffic-related injuries in 2017 resulted in 38,659 deaths, accounting for 15.9% of all injury deaths ([Table 11](#)). The age-adjusted death rate for these injuries decreased 1.7% from 11.7 in 2016 to 11.5 in 2017. In 2017, 39,773 persons died from firearm injuries in the United States ([Table 11](#)), accounting for 16.4% of all injury deaths that year. The age-adjusted death rate from firearm injuries (all intents) increased 1.7%, from 11.8 in 2016 to 12.0 in 2017. The two major component causes of firearm injury deaths in 2017 were suicide (60.0%) and homicide (36.6%). The age-adjusted death rate for firearm suicide and firearm homicide did not change between 2016 and 2017. A total of 37,587 persons died as the result of falls in 2017, accounting for 15.5% of all injury deaths ([Table 11](#)). The age-adjusted death rate for falls increased 3.2%, from 9.5 in 2016 to 9.8 in 2017. The overwhelming majority of fall-related deaths (96.7%) were unintentional.

State of residence

Mortality patterns vary considerably by state ([Tables 12 and 15](#)). The state with the highest age-adjusted death rate in 2017 was West Virginia (957.1 per 100,000 U.S. standard population), with a rate 30.8% above the national rate (731.9). The state with the lowest age-adjusted death rate was Hawaii (584.9 per 100,000 U.S. standard population), with a rate 20.1% below the national rate. The age-adjusted death rate for West Virginia was 63.6% higher than the rate for Hawaii.

Variations in mortality by state are associated with differences in socioeconomic status, race and ethnicity composition, as well as with differences in risk of specific causes of death (32).

Infant mortality

In 2017, a total of 22,335 deaths occurred in children under age 1 year (Tables C, D, 14, and 15). This number represents 826 fewer infant deaths in 2017 than in 2016. The ratio of male to female infant mortality rates was 1.2, the same as in 2016. The infant mortality rate was 5.79 per 1,000 live births, the neonatal mortality rate (deaths of infants aged 0–27 days per 1,000 live births) was 3.84, and the postneonatal mortality rate (deaths of infants aged 28 days through 11 months per 1,000 live births) was 1.95 in 2017 (Tables C and 13; Figure 7; see Technical Notes for information on alternative data sources). Changes in the infant, neonatal, and postneonatal mortality rates from 2016 to 2017 were not significant.

The 10 leading causes of infant death in 2017 accounted for 67.8% of all infant deaths in the United States (Table D). By rank, the 10 leading causes were:

1. Congenital malformations, deformations and chromosomal abnormalities (congenital malformations)
2. Disorders related to short gestation and low birth weight, not elsewhere classified (low birth weight)
3. Newborn affected by maternal complications of pregnancy (maternal complications)
4. Sudden infant death syndrome (SIDS)
5. Accidents (unintentional injuries)
6. Newborn affected by complications of placenta, cord and membranes (cord and placental complications)
7. Bacterial sepsis of newborn
8. Diseases of the circulatory system
9. Respiratory distress of newborn
10. Neonatal hemorrhage

In 2017, the 10 leading causes of infant death remained the same as in 2016 (27), although SIDS dropped from the third leading cause to the fourth leading cause, and maternal

complications rose from the fourth leading cause to the third leading cause. Also, Respiratory distress of newborn dropped from the eighth leading cause to the ninth leading cause, and Diseases of the circulatory system rose from the ninth to the eighth leading cause. Changes in rates by cause of death among the 10 leading causes were statistically significant for one condition. In 2017, unintentional injuries (fifth leading cause of infant death) increased by 10.7% (Table D).

Infant mortality rates by race for non-Hispanic origin that are based on the mortality file may be somewhat understated and are better measured using data from the linked file of live births and infant deaths (33); see Technical Notes. Infant mortality data presented in this report use the general mortality file, not the linked file of live births and infant deaths. Infant mortality rates for the population of Hispanic origin are not adjusted for misclassification; see Technical Notes. Because these rates are not adjusted, caution should be exercised when interpreting rate disparities between Hispanic and non-Hispanic populations (20).

In 2017, the infant mortality rate for Hispanic infants was 5.35 deaths per 1,000 live births. By comparison, for non-Hispanic white infants, the infant mortality rate was 4.61 (a decrease of 3.9%), and for non-Hispanic black infants, the rate was 11.46 (Table 13). The infant mortality rate did not change significantly in 2017 from 2016 for the non-Hispanic black and Hispanic populations.

Additional mortality tables based on 2017 final data

Trend data on drug-induced causes, alcohol-induced causes, and firearm-related injuries by race and Hispanic origin are available as supplemental tables (Tables I–1, I–2, and I–3) from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf. Mortality data by specified Hispanic subgroup, marital status, educational attainment, and injury at work are available in supplemental Tables I–4 through I–9. Estimated population and standard errors by specified

Table C. Number of infant, neonatal, and postneonatal deaths and mortality rates, by sex: United States, 2016 and 2017

[Rates are infant (under 1 year), neonatal (under 28 days), and postneonatal (28 days–11 months) deaths per 1,000 live births in specified group]

Infant age and sex	2017		2016		Percent change ¹ from 2016 to 2017
	Number	Rate	Number	Rate	
Infant					
Total	22,335	5.79	23,161	5.87	–1.4
Male	12,468	6.32	12,867	6.38	–0.9
Female	9,867	5.24	10,294	5.34	–1.9
Neonatal					
Total	14,821	3.84	15,282	3.87	–0.8
Male	8,259	4.19	8,455	4.19	0.0
Female	6,562	3.49	6,827	3.54	–1.4
Postneonatal					
Total	7,514	1.95	7,879	2.00	–2.5
Male	4,209	2.13	4,412	2.19	–2.7
Female	3,305	1.76	3,467	1.80	–2.2

¹Based on a comparison of 2017 and 2016 mortality rates.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table D. Number of infant deaths, percentage of total infant deaths, and infant mortality rates for 2017, and percent change in infant mortality rates from 2016 to 2017 for the 10 leading causes of infant death in 2017: United States

[Rates are infant deaths per 100,000 live births]

Rank ¹	Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Number	Percent of total deaths	Rate	Percent change ² from 2016 to 2017
...	All causes	22,335	100.0	579.3	-1.3
1	Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	4,580	20.5	118.8	-2.7
2	Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	3,749	16.8	97.2	-2.3
3	Newborn affected by maternal complications of pregnancy (P01)	1,432	6.4	37.1	4.5
4	Sudden infant death syndrome (R95)	1,363	6.1	35.4	-6.8
5	Accidents (unintentional injuries) (V01-X59)	1,317	5.9	34.2	10.7
6	Newborn affected by complications of placenta, cord and membranes (P02)	843	3.8	21.9	2.8
7	Bacterial sepsis of newborn (P36)	592	2.7	15.4	4.1
8	Diseases of the circulatory system (I00-I99)	449	2.0	11.6	-0.9
9	Respiratory distress of newborn (P22)	440	2.0	11.4	-8.1
10	Neonatal hemorrhage (P50-P52, P54)	379	1.7	9.8	-3.0
...	All other causes (residual)	7,191	32.2	186.5	...

... Category not applicable.

¹Rank based on number of deaths; see Technical Notes in this report.

²Based on a comparison of the 2017 infant mortality rate with the 2016 infant mortality rate.

NOTE: Due to rounding, percent changes based on rates per 100,000 live births may differ from those computed using rates per 1,000 live births.

SOURCE: NCHS, National Vital Statistics System, Mortality.

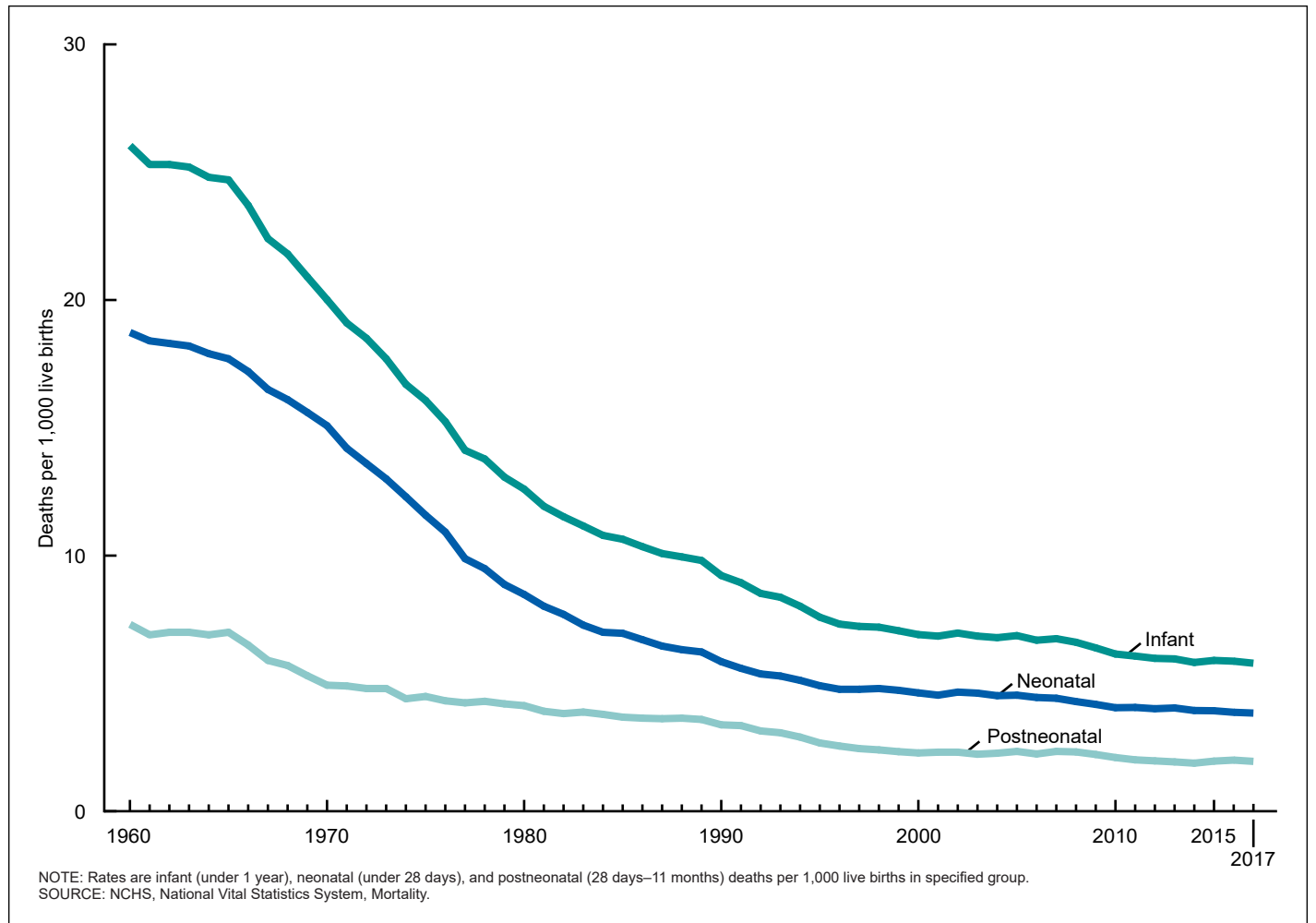


Figure 7. Infant, neonatal, and postneonatal mortality rates: United States, 1960–2017

Hispanic subgroups, marital status, and educational attainment are available as supplemental tables (Tables I–18 through I–20) as well. See [List of Internet Tables](#) for the complete list of supplemental tables.

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List of Detailed Tables

1. Number of deaths, death rates, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000, and 2010–2017	21
2. Number of deaths and death rates, by age, race and Hispanic origin, and sex: United States, 2017	23
3. Life expectancy at selected ages, by race and Hispanic origin and sex: United States, 2017	25
4. Life expectancy at birth, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, and 2000–2017	26
5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017	27
6. Number of deaths from selected causes, by age: United States, 2017	34
7. Death rates for selected causes, by age: United States, 2017	37
8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2017	40
9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2017	44
10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2017	48
11. Number of deaths, death rates, and age-adjusted death rates for injury deaths, by mechanism and intent of death for all injury death and the leading causes of injury death: United States, 2017	51
12. Number of deaths, death rates, and age-adjusted death rates for major causes of death: United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2017	52
13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000–2017	55
14. Number of infant deaths and infant mortality rates for selected causes, by race and Hispanic origin: United States, 2017	57
15. Number of infant deaths and mortality rates, by race and Hispanic origin for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, and by sex for the United States, 2017	59

List of Internet Tables

(Available from https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf)

I-1. Number of deaths, death rates, and age-adjusted death rates for drug-induced causes, by race and Hispanic origin and sex: United States, 1999–2017	
I-2. Number of deaths, death rates, and age-adjusted death rates for alcohol-induced causes, by race and Hispanic origin and sex: United States, 1999–2017	
I-3. Number of deaths, death rates, and age-adjusted death rates for firearm-related injuries, by race and Hispanic origin and sex: United States, 1999–2017	
I-4. Number of deaths and death rates by age, and age-adjusted death rates, by specified Hispanic origin, race for non-Hispanic population, and sex: United States, 2017	
I-5. Number of deaths, death rates, and age-adjusted death rates for ages 15 and over, by marital status and sex: United States, 2017	
I-6. Number of deaths, death rates, and age-adjusted death rates for ages 25–64, by educational attainment and sex: 49 reporting states and District of Columbia, 2017	
I-7. Percent distribution of deaths by educational attainment: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming, 2002 and 2017	
I-8. Number of deaths, death rates, and age-adjusted death rates for injury at work for ages 15 and over, by race and Hispanic origin and sex: United States, 2017	
I-9. Number of deaths, death rates, and age-adjusted death rates for injury at work, by race and Hispanic origin and sex: United States, 1997–2017	
I-10. Number of deaths and death rates, by age, race, and sex: United States, 2017	
I-11. Number of deaths and death rates by Hispanic origin, race for non-Hispanic population, age, and sex: United States, 2017	
I-12. Number of deaths from 113 selected causes, Enterocolitis due to <i>Clostridium difficile</i> , drug-induced causes, alcohol-induced causes, and firearm-related injuries, by Hispanic origin, race for non-Hispanic population, and sex: United States, 2017	
I-13. Death rates for 113 selected causes, Enterocolitis due to <i>Clostridium difficile</i> , drug-induced causes, alcohol-induced causes, and firearm-related injuries, by Hispanic origin, race for non-Hispanic population, and sex: United States, 2017	
I-14. Age-adjusted death rates for 113 selected causes, Enterocolitis due to <i>Clostridium difficile</i> , drug-induced causes, alcohol-induced causes, and firearm-related injuries, by Hispanic origin, race for non-Hispanic population, and sex: United States, 2017	
I-15. Number of deaths, death rates, and age-adjusted death rates for injury deaths, by mechanism and intent of death: United States, 2017	
I-16. Number of deaths, death rates, and age-adjusted death rates for major causes of death: United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2017	
I-17. Number of infant deaths and infant mortality rates for 130 selected causes, by race: United States, 2017	
I-18. Estimated population and standard errors for specified Hispanic-origin populations, by 10-year age group and sex: United States, 2017	

- I-19. Estimated population and standard errors for ages 15 and over, by marital status, 10-year age group, and sex: United States, 2017
- I-20. Estimated population and standard errors for ages 25-64, by educational attainment and sex: Total of 49 reporting states and the District of Columbia using the 2003 version of the U.S. Standard Certificate of Death, 2017

Table 1. Number of deaths, death rates, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000, and 2010–2017

[Beginning in 1970, excludes deaths of nonresidents of the United States. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes in this report]

Year	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Number																	
2017.....	2,813,503	1,439,111	1,374,392	2,179,857	1,102,838	1,077,019	335,667	174,403	161,264	19,198	10,502	8,696	72,598	37,236	35,362	197,249	108,579	88,670
2016.....	2,744,248	1,400,232	1,344,016	2,133,463	1,077,362	1,056,101	326,810	168,750	158,060	18,595	10,280	8,315	68,235	34,892	33,343	188,254	103,532	84,722
2015.....	2,712,630	1,373,404	1,339,226	2,123,631	1,063,705	1,059,926	315,254	161,850	153,404	18,039	9,869	8,170	65,277	33,306	31,971	179,457	98,170	81,287
2014.....	2,626,418	1,328,241	1,298,177	2,066,949	1,035,345	1,031,604	303,844	154,836	149,008	17,138	9,338	7,800	60,424	31,039	29,385	169,387	92,474	76,913
2013.....	2,596,993	1,306,034	1,290,959	2,052,660	1,021,135	1,031,525	299,227	152,661	146,566	16,219	8,840	7,379	58,702	30,343	28,359	163,241	88,880	74,361
2012.....	2,543,279	1,273,722	1,269,557	2,016,896	998,832	1,018,064	291,179	148,344	142,835	15,705	8,598	7,107	55,298	28,214	27,084	156,419	85,238	71,181
2011.....	2,515,458	1,254,978	1,260,480	2,006,319	989,835	1,016,484	286,797	145,052	141,745	15,181	8,175	7,006	52,346	26,909	25,437	149,635	81,887	67,748
2010.....	2,468,435	1,232,432	1,236,003	1,969,916	971,604	998,312	283,438	143,824	139,614	14,846	8,072	6,774	50,018	25,938	24,080	144,490	79,622	64,868
2000.....	2,403,351	1,177,578	1,225,773	1,959,919	944,781	1,015,138	282,676	143,297	139,379	11,025	5,973	5,052	34,226	18,653	15,573	107,254	60,172	47,082
1990.....	2,148,463	1,113,417	1,035,046	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1980.....	1,989,841	1,075,078	914,763	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1970.....	1,921,031	1,078,478	842,553	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1960.....	1,711,982	975,648	736,334	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1950.....	1,452,454	827,749	624,705	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1940.....	1,417,269	791,003	626,266	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Crude death rate ⁵																	
2017.....	863.8	897.2	831.4	1,083.2	1,111.4	1,055.8	787.5	854.2	726.1	703.4	784.4	625.5	359.8	386.2	335.6	334.6	364.6	304.0
2016.....	849.3	880.2	819.3	1,059.7	1,085.6	1,034.6	775.5	836.2	719.7	685.9	772.8	602.2	350.3	374.9	327.8	327.6	356.8	297.7
2015.....	844.0	868.0	820.7	1,055.3	1,072.5	1,038.5	754.6	809.4	704.3	670.7	747.4	596.7	341.5	364.9	320.1	317.1	343.2	290.4
2014.....	823.7	846.4	801.7	1,028.1	1,045.4	1,011.3	735.4	783.3	691.4	642.5	713.4	574.2	327.7	352.7	305.0	305.8	330.1	281.0
2013.....	821.5	839.1	804.4	1,021.6	1,032.1	1,011.5	733.4	782.5	688.4	613.7	681.4	548.3	331.8	359.2	306.7	301.9	323.7	279.4
2012.....	810.2	824.5	796.4	1,004.9	1,011.2	998.8	720.9	768.5	677.3	599.3	668.7	532.5	322.0	344.1	301.7	295.0	316.5	272.7
2011.....	807.3	818.7	796.3	1,001.0	1,004.1	998.1	718.0	760.4	679.2	584.2	640.9	529.5	315.7	339.9	293.7	287.5	309.7	264.6
2010.....	799.5	812.0	787.4	984.3	987.5	981.2	718.7	764.5	676.9	577.8	640.1	517.7	310.0	336.7	285.6	286.2	310.8	260.9
2000.....	854.0	853.0	855.0	993.2	978.5	1,007.3	805.5	859.5	756.7	470.3	517.0	425.0	301.4	338.3	266.5	303.8	331.3	274.6
1990.....	863.8	918.4	812.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1980.....	878.3	976.9	785.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1970.....	945.3	1,090.3	807.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1960.....	954.7	1,104.5	809.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1950.....	963.8	1,106.1	823.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1940.....	1,076.4	1,197.4	954.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

Table 1. Number of deaths, death rates, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000, and 2010–2017—Con.

[Beginning in 1970, excludes deaths of nonresidents of the United States. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes in this report]

Year	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Age-adjusted death rate ⁶																	
2017.....	731.9	864.5	619.7	755.0	885.1	642.8	881.0	1,083.3	728.0	800.2	943.9	674.0	395.3	470.1	336.4	524.7	631.8	434.2
2016.....	728.8	861.0	617.5	749.0	879.5	637.2	882.8	1,081.2	734.1	800.3	954.0	668.0	394.4	466.6	337.4	525.8	631.8	436.4
2015.....	733.1	863.2	624.2	753.2	881.3	644.1	876.1	1,070.1	731.0	805.7	950.2	679.5	396.2	468.9	339.6	525.3	628.9	438.3
2014.....	724.6	855.1	616.7	742.8	872.3	633.8	870.7	1,060.3	731.2	796.9	935.0	677.4	390.5	464.2	333.3	523.3	626.8	437.5
2013.....	731.9	863.6	623.5	747.1	876.8	638.4	885.2	1,083.3	740.6	787.5	930.6	666.4	407.5	490.2	344.8	535.4	639.8	448.6
2012.....	732.8	865.1	624.7	745.8	876.2	637.6	887.1	1,086.4	742.1	787.8	929.9	666.3	409.6	486.3	351.4	539.1	643.9	452.5
2011.....	741.3	875.3	632.4	754.3	887.2	644.6	901.6	1,098.3	759.8	798.1	933.8	684.7	413.2	493.4	352.8	540.7	647.3	452.8
2010.....	747.0	887.1	634.9	755.0	892.5	643.3	920.4	1,131.7	770.8	818.8	965.8	696.8	425.6	513.0	360.6	558.6	677.7	463.4
2000.....	869.0	1,053.8	731.4	855.5	1,035.4	721.5	1,137.0	1,422.0	941.2	800.5	955.6	679.1	507.0	624.9	417.3	665.7	818.1	546.0
1990.....	938.7	1,202.8	750.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1980.....	1,039.1	1,348.1	817.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1970.....	1,222.6	1,542.1	971.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1960.....	1,339.2	1,609.0	1,105.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1950.....	1,446.0	1,674.2	1,236.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1940.....	1,785.0	1,976.0	1,599.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

--- Data not available.

¹Includes deaths for origin not stated; see Technical Notes.

²Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Includes Aleut and Eskimo persons.

⁴Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

⁵Rates are based on populations enumerated as of April 1 for census years and estimated as of July 1 for all other years; see Technical Notes.

⁶Age-adjusted rates are per 100,000 U.S. standard population. For method of computation, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 2. Number of deaths and death rates, by age, race and Hispanic origin, and sex: United States, 2017

[Rates are per 100,000 population in specified group; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Age (years)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Number																	
All ages	2,813,503	1,439,111	1,374,392	2,179,857	1,102,838	1,077,019	335,667	174,403	161,264	19,198	10,502	8,696	72,598	37,236	35,362	197,249	108,579	88,670
Under 1	22,335	12,468	9,867	9,359	5,281	4,078	6,730	3,760	2,970	284	151	133	957	528	429	4,808	2,635	2,173
1-4	3,880	2,232	1,648	1,858	1,107	751	985	535	450	72	33	39	148	96	52	805	455	350
5-9	2,354	1,299	1,055	1,115	623	492	573	319	254	38	19	19	100	52	48	521	282	239
10-14	3,217	1,970	1,247	1,667	1,005	662	723	465	258	64	36	28	108	62	46	644	395	249
15-19	10,886	7,849	3,037	5,592	3,894	1,698	2,560	2,019	541	208	148	60	325	222	103	2,175	1,547	628
20-24	21,139	15,654	5,485	11,615	8,391	3,224	4,804	3,692	1,112	354	244	110	635	445	190	3,679	2,840	839
25-29	28,276	20,385	7,891	16,736	11,865	4,871	6,066	4,454	1,612	547	348	199	680	477	203	4,166	3,181	985
30-34	31,939	21,764	10,175	20,028	13,495	6,533	6,018	4,098	1,920	647	431	216	820	536	284	4,326	3,128	1,198
35-39	36,901	24,105	12,796	22,872	14,806	8,066	7,251	4,663	2,588	680	441	239	944	584	360	5,014	3,516	1,498
40-44	42,895	26,687	16,208	26,524	16,468	10,056	8,475	5,058	3,417	729	430	299	1,283	790	493	5,724	3,842	1,882
45-49	65,698	40,223	25,475	42,453	25,965	16,488	12,288	7,229	5,059	948	592	356	2,007	1,181	826	7,738	5,072	2,666
50-54	104,444	63,581	40,863	70,312	42,816	27,496	18,938	10,952	7,986	1,338	775	563	2,678	1,613	1,065	10,671	7,073	3,598
55-59	162,098	98,387	63,711	114,084	69,506	44,578	28,790	16,723	12,067	1,686	1,000	686	3,611	2,133	1,478	13,056	8,392	4,664
60-64	209,908	126,948	82,960	150,915	91,792	59,123	35,708	20,829	14,879	1,857	1,068	789	4,891	2,898	1,993	15,477	9,582	5,895
65-69	248,087	145,258	102,829	184,996	108,920	76,076	37,568	21,346	16,222	1,889	1,087	802	6,260	3,600	2,660	16,280	9,533	6,747
70-74	283,523	158,673	124,850	223,431	125,660	97,771	33,453	18,050	15,403	1,855	997	858	6,633	3,752	2,881	17,088	9,499	7,589
75-79	307,498	163,505	143,993	245,250	131,567	113,683	32,828	16,251	16,577	1,798	933	865	8,035	4,393	3,642	18,699	9,834	8,865
80-84	350,261	173,166	177,095	284,866	142,527	142,339	32,248	14,488	17,760	1,731	829	902	9,495	4,705	4,790	21,131	10,177	10,954
85 and over	878,035	334,866	543,169	746,124	287,103	459,021	59,645	19,462	40,183	2,473	940	1,533	22,988	9,169	13,819	45,236	17,588	27,648
Not stated	129	91	38	60	47	13	16	10	6	-	-	-	-	-	-	11	8	3

See footnotes at end of table.

Table 2. Number of deaths and death rates, by age, race and Hispanic origin, and sex: United States, 2017—Con.

[Rates are per 100,000 population in specified group; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Age (years)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Rate																	
All ages	863.8	897.2	831.4	1,083.2	1,111.4	1,055.8	787.5	854.2	726.1	703.4	784.4	625.5	359.8	386.2	335.6	334.6	364.6	304.0
Under 1 ⁵	567.0	618.7	512.8	458.5	505.2	409.5	1,110.6	1,215.4	1,001.3	723.8	755.9	690.6	431.2	464.0	396.7	466.4	500.3	431.0
1–4	24.3	27.3	21.1	22.4	26.1	18.6	40.1	42.9	37.3	45.3	40.8	50.0	15.6	19.6	11.3	19.4	21.5	17.2
5–9	11.6	12.5	10.6	10.6	11.5	9.6	18.5	20.2	16.6	18.6	*	*	8.4	8.6	8.3	9.9	10.5	9.3
10–14	15.5	18.6	12.3	15.0	17.7	12.2	23.4	29.7	17.0	31.1	34.7	27.5	8.9	10.1	7.6	12.5	15.0	9.8
15–19	51.5	72.7	29.4	48.2	65.5	30.1	80.0	124.2	34.4	99.5	139.8	58.2	26.5	35.9	16.9	44.4	61.8	26.2
20–24	95.6	137.9	50.9	95.1	133.6	54.3	140.8	213.0	66.3	163.3	221.7	103.0	44.2	61.2	26.8	76.1	113.7	35.9
25–29	121.0	171.3	68.8	127.9	178.2	75.8	171.4	252.3	90.9	245.7	307.8	181.7	39.2	55.8	23.1	86.9	126.7	43.2
30–34	145.4	196.3	93.5	159.3	212.4	105.0	203.9	286.3	126.3	343.2	459.6	227.9	47.4	64.5	31.6	95.5	131.5	55.7
35–39	173.8	227.1	120.5	187.5	241.1	133.2	257.9	349.0	175.4	394.3	518.1	273.6	57.8	76.3	41.5	113.5	153.7	70.3
40–44	218.4	273.6	163.9	233.9	289.1	178.2	332.4	422.2	252.8	465.5	561.2	373.8	83.2	109.4	60.1	141.2	186.5	94.4
45–49	313.2	387.3	240.6	326.7	399.0	254.1	461.4	578.4	357.9	584.1	748.4	427.9	137.6	173.3	106.4	209.4	271.5	146.0
50–54	488.0	604.4	375.5	499.8	613.5	387.8	703.6	869.7	557.6	784.4	945.4	635.5	210.9	272.4	157.1	333.4	439.8	225.9
55–59	736.5	919.5	563.4	741.6	919.5	569.7	1,088.2	1,365.8	849.1	969.7	1,219.9	746.4	313.1	402.2	237.2	492.5	643.2	346.5
60–64	1,050.2	1,328.3	795.4	1,040.5	1,305.4	791.3	1,583.5	2,051.5	1,200.3	1,251.2	1,549.5	992.5	475.1	625.4	352.0	754.5	979.9	549.2
65–69	1,473.5	1,831.8	1,154.5	1,463.6	1,799.6	1,154.9	2,168.8	2,831.9	1,657.9	1,649.4	2,037.6	1,310.8	736.9	957.5	561.7	1,085.1	1,372.9	837.1
70–74	2,206.9	2,668.0	1,809.5	2,240.1	2,675.8	1,852.4	2,899.5	3,717.9	2,305.0	2,355.3	2,739.0	2,025.5	1,122.0	1,426.1	878.2	1,628.5	2,037.5	1,301.5
75–79	3,517.8	4,193.7	2,973.6	3,603.5	4,259.2	3,058.6	4,258.0	5,298.3	3,570.7	3,598.9	4,166.7	3,137.7	1,962.4	2,418.3	1,598.9	2,652.3	3,288.8	2,183.5
80–84	5,871.7	6,901.6	5,123.9	6,078.8	7,102.6	5,312.1	6,363.6	7,821.4	5,523.7	5,805.8	6,639.4	5,205.1	3,529.8	4,126.1	3,091.0	4,462.8	5,338.6	3,872.5
85 and over	13,573.6	14,689.2	12,966.5	14,336.0	15,521.8	13,682.1	12,101.9	13,164.9	11,646.4	9,157.2	9,649.9	8,879.2	8,567.8	9,252.7	8,166.7	9,504.4	10,147.1	9,136.3

– Quantity zero.

* Rate does not meet NCHS standards of reliability; see Technical Notes.

¹Includes deaths for origin not stated; see Technical Notes.

²Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Includes Aleut and Eskimo persons.

⁴Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

⁵Death rates for “Under 1” (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 3. Life expectancy at selected ages, by race and Hispanic origin and sex: United States, 2017

[Race and Hispanic-origin categories are consistent with the 1977 Office of Management and Budget (OMB) standards]

Exact age (years)	Total ¹			Non-Hispanic white ^{2,3}			Non-Hispanic black ^{2,3}			Hispanic ³		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
0.....	78.6	76.1	81.1	78.5	76.1	81.0	74.9	71.5	78.1	81.8	79.1	84.3
1.....	78.1	75.6	80.5	77.9	75.5	80.3	74.7	71.4	77.9	81.2	78.5	83.7
5.....	74.1	71.7	76.6	74.0	71.6	76.4	70.8	67.5	74.0	77.3	74.6	79.8
10.....	69.2	66.7	71.6	69.0	66.6	71.4	65.9	62.5	69.0	72.3	69.6	74.8
15.....	64.2	61.8	66.7	64.0	61.7	66.4	61.0	57.6	64.1	67.4	64.7	69.8
20.....	59.4	57.0	61.8	59.2	56.9	61.5	56.2	53.0	59.2	62.5	59.9	64.9
25.....	54.7	52.4	56.9	54.5	52.2	56.7	51.6	48.5	54.4	57.7	55.2	60.1
30.....	50.0	47.8	52.1	49.8	47.7	51.9	47.0	44.1	49.6	53.0	50.5	55.2
35.....	45.3	43.2	47.3	45.2	43.2	47.2	42.5	39.7	44.9	48.2	45.8	50.3
40.....	40.7	38.7	42.6	40.6	38.6	42.5	38.0	35.3	40.3	43.5	41.2	45.5
45.....	36.1	34.2	37.9	36.0	34.2	37.8	33.6	31.0	35.8	38.8	36.6	40.7
50.....	31.6	29.8	33.4	31.6	29.8	33.3	29.3	26.9	31.4	34.2	32.1	36.0
55.....	27.4	25.6	28.9	27.3	25.6	28.8	25.2	23.0	27.2	29.8	27.7	31.4
60.....	23.3	21.7	24.7	23.2	21.7	24.6	21.5	19.4	23.3	25.5	23.6	27.0
65.....	19.4	18.0	20.6	19.3	18.0	20.5	18.1	16.2	19.5	21.4	19.7	22.7
70.....	15.7	14.5	16.7	15.6	14.5	16.6	14.9	13.3	16.0	17.5	16.0	18.6
75.....	12.3	11.3	13.0	12.2	11.2	12.9	11.9	10.6	12.7	13.8	12.6	14.7
80.....	9.2	8.4	9.8	9.1	8.3	9.7	9.2	8.1	9.8	10.5	9.4	11.1
85.....	6.6	5.9	7.0	6.5	5.9	6.9	6.9	6.1	7.3	7.6	6.7	8.0
90.....	4.5	4.1	4.8	4.5	4.0	4.7	5.0	4.5	5.2	5.3	4.6	5.5
95.....	3.1	2.8	3.2	3.0	2.7	3.2	3.6	3.3	3.7	3.6	3.2	3.7
100.....	2.2	2.0	2.2	2.1	1.9	2.2	2.7	2.5	2.7	2.6	2.2	2.6

¹Includes races and origins not shown separately.²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes in this report.³Life expectancies by Hispanic origin are based on death rates adjusted for misclassification; see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 4. Life expectancy at birth, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, and 2000–2017

[Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards]

Year	All races and origins ¹			Non-Hispanic white ²			Non-Hispanic black ²			Hispanic ³		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
2017 ^{4,5}	78.6	76.1	81.1	78.5	76.1	81.0	74.9	71.5	78.1	81.8	79.1	84.3
2016 ^{4,6}	78.7	76.2	81.1	78.6	76.2	81.0	74.9	71.6	78.0	81.8	79.1	84.3
2015 ^{4,5}	78.7	76.3	81.1	78.7	76.3	81.0	75.1	71.9	78.1	82.0	79.3	84.3
2014 ^{4,5}	78.9	76.5	81.3	78.8	76.5	81.2	75.3	72.2	78.2	82.1	79.4	84.5
2013 ^{4,5}	78.8	76.4	81.2	78.8	76.5	81.2	75.1	71.9	78.1	81.9	79.2	84.2
2012 ^{4,5}	78.8	76.4	81.2	78.9	76.5	81.2	75.1	71.9	78.1	81.9	79.3	84.3
2011 ^{4,5}	78.7	76.3	81.1	78.7	76.4	81.1	75.0	71.8	77.8	81.8	79.2	84.2
2010 ^{4,5}	78.7	76.2	81.0	78.8	76.4	81.1	74.7	71.5	77.7	81.7	78.8	84.3
2009 ⁴	78.5	76.0	80.9	78.7	76.3	81.0	74.4	71.0	77.4	81.1	78.4	83.5
2008 ⁴	78.2	75.6	80.6	78.4	76.0	80.7	73.9	70.5	77.0	80.8	78.0	83.3
2007 ⁴	78.1	75.5	80.6	78.4	75.9	80.8	73.5	69.9	76.7	80.7	77.8	83.2
2006 ⁴	77.8	75.2	80.3	78.2	75.7	80.6	73.1	69.5	76.4	80.3	77.5	82.9
2005 ⁴	77.6	75.0	80.1	---	---	---	---	---	---	---	---	---
2004 ⁴	77.6	75.0	80.1	---	---	---	---	---	---	---	---	---
2003 ⁴	77.2	74.5	79.7	---	---	---	---	---	---	---	---	---
2002 ⁴	77.0	74.4	79.6	---	---	---	---	---	---	---	---	---
2001 ⁴	77.0	74.3	79.5	---	---	---	---	---	---	---	---	---
2000	76.8	74.1	79.3	---	---	---	---	---	---	---	---	---
1990	75.4	71.8	78.8	---	---	---	---	---	---	---	---	---
1980	73.7	70.0	77.4	---	---	---	---	---	---	---	---	---
1970	70.8	67.1	74.7	---	---	---	---	---	---	---	---	---
1960	69.7	66.6	73.1	---	---	---	---	---	---	---	---	---
1950	68.2	65.6	71.1	---	---	---	---	---	---	---	---	---
1940	62.9	60.8	65.2	---	---	---	---	---	---	---	---	---

--- Data not available.

¹Includes races and origins not shown separately.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes in this report.

³Based on death rates adjusted for misclassification; see Technical Notes.

⁴Life table data for 2001–2017 are based on revised life table methodology; see Technical Notes.

⁵Life expectancies by Hispanic origin were revised using updated adjustment factors to correct for race and Hispanic-origin misclassification.

⁶Life expectancies were revised using updated Medicare data; therefore, data may differ from those previously published; see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
All causes													
2017.....	863.8	567.0	24.3	13.6	74.0	132.8	195.2	401.5	885.8	1,790.9	4,472.6	13,573.6	731.9
2016.....	849.3	583.4	25.3	13.4	74.9	129.0	192.2	405.5	883.8	1,788.6	4,474.8	13,392.1	728.8
2015.....	844.0	589.6	24.9	13.2	69.5	116.7	180.1	404.0	875.3	1,796.8	4,579.2	13,673.9	733.1
2014.....	823.7	588.0	24.0	12.7	65.5	108.4	175.2	404.8	870.3	1,786.3	4,564.2	13,407.9	724.6
2013.....	821.5	594.7	25.5	13.0	64.8	106.1	172.0	406.1	860.0	1,802.1	4,648.1	13,660.4	731.9
2012.....	810.2	599.3	26.3	12.6	66.4	105.4	170.7	405.4	854.2	1,802.5	4,674.5	13,678.6	732.8
2011.....	807.3	600.1	26.3	13.2	67.7	104.7	172.0	409.8	849.4	1,846.2	4,753.0	13,779.3	741.3
2010.....	799.5	623.4	26.5	12.9	67.7	102.9	170.5	407.1	851.9	1,875.1	4,790.2	13,934.3	747.0
2009.....	794.5	659.7	27.4	13.8	69.8	104.4	180.0	418.1	856.7	1,888.7	4,820.2	13,660.1	749.6
2008.....	812.9	678.9	29.3	13.9	74.2	105.1	181.0	419.6	867.1	1,958.4	4,998.1	14,332.4	774.9
2007.....	804.6	702.5	29.4	15.2	78.8	107.2	186.0	420.3	866.7	1,976.0	4,987.1	14,160.9	775.3
2006.....	813.1	705.8	29.1	15.2	81.4	109.0	192.0	427.5	881.3	2,031.4	5,096.1	14,426.7	791.8
2005.....	828.4	710.2	29.9	16.3	80.7	106.8	194.9	431.9	898.5	2,109.7	5,251.8	14,982.4	815.0
2004.....	818.8	695.9	30.3	16.7	79.7	104.1	194.9	426.8	903.2	2,141.0	5,267.4	14,777.6	813.7
2003.....	843.9	704.9	31.8	16.9	81.1	105.2	202.6	433.1	937.3	2,235.0	5,451.3	15,401.4	843.5
2002.....	849.5	709.5	31.4	17.4	80.9	105.1	204.2	431.0	948.7	2,300.3	5,543.8	15,589.5	855.9
2001.....	848.0	687.0	33.4	17.2	80.2	105.6	203.5	426.7	972.5	2,344.2	5,573.7	15,432.6	858.8
2000.....	854.0	736.7	32.4	18.0	79.9	101.4	198.9	425.6	992.2	2,399.1	5,666.5	15,524.4	869.0
1999.....	857.0	736.0	34.2	18.6	79.3	102.2	198.0	418.2	1,005.0	2,457.3	5,714.5	15,554.6	875.6
Diseases of heart (I00–I09,I11,I13,I20–I51)													
2017.....	198.8	7.7	0.8	0.4	2.1	8.1	25.4	77.1	190.7	392.9	1,028.4	3,882.9	165.0
2016.....	196.6	7.4	0.7	0.5	2.2	7.7	25.9	79.5	189.6	392.5	1,037.1	3,873.4	165.5
2015.....	197.2	7.3	0.9	0.5	2.3	8.0	25.6	79.3	188.1	389.5	1,071.6	3,986.5	168.5
2014.....	192.7	8.0	0.9	0.5	2.2	7.7	25.6	80.1	185.8	385.2	1,070.2	3,920.9	167.0
2013.....	193.3	7.8	1.1	0.4	2.1	7.6	25.6	80.3	184.6	390.3	1,095.1	4,013.9	169.8
2012.....	191.0	8.5	1.0	0.4	2.2	7.6	25.9	79.7	184.6	388.3	1,103.7	4,046.1	170.5
2011.....	191.5	7.7	1.0	0.5	2.3	7.9	26.2	80.7	183.2	399.0	1,134.7	4,111.6	173.7
2010.....	193.6	8.3	1.0	0.5	2.4	7.8	25.8	81.6	186.6	409.2	1,172.0	4,285.2	179.1
2009.....	195.4	9.6	0.9	0.5	2.4	7.8	26.7	82.3	190.0	422.8	1,210.8	4,316.9	182.8
2008.....	202.8	9.6	1.2	0.6	2.5	8.1	26.9	85.2	195.3	441.4	1,271.7	4,598.4	192.1
2007.....	204.5	10.2	1.1	0.6	2.5	8.1	27.7	85.2	197.8	454.8	1,308.6	4,668.1	196.1
2006.....	211.7	8.6	1.0	0.6	2.5	8.4	28.5	88.0	205.1	483.0	1,378.0	4,877.6	205.5
2005.....	220.7	8.9	0.9	0.6	2.6	8.3	29.2	89.7	212.8	512.3	1,458.5	5,188.3	216.8
2004.....	222.8	10.5	1.2	0.6	2.5	8.1	29.5	90.2	217.1	535.7	1,504.1	5,233.8	221.6
2003.....	236.1	11.0	1.2	0.6	2.7	8.3	30.8	92.4	232.3	579.8	1,607.7	5,570.7	236.3
2002.....	242.3	12.7	1.1	0.6	2.5	8.0	30.7	93.9	240.5	612.0	1,673.2	5,726.3	244.6
2001.....	245.7	11.9	1.5	0.7	2.5	8.0	29.6	92.4	248.9	632.6	1,723.0	5,784.1	249.5
2000.....	252.6	13.0	1.2	0.7	2.6	7.4	29.2	94.2	261.2	665.6	1,780.3	5,926.1	257.6
1999.....	259.9	13.8	1.2	0.7	2.8	7.6	30.2	95.7	269.9	701.7	1,849.9	6,063.0	266.5

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Malignant neoplasms (C00–C97)													
2017.....	183.9	1.4	2.0	2.1	3.2	8.0	26.7	92.7	273.4	567.5	1,060.2	1,600.3	152.5
2016.....	185.1	1.7	2.4	2.1	3.3	8.5	26.9	96.5	280.6	578.3	1,081.7	1,620.3	155.8
2015.....	185.4	1.3	2.2	2.1	3.4	8.4	26.9	99.7	284.1	594.3	1,100.8	1,628.6	158.5
2014.....	185.6	1.3	2.0	2.1	3.6	8.3	27.8	103.2	287.6	603.1	1,125.9	1,632.9	161.2
2013.....	185.0	1.6	2.1	2.2	3.4	8.6	28.1	105.5	288.2	616.9	1,139.4	1,635.4	163.2
2012.....	185.6	1.6	2.4	2.2	3.6	8.7	28.0	108.5	293.2	632.2	1,161.7	1,658.9	166.5
2011.....	185.1	1.8	2.2	2.1	3.7	8.4	28.8	109.3	295.8	647.6	1,179.1	1,676.2	169.0
2010.....	186.2	1.6	2.1	2.2	3.7	8.8	28.8	111.6	300.1	666.1	1,202.2	1,729.5	172.8
2009.....	185.0	1.8	2.2	2.2	3.8	9.0	30.2	112.8	301.7	668.2	1,213.0	1,699.3	173.5
2008.....	186.0	1.7	2.4	2.2	3.8	8.8	30.1	113.4	304.7	688.4	1,230.9	1,724.6	176.4
2007.....	186.9	1.7	2.3	2.4	3.8	8.7	31.0	114.2	311.4	702.9	1,250.1	1,739.4	179.3
2006.....	187.6	1.9	2.4	2.2	3.8	9.3	32.2	116.3	317.7	716.3	1,259.2	1,748.3	181.8
2005.....	189.3	1.9	2.4	2.5	4.0	9.2	33.5	118.6	323.9	733.2	1,272.8	1,778.2	185.1
2004.....	189.2	1.8	2.5	2.5	4.1	9.3	33.6	119.0	330.8	746.8	1,278.6	1,767.4	186.8
2003.....	192.0	1.9	2.5	2.6	4.0	9.5	35.1	122.1	341.6	763.5	1,299.7	1,792.3	190.9
2002.....	193.7	1.9	2.6	2.6	4.2	9.8	36.0	124.1	349.7	787.2	1,308.8	1,812.4	194.3
2001.....	194.3	1.6	2.7	2.4	4.2	10.1	36.8	125.8	359.4	799.7	1,313.7	1,802.9	196.5
2000.....	196.5	2.4	2.7	2.5	4.4	9.8	36.6	127.5	366.7	816.3	1,335.6	1,819.4	199.6
1999.....	197.0	1.8	2.7	2.5	4.5	10.0	37.1	127.6	374.6	827.1	1,331.5	1,805.8	200.8
Accidents (unintentional injuries) (V01–X59, Y85–Y86)													
2017.....	52.2	33.4	7.9	3.8	31.1	56.6	55.8	57.7	55.7	50.7	113.3	374.9	49.4
2016.....	49.9	30.7	7.9	4.0	31.9	53.7	51.8	54.6	52.7	49.1	110.7	365.7	47.4
2015.....	45.6	32.5	7.8	3.7	28.5	44.8	43.9	49.8	47.7	47.0	111.5	364.5	43.2
2014.....	42.6	29.4	7.6	3.6	26.8	39.8	39.6	47.4	44.9	45.1	108.7	349.1	40.5
2013.....	41.3	29.3	8.3	3.7	26.4	37.8	38.0	46.5	43.4	43.5	107.4	340.0	39.4
2012.....	40.7	29.6	8.4	3.8	27.1	37.5	37.1	46.1	41.0	44.0	107.8	336.9	39.1
2011.....	40.6	29.1	8.5	4.0	28.2	37.1	37.5	46.4	39.8	44.5	107.0	333.8	39.1
2010.....	39.1	28.1	8.6	4.0	28.3	35.5	36.0	43.7	38.4	43.3	106.1	328.4	38.0
2009.....	38.5	29.5	9.0	4.1	28.6	34.5	36.4	44.5	36.5	42.1	103.5	310.9	37.5
2008.....	40.1	31.8	9.1	4.6	32.5	36.3	38.1	45.8	37.4	43.9	105.7	318.3	39.2
2007.....	41.1	31.0	9.9	5.4	36.8	37.7	39.6	46.2	36.8	44.4	105.0	313.6	40.4
2006.....	40.8	28.4	10.1	5.6	37.9	38.0	40.5	45.5	35.8	43.8	104.7	299.2	40.2
2005.....	39.9	27.0	10.5	5.9	37.1	35.7	38.9	43.2	35.4	45.7	106.0	303.5	39.5
2004.....	38.3	26.2	10.4	6.5	36.8	33.2	37.6	40.7	32.9	43.5	103.6	295.8	38.1
2003.....	37.7	23.8	11.0	6.4	36.9	32.0	38.0	38.8	32.7	43.7	101.6	294.3	37.6
2002.....	37.1	23.9	10.6	6.6	37.7	31.9	37.4	36.7	31.3	44.0	101.1	289.6	37.1
2001.....	35.6	24.3	11.2	6.9	35.8	30.0	35.4	33.9	30.5	42.6	100.7	282.2	35.7
2000.....	34.8	23.1	11.9	7.3	36.0	29.5	34.1	32.6	30.9	41.9	95.1	273.5	34.9
1999.....	35.1	22.3	12.4	7.6	35.3	29.6	33.8	31.8	30.6	44.6	100.5	282.4	35.3

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Chronic lower respiratory diseases (J40–J47)													
2017.....	49.2	*	0.2	0.3	0.4	0.7	1.7	9.4	44.4	133.8	347.6	700.6	40.9
2016.....	47.8	0.7	0.3	0.3	0.5	0.8	1.7	10.1	43.0	134.1	347.2	676.9	40.6
2015.....	48.2	0.7	0.3	0.4	0.5	0.7	1.7	10.1	42.7	136.6	357.9	705.1	41.6
2014.....	46.1	*	0.3	0.3	0.4	0.8	1.9	10.1	41.2	134.9	349.0	670.5	40.5
2013.....	47.2	0.6	0.4	0.4	0.4	0.7	1.9	10.6	40.5	141.2	367.0	699.3	42.1
2012.....	45.7	0.5	0.3	0.3	0.3	0.7	1.8	10.2	39.4	140.0	364.0	687.8	41.5
2011.....	45.9	0.8	0.3	0.3	0.4	0.6	1.8	10.4	39.5	144.3	374.9	697.9	42.5
2010.....	44.7	0.9	0.3	0.3	0.3	0.7	1.7	9.9	39.0	146.3	369.9	690.7	42.2
2009.....	44.8	0.7	0.4	0.3	0.4	0.7	1.8	10.4	40.0	147.5	376.4	684.9	42.7
2008.....	46.4	0.8	0.3	0.3	0.4	0.6	1.9	9.9	41.1	155.9	395.4	722.7	44.7
2007.....	42.5	1.0	0.4	0.3	0.3	0.7	1.9	9.5	38.6	145.5	367.1	652.0	41.4
2006.....	41.8	0.7	0.3	0.3	0.4	0.6	1.9	9.1	38.8	147.0	362.0	641.3	41.0
2005.....	44.3	0.8	0.4	0.3	0.3	0.7	2.0	9.4	41.6	158.4	385.0	691.9	43.9
2004.....	41.7	0.9	0.3	0.3	0.4	0.6	2.0	8.4	40.1	152.1	366.2	643.2	41.6
2003.....	43.6	0.8	0.4	0.3	0.5	0.7	2.2	8.7	43.1	161.7	382.2	670.2	43.7
2002.....	43.4	1.0	0.4	0.3	0.5	0.8	2.3	8.7	42.2	162.0	385.8	670.3	43.9
2001.....	43.2	1.0	0.3	0.3	0.4	0.7	2.2	8.4	44.5	167.3	379.3	658.3	43.9
2000.....	43.4	0.9	0.3	0.3	0.5	0.7	2.1	8.6	44.2	169.4	386.1	648.6	44.2
1999.....	44.5	0.9	0.4	0.3	0.5	0.8	2.0	8.5	47.5	177.2	397.8	646.0	45.4
Cerebrovascular diseases (I60–I69)													
2017.....	44.9	2.5	0.4	0.2	0.4	1.3	4.4	12.3	30.3	76.4	263.1	993.5	37.6
2016.....	44.0	3.1	0.3	0.2	0.3	1.3	4.6	12.5	29.7	76.0	265.5	972.9	37.3
2015.....	43.7	2.2	0.3	0.2	0.4	1.3	4.4	12.3	29.6	75.5	273.0	975.8	37.6
2014.....	41.7	2.4	0.2	0.2	0.4	1.3	4.3	12.3	29.3	74.5	265.7	929.7	36.5
2013.....	40.8	2.7	0.2	0.2	0.3	1.2	4.2	12.4	28.9	74.2	268.9	906.0	36.2
2012.....	40.9	2.6	0.3	0.2	0.4	1.3	4.3	12.8	28.7	75.7	272.2	931.2	36.9
2011.....	41.4	3.4	0.3	0.2	0.4	1.3	4.2	12.8	29.4	78.2	285.4	943.7	37.9
2010.....	41.9	3.3	0.3	0.2	0.4	1.3	4.6	13.1	29.3	81.7	288.3	993.8	39.1
2009.....	42.0	3.7	0.3	0.2	0.4	1.3	4.6	13.7	29.7	82.8	294.9	992.2	39.6
2008.....	44.1	3.4	0.4	0.2	0.4	1.3	4.8	13.7	30.6	87.3	313.3	1,071.0	42.1
2007.....	45.1	3.2	0.3	0.2	0.5	1.3	5.0	14.5	31.7	91.4	320.8	1,110.7	43.5
2006.....	46.0	3.5	0.3	0.2	0.5	1.3	5.1	14.6	32.9	94.9	333.9	1,131.7	44.8
2005.....	48.6	3.1	0.4	0.2	0.5	1.4	5.2	15.0	32.7	99.8	358.4	1,239.7	48.0
2004.....	51.3	3.2	0.3	0.2	0.5	1.4	5.4	14.8	34.0	106.6	385.6	1,331.9	51.2
2003.....	54.4	2.5	0.3	0.2	0.5	1.5	5.6	15.0	35.5	111.9	409.8	1,446.0	54.6
2002.....	56.6	3.0	0.3	0.2	0.4	1.4	5.4	15.1	37.1	119.6	430.0	1,520.1	57.2
2001.....	57.4	2.7	0.4	0.2	0.5	1.5	5.5	15.0	38.3	122.9	443.3	1,532.0	58.4
2000.....	59.6	3.3	0.3	0.2	0.5	1.5	5.8	16.0	41.0	128.6	461.3	1,589.2	60.9
1999.....	60.0	2.7	0.3	0.2	0.5	1.4	5.7	15.2	40.6	130.8	469.8	1,614.8	61.6

See footnotes at end of table.

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)										Age-adjusted rate ³	
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Alzheimer disease (G30)													
2017.....	37.3	*	*	*	*	*	*	0.2	2.8	24.5	219.7	1,244.7	31.0
2016.....	35.9	*	*	*	*	*	*	0.2	2.7	23.6	214.1	1,216.9	30.3
2015.....	34.4	*	*	*	*	*	*	0.2	2.4	22.4	211.9	1,174.2	29.4
2014.....	29.3	*	*	*	*	*	*	0.2	2.1	19.6	185.6	1,006.8	25.4
2013.....	26.8	*	*	*	*	*	*	0.2	2.2	18.1	171.6	929.5	23.5
2012.....	26.6	*	*	*	*	*	*	0.2	2.2	17.9	175.4	936.1	23.8
2011.....	27.3	*	*	*	*	*	*	0.2	2.2	19.2	183.9	967.1	24.7
2010.....	27.0	*	*	*	*	*	*	0.3	2.1	19.8	184.5	987.1	25.1
2009.....	25.8	*	*	*	*	*	*	0.2	2.0	19.4	179.1	945.3	24.2
2008.....	27.1	*	*	*	*	*	*	0.2	2.2	21.1	192.5	1,002.2	25.8
2007.....	24.8	*	*	*	*	*	*	0.2	2.2	20.2	175.8	928.7	23.8
2006.....	24.3	*	*	*	*	*	*	0.2	2.1	19.9	175.0	923.4	23.7
2005.....	24.2	*	*	*	*	*	*	0.2	2.1	20.2	177.0	935.5	24.0
2004.....	22.5	*	*	*	*	*	*	0.2	1.8	19.5	168.5	875.3	22.6
2003.....	21.9	*	*	*	*	*	*	0.2	2.0	20.7	164.1	846.8	22.1
2002.....	20.5	*	*	*	*	*	*	0.1	1.9	19.6	157.7	790.9	20.8
2001.....	18.9	*	*	*	*	*	*	0.2	2.1	18.6	147.2	725.4	19.3
2000.....	17.6	*	*	*	*	*	*	0.2	2.0	18.7	139.6	667.7	18.1
1999.....	16.0	*	*	*	*	*	*	0.2	1.9	17.4	129.5	601.3	16.5
Diabetes mellitus (E10–E14)													
2017.....	25.7	*	*	0.1	0.6	1.8	5.2	15.1	35.5	71.9	140.8	262.4	21.5
2016.....	24.8	*	*	0.1	0.5	1.8	5.1	14.6	34.4	69.9	137.9	263.6	21.0
2015.....	24.7	*	*	0.1	0.4	1.8	4.9	14.4	34.7	70.6	143.0	267.0	21.3
2014.....	24.0	*	*	0.1	0.4	1.6	4.9	13.9	33.3	69.0	141.8	268.6	20.9
2013.....	23.9	*	*	0.1	0.4	1.6	4.8	13.5	33.2	68.5	145.7	279.5	21.2
2012.....	23.6	*	*	0.1	0.4	1.5	4.6	13.0	32.5	69.7	145.8	285.7	21.2
2011.....	23.7	*	*	0.1	0.4	1.6	4.5	13.4	33.3	72.0	148.8	289.5	21.6
2010.....	22.4	*	*	0.1	0.4	1.5	4.4	12.5	32.0	67.6	144.1	285.5	20.8
2009.....	22.4	*	*	0.1	0.4	1.5	4.5	12.8	32.1	69.6	145.8	282.6	21.0
2008.....	23.2	*	*	0.1	0.5	1.4	4.4	12.6	33.3	74.7	153.2	298.9	22.0
2007.....	23.7	*	*	0.1	0.4	1.5	4.6	13.1	34.1	76.7	161.9	302.2	22.8
2006.....	24.3	*	*	0.1	0.4	1.7	4.8	13.1	35.8	80.6	166.2	310.4	23.6
2005.....	25.4	*	*	0.1	0.5	1.6	4.7	13.4	36.9	85.7	177.0	338.8	24.9
2004.....	25.0	*	*	0.1	0.4	1.5	4.6	13.4	36.8	86.2	176.6	328.2	24.7
2003.....	25.6	*	*	0.1	0.4	1.7	4.6	13.9	38.3	90.0	180.7	335.1	25.5
2002.....	25.5	*	*	0.1	0.4	1.6	4.8	13.7	37.5	90.9	182.4	337.0	25.6
2001.....	25.0	*	*	0.1	0.4	1.5	4.3	13.6	38.1	91.0	181.1	328.6	25.4
2000.....	24.6	*	*	0.1	0.4	1.6	4.3	13.1	37.8	90.7	179.5	319.7	25.0
1999.....	24.5	*	*	0.1	0.4	1.4	4.3	12.9	38.3	91.8	178.0	317.2	25.0

See footnotes at end of table.

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Influenza and pneumonia (J09–J18)													
2017.....	17.1	4.0	0.7	0.3	0.4	0.9	1.9	4.8	12.0	29.6	93.8	375.3	14.3
2016.....	15.9	4.2	0.6	0.2	0.4	1.0	2.2	5.0	12.1	28.5	88.5	340.3	13.5
2015.....	17.8	4.4	0.6	0.2	0.4	0.9	1.7	4.7	11.3	29.5	101.6	421.4	15.2
2014.....	17.3	4.7	0.7	0.2	0.5	1.3	2.8	6.3	13.4	29.8	96.4	385.9	15.1
2013.....	18.0	4.5	0.6	0.3	0.4	1.0	2.2	5.1	12.2	29.5	103.7	441.0	15.9
2012.....	16.1	4.0	0.6	0.2	0.3	0.8	1.7	4.1	10.2	26.1	98.2	408.4	14.4
2011.....	17.3	5.2	0.7	0.3	0.5	1.2	2.1	5.0	11.0	28.9	104.0	439.2	15.7
2010.....	16.2	4.9	0.6	0.2	0.4	0.9	1.9	4.3	9.9	27.9	102.4	426.2	15.1
2009.....	17.5	6.3	0.9	0.6	1.0	2.0	3.2	6.5	11.7	29.5	107.0	433.8	16.5
2008.....	18.5	5.5	0.9	0.2	0.5	0.9	2.1	5.1	10.9	30.5	118.6	512.3	17.6
2007.....	17.5	5.4	0.7	0.3	0.4	0.8	1.8	4.3	9.5	28.2	113.5	506.7	16.8
2006.....	18.9	6.5	0.8	0.2	0.4	0.9	1.9	4.6	9.9	31.6	127.3	547.0	18.4
2005.....	21.3	6.6	0.7	0.3	0.4	0.9	2.1	5.1	11.2	35.1	142.0	644.9	21.0
2004.....	20.4	6.8	0.8	0.2	0.4	0.8	2.0	4.6	10.8	34.2	139.1	622.8	20.4
2003.....	22.5	8.1	1.0	0.4	0.5	1.0	2.2	5.2	11.2	36.9	150.8	703.0	22.6
2002.....	22.8	6.7	0.7	0.2	0.4	0.9	2.2	4.8	11.2	37.2	156.6	732.4	23.2
2001.....	21.8	7.5	0.7	0.2	0.5	0.9	2.2	4.6	10.8	36.2	148.3	700.1	22.2
2000.....	23.2	7.6	0.7	0.2	0.5	0.9	2.4	4.7	11.9	39.1	160.3	744.1	23.7
1999.....	22.8	8.4	0.8	0.2	0.5	0.8	2.4	4.6	11.0	37.2	157.0	751.8	23.5
Nephritis, nephrotic syndrome and nephrosis (N00–N07, N17–N19, N25–N27)													
2017.....	15.5	2.0	*	*	0.1	0.6	1.7	5.2	13.5	34.7	95.8	267.1	13.0
2016.....	15.5	1.6	*	*	0.1	0.6	1.8	5.0	13.6	34.6	98.1	270.1	13.1
2015.....	15.5	2.1	*	*	0.1	0.6	1.7	4.9	13.3	35.1	99.7	281.8	13.4
2014.....	15.1	2.3	*	*	0.2	0.5	1.7	4.7	12.6	34.3	98.6	282.4	13.2
2013.....	14.9	2.2	*	*	0.1	0.6	1.5	4.6	12.6	33.8	99.0	285.4	13.2
2012.....	14.5	2.1	*	*	0.2	0.5	1.6	4.7	12.3	33.3	99.9	280.0	13.1
2011.....	14.6	1.9	*	*	0.2	0.5	1.6	4.4	12.5	34.2	101.4	292.1	13.4
2010.....	16.3	2.7	*	0.1	0.2	0.6	1.8	4.9	13.9	39.3	115.7	333.8	15.3
2009.....	16.0	2.8	*	*	0.2	0.7	2.0	5.2	13.5	38.7	115.1	321.4	15.1
2008.....	15.9	3.5	*	*	0.2	0.6	1.8	5.0	14.1	39.9	113.3	325.6	15.1
2007.....	15.4	3.5	0.1	0.1	0.2	0.7	1.8	5.1	13.4	39.4	112.4	317.9	14.9
2006.....	15.2	4.0	*	*	0.2	0.7	1.8	5.2	13.7	38.8	111.0	316.2	14.8
2005.....	14.9	4.0	*	0.1	0.2	0.7	1.7	4.8	13.5	38.8	110.2	313.1	14.7
2004.....	14.5	4.3	*	0.1	0.2	0.6	1.8	5.0	13.5	38.1	108.2	306.4	14.5
2003.....	14.6	4.6	*	0.1	0.2	0.7	1.8	4.9	13.6	39.7	109.3	309.3	14.7
2002.....	14.2	4.4	*	0.1	0.2	0.7	1.7	4.7	12.9	39.0	108.9	303.4	14.4
2001.....	13.9	3.3	*	*	0.2	0.6	1.7	4.6	13.1	40.0	104.0	293.8	14.1
2000.....	13.2	4.3	*	0.1	0.2	0.6	1.6	4.4	12.8	38.0	100.8	277.8	13.5
1999.....	12.7	4.4	*	0.1	0.2	0.6	1.6	4.0	12.0	37.1	97.6	268.9	13.0

See footnotes at end of table.

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)											Age-adjusted rate ³
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Intentional self-harm (suicide) (*U03,X60–X84,Y87.0)⁴													
2017.....	14.5	...	...	1.3	14.5	17.5	17.9	20.2	19.0	15.6	18.0	20.1	14.0
2016.....	13.9	...	...	1.1	13.2	16.5	17.4	19.7	18.7	15.4	18.2	19.0	13.5
2015.....	13.7	...	...	1.0	12.5	15.7	17.1	20.3	18.9	15.2	17.9	19.4	13.3
2014.....	13.4	...	...	1.0	11.6	15.1	16.6	20.2	18.8	15.6	17.5	19.3	13.0
2013.....	13.0	...	...	1.0	11.1	14.8	16.2	19.7	18.1	15.0	17.1	18.6	12.6
2012.....	12.9	...	...	0.8	11.1	14.7	16.7	20.0	18.0	14.0	16.8	17.8	12.6
2011.....	12.7	...	...	0.7	11.0	14.6	16.2	19.8	17.1	14.1	16.5	16.9	12.3
2010.....	12.4	...	...	0.7	10.5	14.0	16.0	19.6	17.5	13.7	15.7	17.6	12.1
2009.....	12.0	...	...	0.6	10.0	13.1	16.1	19.2	16.4	13.7	15.8	16.4	11.8
2008.....	11.8	...	...	0.5	9.9	13.2	15.9	18.6	16.0	13.6	16.1	16.4	11.6
2007.....	11.5	...	...	0.5	9.6	13.3	15.7	17.7	15.3	12.4	16.2	17.0	11.3
2006.....	11.2	...	...	0.5	9.8	12.7	15.2	17.2	14.4	12.4	15.8	17.3	11.0
2005.....	11.0	...	...	0.7	9.9	12.7	15.1	16.5	13.7	12.4	16.8	18.3	10.9
2004.....	11.1	...	...	0.7	10.3	12.9	15.2	16.6	13.7	12.2	16.3	17.6	11.0
2003.....	10.9	...	...	0.6	9.6	12.9	15.0	15.9	13.7	12.6	16.4	17.9	10.8
2002.....	11.0	...	...	0.6	9.8	12.8	15.3	15.8	13.5	13.4	17.7	18.9	10.9
2001 ⁵	10.7	...	...	0.7	9.9	12.8	14.7	15.1	13.2	13.2	17.4	17.8	10.7
2000.....	10.4	...	...	0.7	10.2	12.0	14.5	14.4	12.1	12.5	17.6	19.6	10.4
1999.....	10.5	...	...	0.6	10.1	12.7	14.3	13.9	12.2	13.4	18.1	19.3	10.5
Drug-induced causes⁶													
2017.....	22.7	0.9	0.2	0.2	13.0	39.8	40.6	39.8	30.0	10.5	4.5	5.3	22.8
2016.....	20.8	0.9	0.3	0.1	12.8	35.9	36.6	36.5	27.7	9.2	4.1	5.3	20.8
2015.....	17.2	0.7	0.4	0.1	10.0	28.0	29.6	31.9	23.3	8.1	4.4	5.6	17.2
2014.....	15.6	0.6	0.3	0.1	8.9	24.0	26.2	29.8	21.7	7.6	4.4	5.0	15.5
2013.....	14.7	0.8	0.3	0.1	8.6	21.7	24.1	29.0	20.6	7.1	4.4	5.3	14.6
2012.....	14.0	0.8	0.2	0.1	8.3	20.9	23.1	28.3	17.9	6.5	4.0	5.1	13.8
2011.....	14.0	0.6	0.2	0.1	8.9	20.9	23.4	28.2	17.1	6.0	4.0	4.9	13.9
2010.....	13.1	0.6	0.3	0.2	8.4	19.2	21.7	26.5	16.2	5.2	4.0	5.5	12.9
2009.....	12.8	0.8	0.2	0.1	8.0	17.8	21.5	26.9	14.9	5.4	4.5	5.1	12.6
2008.....	12.7	0.5	0.3	0.1	8.3	17.4	22.2	26.8	14.0	5.2	4.0	5.0	12.6
2007.....	12.7	0.8	0.3	0.2	8.5	17.5	22.6	26.8	13.4	4.6	3.9	5.2	12.6
2006.....	12.9	1.1	0.2	0.1	8.5	17.2	23.5	26.7	12.1	5.2	6.0	8.8	12.8
2005.....	11.3	0.9	0.2	0.1	7.3	14.6	21.5	23.6	10.6	4.7	5.4	8.3	11.3
2004.....	10.5	0.7	0.2	0.2	6.9	12.9	21.1	21.7	9.0	4.2	4.8	6.7	10.5
2003.....	9.9	0.6	0.2	0.1	6.3	12.3	20.7	20.0	8.0	4.1	4.2	6.3	9.9
2002.....	9.1	0.7	0.2	0.1	5.4	11.3	19.8	18.0	6.8	3.6	3.8	6.0	9.1
2001.....	7.6	0.5	0.2	0.1	4.5	9.5	17.0	14.7	5.4	3.0	3.5	5.2	7.6
2000.....	7.0	*	*	0.1	4.0	8.8	16.0	13.2	4.9	2.6	3.5	5.7	7.0
1999.....	6.9	0.6	0.2	0.1	3.5	8.9	15.7	12.6	4.9	3.0	3.8	4.8	6.8

See footnotes at end of table.

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2017, drug-induced causes, alcohol-induced causes, and firearm-related injuries: United States, 1999–2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Alcohol-induced causes⁶													
2017.....	11.0	*	*	*	0.3	3.4	9.4	21.8	30.2	20.9	11.7	6.4	9.6
2016.....	10.8	*	*	*	0.4	3.6	9.2	21.4	29.7	20.3	11.8	6.3	9.5
2015.....	10.3	*	*	*	0.4	3.2	8.7	21.6	28.2	19.1	11.2	5.8	9.1
2014.....	9.6	*	*	*	0.3	2.8	8.0	20.4	26.8	17.6	10.5	5.6	8.5
2013.....	9.2	*	*	*	0.3	2.5	7.7	20.1	25.3	16.6	10.3	4.9	8.2
2012.....	8.8	*	*	*	0.4	2.4	7.4	20.0	24.1	15.8	10.3	5.0	8.0
2011.....	8.6	*	*	*	0.4	2.1	7.6	19.8	22.7	15.2	9.6	5.1	7.7
2010.....	8.3	*	*	*	0.3	2.2	7.5	19.1	21.9	15.8	9.6	5.3	7.6
2009.....	8.0	*	*	*	0.4	1.8	7.6	18.7	20.8	15.1	9.2	4.8	7.4
2008.....	8.0	*	*	*	0.4	2.0	7.6	18.6	20.7	15.3	9.4	5.2	7.4
2007.....	7.7	*	*	*	0.4	1.9	7.3	18.2	19.9	15.2	9.6	5.0	7.2
2006.....	7.4	*	*	*	0.3	1.6	7.5	17.5	19.2	14.5	9.7	5.3	7.0
2005.....	7.3	*	*	*	0.4	1.4	7.5	17.6	19.4	14.9	9.2	5.0	7.0
2004.....	7.2	*	*	*	0.3	1.6	7.7	17.3	18.6	15.5	9.2	4.6	7.0
2003.....	7.1	*	*	*	0.3	1.5	8.1	17.3	18.5	15.0	9.2	4.3	7.0
2002.....	7.0	*	*	*	0.3	1.5	8.1	16.9	18.3	15.4	9.3	4.6	6.9
2001.....	7.1	*	*	*	0.3	1.6	8.3	17.1	18.3	15.5	9.6	5.1	7.0
2000.....	7.0	*	*	*	0.2	1.6	8.5	16.3	18.7	15.8	9.9	5.4	7.0
1999.....	7.0	*	*	*	0.3	1.6	8.5	16.4	18.7	15.9	10.6	5.5	7.1
Firearm-related injuries⁶													
2017.....	12.2	*	0.5	1.1	17.7	18.5	14.4	13.1	12.3	11.4	14.8	15.6	12.0
2016.....	12.0	*	0.6	0.9	17.2	18.2	14.5	12.8	11.9	11.4	14.7	14.3	11.8
2015.....	11.3	*	0.5	0.9	15.7	16.8	13.1	12.4	11.7	11.3	14.5	14.5	11.1
2014.....	10.5	*	0.4	0.9	14.0	14.7	12.1	12.2	11.4	11.5	13.9	15.0	10.3
2013.....	10.6	*	0.4	0.8	14.1	15.3	12.3	12.3	11.5	11.3	14.1	13.9	10.4
2012.....	10.7	*	0.4	0.8	14.7	15.3	12.4	12.4	11.6	10.8	14.1	13.6	10.5
2011.....	10.4	*	0.5	0.8	14.4	15.0	11.7	12.2	11.0	10.9	13.7	13.1	10.2
2010.....	10.3	*	0.4	0.7	14.2	15.0	11.7	12.0	11.1	10.7	12.7	13.2	10.1
2009.....	10.2	*	0.4	0.7	14.4	14.5	11.9	11.8	10.8	10.9	13.3	12.5	10.1
2008.....	10.4	*	0.5	0.7	15.4	15.4	11.8	11.5	10.8	10.7	13.2	12.5	10.3
2007.....	10.4	*	0.4	0.8	16.0	15.9	12.0	11.1	10.1	9.8	13.1	12.7	10.3
2006.....	10.4	*	0.4	0.9	16.7	15.7	11.6	11.2	9.7	9.9	12.9	12.5	10.3
2005.....	10.4	*	0.4	0.8	16.1	16.1	11.7	11.2	9.7	10.2	13.6	13.0	10.3
2004.....	10.1	*	0.3	0.7	15.6	15.3	11.4	11.0	9.8	10.1	13.3	12.7	10.0
2003.....	10.4	*	0.3	0.8	16.5	15.8	11.6	11.1	10.0	10.3	13.4	13.2	10.3
2002.....	10.5	*	0.4	0.8	16.6	15.6	12.2	10.8	10.2	10.8	14.4	13.2	10.5
2001.....	10.4	*	0.5	0.8	16.6	15.5	11.7	10.5	10.1	10.9	14.3	13.1	10.3
2000.....	10.2	*	0.3	0.9	16.8	14.5	11.9	10.5	9.4	10.6	13.9	14.2	10.2
1999.....	10.3	*	0.4	1.0	17.6	14.9	11.6	10.2	9.7	11.0	14.2	13.5	10.3

* Rate does not meet NCHS standards of reliability; see Technical Notes.

... Category not applicable.

¹Figures for age not stated included in "All ages" but not distributed among age groups.²Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes.³For method of computation, see Technical Notes.⁴Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision (ICD-10)*; see Technical Notes.⁵Figures include September 11, 2001-related deaths for which death certificates were filed as of October 24, 2002; see Technical Notes from "Deaths: Final Data for 2001," National Vital Statistics Reports, vol 52 no 3.⁶For the list of ICD-10 codes included, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 6. Number of deaths from selected causes, by age: United States, 2017

[Only selected causes of deaths are shown; therefore, subcategories do not add to totals; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	All ages	Age group (years)											Age not stated
		Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
All causes	2,813,503	22,335	3,880	5,571	32,025	60,215	79,796	170,142	372,006	531,610	657,759	878,035	129
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	6,118	2	–	4	7	20	48	178	529	1,192	1,834	2,304	–
Septicemia (A40–A41)	40,922	147	48	57	123	392	854	2,441	5,838	9,164	10,648	11,210	–
Viral hepatitis (B15–B19)	5,611	1	–	1	1	42	201	927	2,517	1,314	426	177	4
Human immunodeficiency virus (HIV) disease (B20–B24)	5,698	–	–	–	69	513	831	1,609	1,737	685	220	34	–
Malignant neoplasms (C00–C97)	599,108	57	325	855	1,374	3,616	10,900	39,266	114,810	168,458	155,917	103,521	9
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	10,126	–	–	4	14	54	189	962	2,638	2,969	1,987	1,309	–
Malignant neoplasm of esophagus (C15)	15,321	–	–	–	12	35	206	1,137	3,821	4,948	3,443	1,719	–
Malignant neoplasm of stomach (C16)	11,158	–	–	3	24	145	422	1,020	2,197	2,772	2,727	1,848	–
Malignant neoplasms of colon, rectum and anus (C18–C21)	53,447	–	–	1	40	342	1,453	4,976	10,398	13,011	12,447	10,779	–
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	27,106	–	14	21	21	110	338	1,847	7,754	8,580	5,657	2,762	2
Malignant neoplasm of pancreas (C25)	44,012	–	–	1	3	56	470	2,556	8,633	13,692	11,839	6,761	1
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	145,932	–	6	6	17	112	843	6,989	29,505	47,654	41,701	19,099	–
Malignant melanoma of skin (C43)	8,056	1	2	–	15	129	313	705	1,512	2,040	1,952	1,387	–
Malignant neoplasm of breast (C50)	42,510	–	–	–	13	385	1,873	4,978	9,024	10,272	8,472	7,493	–
Malignant neoplasm of cervix uteri (C53)	4,208	–	–	–	8	226	576	869	1,007	776	462	283	1
Malignant neoplasm of ovary (C56)	14,193	–	–	1	20	82	290	1,215	3,113	4,077	3,488	1,907	–
Malignant neoplasm of prostate (C61)	30,488	–	–	1	1	1	8	399	2,743	7,280	10,143	9,910	2
Malignant neoplasms of kidney and renal pelvis (C64–C65)	13,960	3	16	19	26	58	247	980	2,743	4,000	3,538	2,329	1
Malignant neoplasm of bladder (C67)	16,657	–	–	2	–	12	78	430	1,848	3,733	5,207	5,347	–
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	16,804	13	73	336	232	421	803	1,846	4,040	4,603	3,126	1,311	–
Non-Hodgkin lymphoma (C82–C85)	20,460	1	4	29	69	167	332	947	2,678	5,069	6,356	4,807	1
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	12,809	–	–	–	2	8	94	556	1,870	3,613	4,124	2,542	–
Leukemia (C91–C95)	23,359	19	110	186	310	367	541	1,115	2,839	5,481	7,036	5,355	–
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	15,824	41	44	62	80	143	204	567	1,528	3,108	4,735	5,312	–
Anemias (D50–D64)	5,382	15	24	24	69	159	177	250	523	867	1,245	2,029	–
Diabetes mellitus (E10–E14)	83,564	1	6	34	248	823	2,118	6,409	14,904	21,344	20,703	16,973	1
Nutritional deficiencies (E40–E64)	7,846	6	1	3	5	23	48	139	501	1,042	1,784	4,294	–
Obesity (E66)	7,740	–	1	5	65	438	904	1,478	2,124	1,726	762	236	1
Parkinson disease (G20–G21)	31,963	–	–	–	1	4	7	60	714	4,661	13,172	13,344	–
Alzheimer disease (G30)	121,404	–	–	–	–	–	11	95	1,189	7,281	32,309	80,517	2

See footnotes at end of table.

Table 6. Number of deaths from selected causes, by age: United States, 2017—Con.

[Only selected causes of deaths are shown; therefore, subcategories do not add to totals; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	All ages	Age group (years)											Age not stated
		Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Major cardiovascular diseases (I00–I78)	854,390	421	195	288	1,126	4,596	13,179	40,643	99,610	150,078	204,614	339,597	43
Diseases of heart (I00–I09,I11,I13,I20–I51)	647,457	304	127	179	913	3,681	10,401	32,658	80,102	116,633	151,249	251,170	40
Essential hypertension and hypertensive renal disease (I10,I12,I15)	35,316	1	1	1	10	119	514	1,642	3,991	5,856	8,211	14,969	1
Cerebrovascular diseases (I60–I69)	146,383	100	66	97	155	593	1,811	5,198	12,708	22,690	38,697	64,266	2
Atherosclerosis (I70)	5,547	3	–	–	3	5	15	108	381	711	1,320	3,001	–
Aortic aneurysm and dissection (I71)	9,928	1	–	1	28	141	308	650	1,323	2,127	2,709	2,640	–
Influenza and pneumonia (J09–J18)	55,672	157	104	113	190	405	782	2,013	5,045	8,784	13,802	24,276	1
Chronic lower respiratory diseases (J40–J47)	160,201	14	31	134	188	332	713	3,975	18,667	39,704	51,116	45,319	8
Pneumonitis due to solids and liquids (J69)	20,108	6	6	12	42	96	162	585	1,610	2,992	5,236	9,361	–
Chronic liver disease and cirrhosis (K70,K73–K74)	41,743	2	1	2	23	918	3,000	8,312	13,737	9,400	4,610	1,736	2
Alcoholic liver disease (K70)	22,246	–	–	–	14	753	2,266	5,786	8,126	3,976	1,097	227	1
Cholelithiasis and other disorders of gallbladder (K80–K82)	3,793	–	–	–	10	21	43	128	338	652	1,052	1,549	–
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	50,633	79	7	10	52	255	692	2,197	5,671	10,302	14,093	17,275	–
Pregnancy, childbirth and the puerperium (O00–O99)	1,208	...	...	1	168	512	328	192	4	1	1	1	–
Certain conditions originating in the perinatal period (P00–P96)	11,108	11,000	42	21	18	3	4	8	5	3	1	2	1
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	9,902	4,580	424	379	355	437	419	735	1,228	650	367	327	1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	32,750	2,692	274	108	501	1,189	1,326	1,938	3,216	3,927	5,269	12,292	18
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	169,936	1,317	1,267	1,578	13,441	25,669	22,828	24,461	23,408	15,038	16,661	24,252	16
Motor vehicle accidents (V02–V04,V09.0,V09.2,V12–V14,V19.0–V19.2,V19.4–V19.6,V20–V79,V80.3–V80.5,V81.0–V81.1,V82.0–V82.1,V83–V86,V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	40,231	91	453	855	6,864	7,024	5,324	5,660	5,828	3,823	2,836	1,473	–
Falls (W00–W19)	36,338	13	12	30	212	351	522	1,248	2,760	4,752	9,218	17,220	–
Accidental discharge of firearms (W32–W34)	486	1	31	30	117	93	64	50	47	30	18	5	–
Accidental drowning and submersion (W65–W74)	3,709	43	424	235	469	479	397	451	510	381	226	93	1
Accidental hanging, strangulation and suffocation (W75–W84)	6,946	1,106	110	71	101	175	211	441	811	1,048	1,246	1,626	–
Accidental exposure to smoke, fire and flames (X00–X09)	2,812	15	89	149	83	154	202	311	585	567	413	244	–
Accidental poisoning and exposure to noxious substances (X40–X49)	64,795	9	29	45	5,030	16,478	15,032	14,707	10,581	2,241	406	224	13
Intentional self-harm (suicide) (*U03,X60–X84,Y87.0) ¹	47,173	...	...	522	6,252	7,948	7,335	8,561	7,982	4,620	2,648	1,300	5
Intentional self-harm (suicide) by poisoning (X60–X69)	6,554	...	...	39	463	788	1,089	1,604	1,459	724	252	135	1
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	13,075	...	...	284	2,321	3,063	2,562	2,294	1,631	572	227	120	1
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	23,854	...	...	186	2,959	3,458	3,098	3,937	4,219	2,989	2,040	967	1

See footnotes at end of table.

Table 6. Number of deaths from selected causes, by age: United States, 2017—Con.

[Only selected causes of deaths are shown; therefore, subcategories do not add to totals; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	All ages	Age group (years)											Age not stated
		Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Assault (homicide) (*U01–*U02,X85–Y09,Y87.1) ¹	19,510	302	303	332	4,905	5,488	3,351	2,275	1,552	633	252	116	1
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ¹	14,542	12	44	204	4,391	4,594	2,561	1,447	824	322	109	34	–
Legal intervention (Y35,Y89.0)	616	–	–	1	97	192	148	114	41	18	3	2	–
Complications of medical and surgical care (Y40–Y84,Y88)	4,459	14	24	25	52	97	191	380	773	1,153	1,044	705	1
Drug-induced deaths ²	73,990	36	38	73	5,606	18,061	16,592	16,859	12,607	3,106	657	340	15
Alcohol-induced deaths ²	35,823	–	1	4	136	1,548	3,859	9,234	12,695	6,216	1,714	413	3
Injury by firearms ²	39,773	13	80	438	7,656	8,381	5,899	5,558	5,174	3,379	2,182	1,011	2

– Quantity zero.

... Category not applicable.

¹Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision (ICD–10)*; see Technical Notes.

²Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 7. Death rates for selected causes, by age: United States, 2017

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	All ages ¹	Age group (years)										
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
All causes	863.8	567.0	24.3	13.6	74.0	132.8	195.2	401.5	885.8	1,790.9	4,472.6	13,573.6
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	1.9	*	*	*	*	0.0	0.1	0.4	1.3	4.0	12.5	35.6
Septicemia (A40–A41)	12.6	3.7	0.3	0.1	0.3	0.9	2.1	5.8	13.9	30.9	72.4	173.3
Viral hepatitis (B15–B19)	1.7	*	*	*	*	0.1	0.5	2.2	6.0	4.4	2.9	2.7
Human immunodeficiency virus (HIV) disease . . . (B20–B24)	1.7	*	*	*	0.2	1.1	2.0	3.8	4.1	2.3	1.5	0.5
Malignant neoplasms (C00–C97)	183.9	1.4	2.0	2.1	3.2	8.0	26.7	92.7	273.4	567.5	1,060.2	1,600.3
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	3.1	*	*	*	*	0.1	0.5	2.3	6.3	10.0	13.5	20.2
Malignant neoplasm of esophagus (C15)	4.7	*	*	*	*	0.1	0.5	2.7	9.1	16.7	23.4	26.6
Malignant neoplasm of stomach (C16)	3.4	*	*	*	0.1	0.3	1.0	2.4	5.2	9.3	18.5	28.6
Malignant neoplasms of colon, rectum and anus (C18–C21)	16.4	*	*	*	0.1	0.8	3.6	11.7	24.8	43.8	84.6	166.6
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	8.3	*	*	0.1	0.0	0.2	0.8	4.4	18.5	28.9	38.5	42.7
Malignant neoplasm of pancreas (C25)	13.5	*	*	*	*	0.1	1.1	6.0	20.6	46.1	80.5	104.5
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	44.8	*	*	*	*	0.2	2.1	16.5	70.3	160.5	283.6	295.3
Malignant melanoma of skin (C43)	2.5	*	*	*	*	0.3	0.8	1.7	3.6	6.9	13.3	21.4
Malignant neoplasm of breast (C50)	13.1	*	*	*	*	0.8	4.6	11.7	21.5	34.6	57.6	115.8
Malignant neoplasm of cervix uteri (C53)	1.3	*	*	*	*	0.5	1.4	2.1	2.4	2.6	3.1	4.4
Malignant neoplasm of ovary (C56)	4.4	*	*	*	0.0	0.2	0.7	2.9	7.4	13.7	23.7	29.5
Malignant neoplasm of prostate (C61)	9.4	*	*	*	*	*	*	0.9	6.5	24.5	69.0	153.2
Malignant neoplasms of kidney and renal pelvis (C64–C65)	4.3	*	*	*	0.1	0.1	0.6	2.3	6.5	13.5	24.1	36.0
Malignant neoplasm of bladder (C67)	5.1	*	*	*	*	*	0.2	1.0	4.4	12.6	35.4	82.7
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	5.2	*	0.5	0.8	0.5	0.9	2.0	4.4	9.6	15.5	21.3	20.3
Non-Hodgkin lymphoma (C82–C85)	6.3	*	*	0.1	0.2	0.4	0.8	2.2	6.4	17.1	43.2	74.3
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	3.9	*	*	*	*	*	0.2	1.3	4.5	12.2	28.0	39.3
Leukemia (C91–C95)	7.2	*	0.7	0.5	0.7	0.8	1.3	2.6	6.8	18.5	47.8	82.8
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	4.9	1.0	0.3	0.2	0.2	0.3	0.5	1.3	3.6	10.5	32.2	82.1
Anemias (D50–D64)	1.7	*	0.2	0.1	0.2	0.4	0.4	0.6	1.2	2.9	8.5	31.4
Diabetes mellitus (E10–E14)	25.7	*	*	0.1	0.6	1.8	5.2	15.1	35.5	71.9	140.8	262.4
Nutritional deficiencies (E40–E64)	2.4	*	*	*	*	0.1	0.1	0.3	1.2	3.5	12.1	66.4
Obesity (E66)	2.4	*	*	*	0.2	1.0	2.2	3.5	5.1	5.8	5.2	3.6
Parkinson disease (G20–G21)	9.8	*	*	*	*	*	*	0.1	1.7	15.7	89.6	206.3
Alzheimer disease (G30)	37.3	*	*	*	*	*	*	0.2	2.8	24.5	219.7	1,244.7

See footnotes at end of table.

Table 7. Death rates for selected causes, by age: United States, 2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	All ages ¹	Age group (years)										
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
Major cardiovascular diseases (I00–I78)	262.3	10.7	1.2	0.7	2.6	10.1	32.2	95.9	237.2	505.6	1,391.3	5,249.9
Diseases of heart (I00–I09,I11,I13,I20–I51)	198.8	7.7	0.8	0.4	2.1	8.1	25.4	77.1	190.7	392.9	1,028.4	3,882.9
Essential hypertension and hypertensive renal disease (I10,I12,I15)	10.8	*	*	*	*	0.3	1.3	3.9	9.5	19.7	55.8	231.4
Cerebrovascular diseases (I60–I69)	44.9	2.5	0.4	0.2	0.4	1.3	4.4	12.3	30.3	76.4	263.1	993.5
Atherosclerosis (I70)	1.7	*	*	*	*	*	*	0.3	0.9	2.4	9.0	46.4
Aortic aneurysm and dissection (I71)	3.0	*	*	*	0.1	0.3	0.8	1.5	3.2	7.2	18.4	40.8
Influenza and pneumonia (J09–J18)	17.1	4.0	0.7	0.3	0.4	0.9	1.9	4.8	12.0	29.6	93.8	375.3
Chronic lower respiratory diseases (J40–J47)	49.2	*	0.2	0.3	0.4	0.7	1.7	9.4	44.4	133.8	347.6	700.6
Pneumonitis due to solids and liquids (J69)	6.2	*	*	*	0.1	0.2	0.4	1.4	3.8	10.1	35.6	144.7
Chronic liver disease and cirrhosis (K70,K73–K74)	12.8	*	*	*	0.1	2.0	7.3	19.6	32.7	31.7	31.3	26.8
Alcoholic liver disease (K70)	6.8	*	*	*	*	1.7	5.5	13.7	19.3	13.4	7.5	3.5
Cholelithiasis and other disorders of gallbladder (K80–K82)	1.2	*	*	*	*	0.0	0.1	0.3	0.8	2.2	7.2	23.9
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	15.5	2.0	*	*	0.1	0.6	1.7	5.2	13.5	34.7	95.8	267.1
Pregnancy, childbirth and the puerperium (O00–O99)	0.4	...	...	*	0.4	1.1	0.8	0.5	*	*	*	*
Certain conditions originating in the perinatal period (P00–P96)	3.4	279.2	0.3	0.1	*	*	*	*	*	*	*	*
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	3.0	116.3	2.7	0.9	0.8	1.0	1.0	1.7	2.9	2.2	2.5	5.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	10.1	68.3	1.7	0.3	1.2	2.6	3.2	4.6	7.7	13.2	35.8	190.0
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	52.2	33.4	7.9	3.8	31.1	56.6	55.8	57.7	55.7	50.7	113.3	374.9
Motor vehicle accidents (V02–V04,V09.0, V09.2,V12–V14,V19.0–V19.2,V19.4–V19.6, V20–V79,V80.3–V80.5,V81.0–V81.1,V82.0–V82.1, V83–V86,V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	12.4	2.3	2.8	2.1	15.9	15.5	13.0	13.4	13.9	12.9	19.3	22.8
Falls (W00–W19)	11.2	*	*	0.1	0.5	0.8	1.3	2.9	6.6	16.0	62.7	266.2
Accidental discharge of firearms (W32–W34)	0.1	*	0.2	0.1	0.3	0.2	0.2	0.1	0.1	0.1	*	*
Accidental drowning and submersion (W65–W74)	1.1	1.1	2.7	0.6	1.1	1.1	1.0	1.1	1.2	1.3	1.5	1.4
Accidental hanging, strangulation and suffocation (W75–W84)	2.1	28.1	0.7	0.2	0.2	0.4	0.5	1.0	1.9	3.5	8.5	25.1
Accidental exposure to smoke, fire and flames (X00–X09)	0.9	*	0.6	0.4	0.2	0.3	0.5	0.7	1.4	1.9	2.8	3.8
Accidental poisoning and exposure to noxious substances (X40–X49)	19.9	*	0.2	0.1	11.6	36.3	36.8	34.7	25.2	7.5	2.8	3.5

See footnotes at end of table.

Table 7. Death rates for selected causes, by age: United States, 2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	All ages ¹	Age group (years)										
		Under 1 ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
Intentional self-harm (suicide) (*U03,X60–X84,Y87.0) ³	14.5	...	...	1.3	14.5	17.5	17.9	20.2	19.0	15.6	18.0	20.1
Intentional self-harm (suicide) by poisoning(X60–X69)	2.0	...	...	0.1	1.1	1.7	2.7	3.8	3.5	2.4	1.7	2.1
Intentional self-harm (suicide) by hanging, strangulation and suffocation(X70)	4.0	...	...	0.7	5.4	6.8	6.3	5.4	3.9	1.9	1.5	1.9
Intentional self-harm (suicide) by discharge of firearms(X72–X74)	7.3	...	...	0.5	6.8	7.6	7.6	9.3	10.0	10.1	13.9	14.9
Assault (homicide) (*U01–*U02,X85–Y09,Y87.1) ³	6.0	7.7	1.9	0.8	11.3	12.1	8.2	5.4	3.7	2.1	1.7	1.8
Assault (homicide) by discharge of firearms(*U01.4,X93–X95) ³	4.5	*	0.3	0.5	10.2	10.1	6.3	3.4	2.0	1.1	0.7	0.5
Legal intervention(Y35,Y89.0)	0.2	*	*	*	0.2	0.4	0.4	0.3	0.1	*	*	*
Complications of medical and surgical care(Y40–Y84,Y88)	1.4	*	0.2	0.1	0.1	0.2	0.5	0.9	1.8	3.9	7.1	10.9
Drug-induced deaths ⁴	22.7	0.9	0.2	0.2	13.0	39.8	40.6	39.8	30.0	10.5	4.5	5.3
Alcohol-induced deaths ⁴	11.0	*	*	*	0.3	3.4	9.4	21.8	30.2	20.9	11.7	6.4
Injury by firearms ⁴	12.2	*	0.5	1.1	17.7	18.5	14.4	13.1	12.3	11.4	14.8	15.6

* Rate does not meet NCHS standards of reliability; see Technical Notes.

0.0 Quantity more than zero but less than 0.05.

... Category not applicable.

¹Figures for age not stated are included in "All ages" but are not distributed among age groups.

²Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes.

³Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes.

⁴Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2017

[Includes selected causes of deaths; therefore, subcategories do not add to totals; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All causes	2,813,503	1,439,111	1,374,392	2,179,857	1,102,838	1,077,019	335,667	174,403	161,264	19,198	10,502	8,696	72,598	37,236	35,362	197,249	108,579	88,670
Enterocolitis due to <i>Clostridium</i> <i>difficile</i> (A04.7)	6,118	2,481	3,637	4,975	2,002	2,973	557	226	331	49	18	31	116	47	69	405	178	227
Septicemia (A40–A41)	40,922	19,603	21,319	30,198	14,419	15,779	6,568	3,052	3,516	295	130	165	879	460	419	2,869	1,473	1,396
Viral hepatitis (B15–B19)	5,611	3,685	1,926	3,528	2,290	1,238	818	555	263	71	45	26	262	161	101	876	591	285
Human immunodeficiency virus (HIV) disease (B20–B24)	5,698	4,207	1,491	1,750	1,461	289	2,965	1,963	1,002	35	27	8	64	56	8	816	645	171
Malignant neoplasms (C00–C97)	599,108	315,147	283,961	465,679	247,022	218,657	69,872	35,261	34,611	3,257	1,725	1,532	18,257	9,243	9,014	40,550	21,034	19,516
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	10,126	7,235	2,891	7,995	5,680	2,315	1,058	788	270	57	43	14	386	276	110	596	425	171
Malignant neoplasm of esophagus (C15)	15,321	12,314	3,007	12,875	10,484	2,391	1,246	869	377	79	59	20	311	242	69	762	619	143
Malignant neoplasm of stomach (C16)	11,158	6,680	4,478	6,322	3,908	2,414	1,867	1,118	749	94	59	35	960	516	444	1,894	1,066	828
Malignant neoplasms of colon, rectum and anus (C18–C21)	53,447	28,093	25,354	39,790	20,736	19,054	7,214	3,793	3,421	358	204	154	1,801	959	842	4,146	2,318	1,828
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	27,106	18,246	8,860	17,862	12,025	5,837	3,714	2,561	1,153	259	174	85	1,643	1,079	564	3,528	2,332	1,196
Malignant neoplasm of pancreas (C25)	44,012	22,919	21,093	33,940	18,027	15,913	5,305	2,574	2,731	200	109	91	1,408	670	738	3,069	1,499	1,570
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	145,932	78,743	67,189	120,048	63,989	56,059	15,392	8,727	6,665	790	422	368	3,870	2,202	1,668	5,457	3,184	2,273
Malignant melanoma of skin (C43)	8,056	5,312	2,744	7,582	5,055	2,527	132	56	76	18	13	5	57	28	29	251	149	102
Malignant neoplasm of breast (C50)	42,510	510	42,000	31,427	397	31,030	6,436	79	6,357	202	1	201	1,345	12	1,333	3,000	17	2,983
Malignant neoplasm of cervix uteri (C53)	4,208	...	4,208	2,560	...	2,560	793	...	793	31	...	31	203	...	203	606	...	606
Malignant neoplasm of ovary (C56)	14,193	...	14,193	11,101	...	11,101	1,389	...	1,389	80	...	80	496	...	496	1,107	...	1,107
Malignant neoplasm of prostate (C61)	30,488	30,488	...	22,660	22,660	...	5,000	5,000	...	136	136	...	609	609	...	2,011	2,011	...
Malignant neoplasms of kidney and renal pelvis (C64–C65)	13,960	9,037	4,923	10,881	7,064	3,817	1,386	886	500	107	71	36	304	194	110	1,252	803	449
Malignant neoplasm of bladder (C67)	16,657	11,888	4,769	14,207	10,337	3,870	1,257	736	521	61	43	18	288	195	93	804	543	261
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	16,804	9,389	7,415	13,883	7,815	6,068	1,105	581	524	68	33	35	424	235	189	1,297	710	587
Non-Hodgkin lymphoma (C82–C85)	20,460	11,648	8,812	16,548	9,442	7,106	1,564	890	674	82	47	35	640	375	265	1,578	862	716
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	12,809	7,142	5,667	9,171	5,237	3,934	2,340	1,198	1,142	74	38	36	307	168	139	894	490	404
Leukemia (C91–C95)	23,359	13,520	9,839	18,832	11,034	7,798	1,959	1,017	942	92	55	37	661	397	264	1,755	979	776

See footnotes at end of table.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Includes selected causes of deaths; therefore, subcategories do not add to totals; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	15,824	8,502	7,322	13,071	7,067	6,004	1,344	682	662	61	32	29	434	230	204	882	466	416
Anemias (D50–D64)	5,382	2,395	2,987	3,800	1,681	2,119	1,078	488	590	26	10	16	132	59	73	330	151	179
Diabetes mellitus (E10–E14)	83,564	46,302	37,262	55,116	31,343	23,773	14,798	7,494	7,304	1,114	624	490	3,047	1,612	1,435	9,216	5,054	4,162
Nutritional deficiencies (E40–E64)	7,846	2,883	4,963	6,194	2,202	3,992	933	387	546	50	22	28	196	81	115	460	186	274
Obesity (E66)	7,740	4,032	3,708	5,577	2,958	2,619	1,397	645	752	79	48	31	63	38	25	591	329	262
Parkinson disease (G20–G21)	31,963	19,388	12,575	27,582	16,841	10,741	1,518	894	624	114	68	46	869	489	380	1,818	1,060	758
Alzheimer disease (G30)	121,404	37,325	84,079	101,876	31,577	70,299	8,991	2,476	6,515	376	120	256	2,583	790	1,793	7,383	2,297	5,086
Major cardiovascular diseases . . (I00–I78)	854,390	438,041	416,349	663,092	338,319	324,773	106,397	54,323	52,074	4,524	2,501	2,023	23,065	11,861	11,204	54,352	29,171	25,181
Diseases of heart (I00–I09,I11,I13,I20–I51)	647,457	347,879	299,578	508,485	272,428	236,057	78,161	41,411	36,750	3,472	2,033	1,439	15,490	8,418	7,072	39,402	22,009	17,393
Essential hypertension and hypertensive renal disease (I10,I12,I15)	35,316	15,749	19,567	24,465	10,696	13,769	6,273	2,874	3,399	190	97	93	1,472	654	818	2,799	1,354	1,445
Cerebrovascular diseases . . . (I60–I69)	146,383	61,645	84,738	110,038	45,078	64,960	19,088	8,566	10,522	737	322	415	5,430	2,442	2,988	10,775	5,073	5,702
Atherosclerosis (I70)	5,547	2,385	3,162	4,627	1,970	2,657	467	200	267	15	5	10	126	55	71	293	148	145
Aortic aneurysm and dissection . . (I71)	9,928	5,798	4,130	8,015	4,626	3,389	1,039	613	426	43	23	20	343	204	139	462	310	152
Influenza and pneumonia (J09–J18)	55,672	26,558	29,114	43,397	20,515	22,882	5,556	2,682	2,874	391	186	205	2,286	1,155	1,131	3,851	1,911	1,940
Chronic lower respiratory diseases (J40–J47)	160,201	75,005	85,196	139,833	64,673	75,160	11,217	5,605	5,612	939	441	498	2,063	1,198	865	5,599	2,759	2,840
Pneumonitis due to solids and liquids (J69)	20,108	11,350	8,758	16,449	9,352	7,097	1,928	1,019	909	92	50	42	549	317	232	1,022	567	455
Chronic liver disease and cirrhosis (K70,K73–K74)	41,743	26,451	15,292	30,223	18,866	11,357	3,290	2,064	1,226	1,047	559	488	725	468	257	6,286	4,369	1,917
Alcoholic liver disease (K70)	22,246	15,470	6,776	15,910	10,815	5,095	1,660	1,087	573	782	445	337	302	243	59	3,489	2,804	685
Cholelithiasis and other disorders of gallbladder (K80–K82)	3,793	1,898	1,895	2,866	1,429	1,437	344	160	184	34	22	12	155	91	64	382	190	192
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	50,633	25,744	24,889	35,191	18,187	17,004	9,542	4,555	4,987	333	154	179	1,534	789	745	3,928	1,988	1,940
Pregnancy, childbirth and the puerperium (O00–O99)	1,208	...	1,208	561	...	561	383	...	383	17	...	17	41	...	41	204	...	204

See footnotes at end of table.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Includes selected causes of deaths; therefore, subcategories do not add to totals; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Certain conditions originating in the perinatal period (P00–P96)	11,108	6,303	4,805	4,264	2,422	1,842	3,637	2,080	1,557	117	61	56	536	308	228	2,409	1,356	1,053
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	9,902	5,198	4,704	6,044	3,198	2,846	1,597	834	763	93	47	46	333	175	158	1,791	918	873
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	32,750	15,391	17,359	24,949	11,184	13,765	4,510	2,302	2,208	269	149	120	629	328	301	2,237	1,327	910
Accidents (unintentional injuries) (V01–X59, Y85–Y86)	169,936	109,722	60,214	127,029	79,280	47,749	19,869	13,844	6,025	2,229	1,448	781	3,256	2,074	1,182	16,757	12,455	4,302
Motor vehicle accidents (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	40,231	28,629	11,602	26,177	18,356	7,821	6,109	4,510	1,599	799	522	277	946	592	354	6,076	4,549	1,527
Falls (W00–W19)	36,338	18,392	17,946	31,455	15,511	15,944	1,525	873	652	237	136	101	917	503	414	2,122	1,314	808
Accidental discharge of firearms (W32–W34)	486	423	63	312	263	49	105	97	8	10	7	3	7	7	–	50	48	2
Accidental drowning and submersion (W65–W74)	3,709	2,802	907	2,312	1,698	614	591	465	126	62	47	15	217	158	59	512	419	93
Accidental hanging, strangulation and suffocation (W75–W84)	6,946	3,966	2,980	5,027	2,870	2,157	1,125	616	509	79	50	29	153	90	63	539	326	213
Accidental exposure to smoke, fire and flames (X00–X09)	2,812	1,666	1,146	1,990	1,164	826	520	300	220	48	30	18	39	17	22	196	138	58
Accidental poisoning and exposure to noxious substances (X40–X49)	64,795	44,545	20,250	48,568	32,538	16,030	8,266	5,894	2,372	780	502	278	669	518	151	6,051	4,728	1,323
Intentional self-harm (suicide) (*U03, X60–X84, Y87.0) ⁵	47,173	36,782	10,391	38,106	29,708	8,398	2,940	2,324	616	602	448	154	1,414	990	424	3,933	3,175	758
Intentional self-harm (suicide) by poisoning (X60–X69)	6,554	3,295	3,259	5,666	2,848	2,818	301	143	158	48	24	24	162	81	81	348	184	164
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	13,075	10,175	2,900	9,497	7,467	2,030	836	630	206	284	193	91	665	432	233	1,729	1,400	329
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	23,854	20,615	3,239	20,328	17,516	2,812	1,444	1,282	162	229	197	32	367	312	55	1,423	1,252	171

See footnotes at end of table.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Includes selected causes of deaths; therefore, subcategories do not add to totals; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Assault (homicide) (*U01–*U02, X85–Y09, Y87.1) ⁵	19,510	15,524	3,986	5,747	3,815	1,932	9,908	8,643	1,265	266	199	67	347	234	113	3,186	2,588	598
Assault (homicide) by discharge of firearms (*U01.4, X93–X95) ⁵	14,542	12,220	2,322	3,549	2,466	1,083	8,371	7,546	825	124	99	25	197	144	53	2,268	1,936	332
Legal intervention (Y35, Y89.0)	616	586	30	312	292	20	152	148	4	21	21	–	13	13	–	118	112	6
Complications of medical and surgical care (Y40–Y84, Y88)	4,459	2,303	2,156	3,333	1,727	1,606	650	330	320	43	21	22	113	56	57	311	164	147
Drug-induced deaths ⁶	73,990	48,967	25,023	56,232	36,166	20,066	9,406	6,602	2,804	731	444	287	803	583	220	6,322	4,797	1,525
Alcohol-induced deaths ⁶	35,823	25,911	9,912	26,064	18,486	7,578	3,022	2,172	850	1,206	753	453	498	398	100	4,817	3,934	883
Injury by firearms ⁶	39,773	34,062	5,711	24,690	20,686	4,004	10,117	9,107	1,010	394	333	61	588	479	109	3,884	3,369	515

... Category not applicable.

– Quantity zero.

¹Includes deaths for origin not stated; see Technical Notes.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Includes Aleut and Eskimo persons.

⁴Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

⁵Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes.

⁶Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2017

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	All causes	863.8	897.2	831.4	1,083.2	1,111.4	1,055.8	787.5	854.2	726.1	703.4	784.4	625.5	359.8	386.2	335.6	334.6	364.6	304.0
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	1.9	1.5	2.2	2.5	2.0	2.9	1.3	1.1	1.5	1.8	*	2.2	0.6	0.5	0.7	0.7	0.6	0.8
Septicemia (A40–A41)	12.6	12.2	12.9	15.0	14.5	15.5	15.4	14.9	15.8	10.8	9.7	11.9	4.4	4.8	4.0	4.9	4.9	4.8
Viral hepatitis (B15–B19)	1.7	2.3	1.2	1.8	2.3	1.2	1.9	2.7	1.2	2.6	3.4	1.9	1.3	1.7	1.0	1.5	2.0	1.0
Human immunodeficiency virus (HIV) disease (B20–B24)	1.7	2.6	0.9	0.9	1.5	0.3	7.0	9.6	4.5	1.3	2.0	*	0.3	0.6	*	1.4	2.2	0.6
Malignant neoplasms (C00–C97)	183.9	196.5	171.8	231.4	248.9	214.3	163.9	172.7	155.8	119.3	128.8	110.2	90.5	95.9	85.6	68.8	70.6	66.9
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	3.1	4.5	1.7	4.0	5.7	2.3	2.5	3.9	1.2	2.1	3.2	*	1.9	2.9	1.0	1.0	1.4	0.6
Malignant neoplasm of esophagus (C15)	4.7	7.7	1.8	6.4	10.6	2.3	2.9	4.3	1.7	2.9	4.4	1.4	1.5	2.5	0.7	1.3	2.1	0.5
Malignant neoplasm of stomach (C16)	3.4	4.2	2.7	3.1	3.9	2.4	4.4	5.5	3.4	3.4	4.4	2.5	4.8	5.4	4.2	3.2	3.6	2.8
Malignant neoplasms of colon, rectum and anus (C18–C21)	16.4	17.5	15.3	19.8	20.9	18.7	16.9	18.6	15.4	13.1	15.2	11.1	8.9	9.9	8.0	7.0	7.8	6.3
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	8.3	11.4	5.4	8.9	12.1	5.7	8.7	12.5	5.2	9.5	13.0	6.1	8.1	11.2	5.4	6.0	7.8	4.1
Malignant neoplasm of pancreas (C25)	13.5	14.3	12.8	16.9	18.2	15.6	12.4	12.6	12.3	7.3	8.1	6.5	7.0	6.9	7.0	5.2	5.0	5.4
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	44.8	49.1	40.6	59.7	64.5	55.0	36.1	42.7	30.0	28.9	31.5	26.5	19.2	22.8	15.8	9.3	10.7	7.8
Malignant melanoma of skin (C43)	2.5	3.3	1.7	3.8	5.1	2.5	0.3	0.3	0.3	*	*	*	0.3	0.3	0.3	0.4	0.5	0.3
Malignant neoplasm of breast (C50)	13.1	0.3	25.4	15.6	0.4	30.4	15.1	0.4	28.6	7.4	*	14.5	6.7	*	12.7	5.1	*	10.2
Malignant neoplasm of cervix uteri (C53)	1.3	...	2.5	1.3	...	2.5	1.9	...	3.6	1.1	...	2.2	1.0	...	1.9	1.0	...	2.1
Malignant neoplasm of ovary (C56)	4.4	...	8.6	5.5	...	10.9	3.3	...	6.3	2.9	...	5.8	2.5	...	4.7	1.9	...	3.8
Malignant neoplasm of prostate (C61)	9.4	19.0	...	11.3	22.8	...	11.7	24.5	...	5.0	10.2	...	3.0	6.3	...	3.4	6.8	...
Malignant neoplasms of kidney and renal pelvis (C64–C65)	4.3	5.6	3.0	5.4	7.1	3.7	3.3	4.3	2.3	3.9	5.3	2.6	1.5	2.0	1.0	2.1	2.7	1.5
Malignant neoplasm of bladder (C67)	5.1	7.4	2.9	7.1	10.4	3.8	2.9	3.6	2.3	2.2	3.2	*	1.4	2.0	0.9	1.4	1.8	0.9
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	5.2	5.9	4.5	6.9	7.9	5.9	2.6	2.8	2.4	2.5	2.5	2.5	2.1	2.4	1.8	2.2	2.4	2.0
Non-Hodgkin lymphoma (C82–C85)	6.3	7.3	5.3	8.2	9.5	7.0	3.7	4.4	3.0	3.0	3.5	2.5	3.2	3.9	2.5	2.7	2.9	2.5
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	3.9	4.5	3.4	4.6	5.3	3.9	5.5	5.9	5.1	2.7	2.8	2.6	1.5	1.7	1.3	1.5	1.6	1.4
Leukemia (C91–C95)	7.2	8.4	6.0	9.4	11.1	7.6	4.6	5.0	4.2	3.4	4.1	2.7	3.3	4.1	2.5	3.0	3.3	2.7

See footnotes at end of table.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior..... (D00–D48)	4.9	5.3	4.4	6.5	7.1	5.9	3.2	3.3	3.0	2.2	2.4	2.1	2.2	2.4	1.9	1.5	1.6	1.4
Anemias..... (D50–D64)	1.7	1.5	1.8	1.9	1.7	2.1	2.5	2.4	2.7	1.0	*	*	0.7	0.6	0.7	0.6	0.5	0.6
Diabetes mellitus..... (E10–E14)	25.7	28.9	22.5	27.4	31.6	23.3	34.7	36.7	32.9	40.8	46.6	35.2	15.1	16.7	13.6	15.6	17.0	14.3
Nutritional deficiencies..... (E40–E64)	2.4	1.8	3.0	3.1	2.2	3.9	2.2	1.9	2.5	1.8	1.6	2.0	1.0	0.8	1.1	0.8	0.6	0.9
Obesity..... (E66)	2.4	2.5	2.2	2.8	3.0	2.6	3.3	3.2	3.4	2.9	3.6	2.2	0.3	0.4	0.2	1.0	1.1	0.9
Parkinson disease..... (G20–G21)	9.8	12.1	7.6	13.7	17.0	10.5	3.6	4.4	2.8	4.2	5.1	3.3	4.3	5.1	3.6	3.1	3.6	2.6
Alzheimer disease..... (G30)	37.3	23.3	50.9	50.6	31.8	68.9	21.1	12.1	29.3	13.8	9.0	18.4	12.8	8.2	17.0	12.5	7.7	17.4
Major cardiovascular diseases..... (I00–I78)	262.3	273.1	251.9	329.5	340.9	318.4	249.6	266.1	234.5	165.8	186.8	145.5	114.3	123.0	106.3	92.2	98.0	86.3
Diseases of heart..... (I00–I09,I11,I13,I20–I51)	198.8	216.9	181.2	252.7	274.5	231.4	183.4	202.8	165.5	127.2	151.8	103.5	76.8	87.3	67.1	66.8	73.9	59.6
Essential hypertension and hypertensive renal disease..... (I10,I12,I15)	10.8	9.8	11.8	12.2	10.8	13.5	14.7	14.1	15.3	7.0	7.2	6.7	7.3	6.8	7.8	4.7	4.5	5.0
Cerebrovascular diseases..... (I60–I69)	44.9	38.4	51.3	54.7	45.4	63.7	44.8	42.0	47.4	27.0	24.0	29.9	26.9	25.3	28.4	18.3	17.0	19.5
Atherosclerosis..... (I70)	1.7	1.5	1.9	2.3	2.0	2.6	1.1	1.0	1.2	*	*	*	0.6	0.6	0.7	0.5	0.5	0.5
Aortic aneurysm and dissection..... (I71)	3.0	3.6	2.5	4.0	4.7	3.3	2.4	3.0	1.9	1.6	1.7	1.4	1.7	2.1	1.3	0.8	1.0	0.5
Influenza and pneumonia..... (J09–J18)	17.1	16.6	17.6	21.6	20.7	22.4	13.0	13.1	12.9	14.3	13.9	14.7	11.3	12.0	10.7	6.5	6.4	6.7
Chronic lower respiratory diseases... (J40–J47)	49.2	46.8	51.5	69.5	65.2	73.7	26.3	27.5	25.3	34.4	32.9	35.8	10.2	12.4	8.2	9.5	9.3	9.7
Pneumonitis due to solids and liquids... (J69)	6.2	7.1	5.3	8.2	9.4	7.0	4.5	5.0	4.1	3.4	3.7	3.0	2.7	3.3	2.2	1.7	1.9	1.6
Chronic liver disease and cirrhosis..... (K70,K73–K74)	12.8	16.5	9.3	15.0	19.0	11.1	7.7	10.1	5.5	38.4	41.8	35.1	3.6	4.9	2.4	10.7	14.7	6.6
Alcoholic liver disease..... (K70)	6.8	9.6	4.1	7.9	10.9	5.0	3.9	5.3	2.6	28.7	33.2	24.2	1.5	2.5	0.6	5.9	9.4	2.3
Cholelithiasis and other disorders of gallbladder..... (K80–K82)	1.2	1.2	1.1	1.4	1.4	1.4	0.8	0.8	0.8	1.2	1.6	*	0.8	0.9	0.6	0.6	0.6	0.7
Nephritis, nephrotic syndrome and nephrosis... (N00–N07,N17–N19,N25–N27)	15.5	16.0	15.1	17.5	18.3	16.7	22.4	22.3	22.5	12.2	11.5	12.9	7.6	8.2	7.1	6.7	6.7	6.7
Pregnancy, childbirth and the puerperium..... (O00–O99)	0.4	...	0.7	0.3	...	0.5	0.9	...	1.7	*	...	*	0.2	...	0.4	0.3	...	0.7
Certain conditions originating in the perinatal period..... (P00–P96)	3.4	3.9	2.9	2.1	2.4	1.8	8.5	10.2	7.0	4.3	4.6	4.0	2.7	3.2	2.2	4.1	4.6	3.6
Congenital malformations, deformations and chromosomal abnormalities..... (Q00–Q99)	3.0	3.2	2.8	3.0	3.2	2.8	3.7	4.1	3.4	3.4	3.5	3.3	1.7	1.8	1.5	3.0	3.1	3.0

See footnotes at end of table.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	10.1	9.6	10.5	12.4	11.3	13.5	10.6	11.3	9.9	9.9	11.1	8.6	3.1	3.4	2.9	3.8	4.5	3.1
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	52.2	68.4	36.4	63.1	79.9	46.8	46.6	67.8	27.1	81.7	108.1	56.2	16.1	21.5	11.2	28.4	41.8	14.7
Motor vehicle accidents (V02–V04, V09.0,V09.2,V12–V14,V19.0–V19.2, V19.4–V19.6,V20–V79,V80.3–V80.5, V81.0–V81.1,V82.0–V82.1,V83–V86, V87.0–V87.8,V88.0–V88.8, V89.0,V89.2)	12.4	17.8	7.0	13.0	18.5	7.7	14.3	22.1	7.2	29.3	39.0	19.9	4.7	6.1	3.4	10.3	15.3	5.2
Falls (W00–W19)	11.2	11.5	10.9	15.6	15.6	15.6	3.6	4.3	2.9	8.7	10.2	7.3	4.5	5.2	3.9	3.6	4.4	2.8
Accidental discharge of firearms (W32–W34)	0.1	0.3	0.0	0.2	0.3	0.0	0.2	0.5	*	*	*	*	*	*	*	0.1	0.2	*
Accidental drowning and submersion (W65–W74)	1.1	1.7	0.5	1.1	1.7	0.6	1.4	2.3	0.6	2.3	3.5	*	1.1	1.6	0.6	0.9	1.4	0.3
Accidental hanging, strangulation and suffocation (W75–W84)	2.1	2.5	1.8	2.5	2.9	2.1	2.6	3.0	2.3	2.9	3.7	2.1	0.8	0.9	0.6	0.9	1.1	0.7
Accidental exposure to smoke, fire and flames (X00–X09)	0.9	1.0	0.7	1.0	1.2	0.8	1.2	1.5	1.0	1.8	2.2	*	0.2	*	0.2	0.3	0.5	0.2
Accidental poisoning and exposure to noxious substances (X40–X49)	19.9	27.8	12.2	24.1	32.8	15.7	19.4	28.9	10.7	28.6	37.5	20.0	3.3	5.4	1.4	10.3	15.9	4.5
Intentional self-harm (suicide) (*U03, X60–X84,Y87.0) ⁵	14.5	22.9	6.3	18.9	29.9	8.2	6.9	11.4	2.8	22.1	33.5	11.1	7.0	10.3	4.0	6.7	10.7	2.6
Intentional self-harm (suicide) by poisoning (X60–X69)	2.0	2.1	2.0	2.8	2.9	2.8	0.7	0.7	0.7	1.8	1.8	1.7	0.8	0.8	0.8	0.6	0.6	0.6
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	4.0	6.3	1.8	4.7	7.5	2.0	2.0	3.1	0.9	10.4	14.4	6.5	3.3	4.5	2.2	2.9	4.7	1.1
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	7.3	12.9	2.0	10.1	17.7	2.8	3.4	6.3	0.7	8.4	14.7	2.3	1.8	3.2	0.5	2.4	4.2	0.6
Assault (homicide) (*U01–*U02, X85–Y09,Y87.1) ⁵	6.0	9.7	2.4	2.9	3.8	1.9	23.2	42.3	5.7	9.7	14.9	4.8	1.7	2.4	1.1	5.4	8.7	2.1
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ⁵	4.5	7.6	1.4	1.8	2.5	1.1	19.6	37.0	3.7	4.5	7.4	1.8	1.0	1.5	0.5	3.8	6.5	1.1

See footnotes at end of table.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Legal intervention (Y35,Y89.0)	0.2	0.4	0.0	0.2	0.3	0.0	0.4	0.7	*	0.8	1.6	*	*	*	*	0.2	0.4
Complications of medical and surgical care (Y40–Y84,Y88)	1.4	1.4	1.3	1.7	1.7	1.6	1.5	1.6	1.4	1.6	1.6	1.6	0.6	0.6	0.5	0.5	0.6	0.5
Drug-induced deaths ⁶	22.7	30.5	15.1	27.9	36.4	19.7	22.1	32.3	12.6	26.8	33.2	20.6	4.0	6.0	2.1	10.7	16.1	5.2
Alcohol-induced deaths ⁶	11.0	16.2	6.0	13.0	18.6	7.4	7.1	10.6	3.8	44.2	56.2	32.6	2.5	4.1	0.9	8.2	13.2	3.0
Injury by firearms ⁶	12.2	21.2	3.5	12.3	20.8	3.9	23.7	44.6	4.5	14.4	24.9	4.4	2.9	5.0	1.0	6.6	11.3	1.8

* Rate does not meet NCHS standards of reliability; see Technical Notes.

... Category not applicable.

0.0 Quantity more than zero but less than 0.05.

¹Includes deaths for origin not stated; see Technical Notes.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Includes Aleut and Eskimo persons.

⁴Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

⁵Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes.

⁶Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2017

[Age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All causes.....	731.9	864.5	619.7	755.0	885.1	642.8	881.0	1,083.3	728.0	800.2	943.9	674.0	395.3	470.1	336.4	524.7	631.8	434.2
Enterocolitis due to <i>Clostridium difficile</i> . (A04.7)	1.6	1.5	1.6	1.6	1.6	1.7	1.5	1.5	1.5	2.3	*	2.6	0.6	0.7	0.6	1.2	1.3	1.2
Septicemia..... (A40-A41)	10.6	11.7	9.7	10.3	11.3	9.5	17.4	19.8	15.8	12.1	11.4	12.5	4.8	5.9	4.0	7.9	9.1	6.9
Viral hepatitis..... (B15-B19)	1.4	1.9	0.9	1.2	1.6	0.9	1.8	2.7	1.0	2.5	3.3	1.7	1.3	1.8	0.9	2.0	2.7	1.3
Human immunodeficiency virus (HIV) disease..... (B20-B24)	1.6	2.4	0.8	0.7	1.2	0.3	6.9	9.9	4.4	1.3	2.1	*	0.3	0.6	*	1.7	2.7	0.7
Malignant neoplasms..... (C00-C97)	152.5	181.1	131.4	157.9	186.6	136.2	178.0	219.8	151.9	130.0	152.2	112.5	95.2	112.2	82.9	108.1	129.5	93.0
Malignant neoplasms of lip, oral cavity and pharynx..... (C00-C14)	2.5	4.0	1.3	2.7	4.2	1.4	2.5	4.4	1.2	2.0	3.2	*	1.9	3.1	1.0	1.6	2.5	0.8
Malignant neoplasm of esophagus..... (C15)	3.8	6.8	1.4	4.3	7.7	1.5	3.0	5.1	1.6	2.7	4.4	1.3	1.6	2.8	0.7	2.0	3.6	0.7
Malignant neoplasm of stomach..... (C16)	2.9	3.8	2.1	2.2	3.0	1.5	4.9	7.1	3.4	4.0	5.7	2.6	5.0	6.3	4.1	4.9	6.2	3.9
Malignant neoplasms of colon, rectum and anus..... (C18-C21)	13.7	16.2	11.7	13.7	15.9	11.8	18.4	23.0	15.1	14.5	17.2	12.0	9.4	11.4	7.8	10.9	13.7	8.7
Malignant neoplasms of liver and intrahepatic bile ducts..... (C22)	6.7	9.8	4.1	5.9	8.6	3.6	8.7	13.6	4.9	9.7	14.0	6.2	8.4	12.4	5.3	9.2	13.0	5.9
Malignant neoplasm of pancreas..... (C25)	11.1	12.9	9.6	11.3	13.3	9.6	13.5	15.3	12.0	7.9	9.3	6.8	7.4	8.0	7.0	8.4	9.0	7.9
Malignant neoplasms of trachea, bronchus and lung..... (C33-C34)	36.6	44.4	30.6	39.9	47.1	34.3	38.8	53.4	28.9	31.3	37.7	26.2	20.4	27.0	15.5	15.6	21.2	11.5
Malignant melanoma of skin..... (C43)	2.1	3.1	1.3	2.7	3.9	1.7	0.3	0.3	0.4	*	*	*	0.3	0.4	0.2	0.6	0.8	0.5
Malignant neoplasm of breast..... (C50)	11.0	0.3	19.9	10.9	0.3	20.0	16.2	0.5	27.8	8.1	*	14.8	6.6	*	11.8	7.3	*	13.4
Malignant neoplasm of cervix uteri..... (C53)	1.2	...	2.2	1.0	...	2.0	1.9	...	3.5	1.2	...	2.3	1.0	...	1.8	1.3	...	2.5
Malignant neoplasm of ovary..... (C56)	3.6	...	6.6	3.8	...	7.0	3.5	...	6.0	2.9	...	5.4	2.4	...	4.4	2.8	...	5.2
Malignant neoplasm of prostate..... (C61)	7.8	18.7	...	7.5	17.8	...	13.9	36.8	...	6.2	14.4	...	3.4	8.4	...	6.3	15.4	...
Malignant neoplasms of kidney and renal pelvis..... (C64-C65)	3.5	5.1	2.2	3.7	5.3	2.3	3.6	5.4	2.3	4.3	6.1	2.8	1.6	2.3	1.0	3.3	4.7	2.2
Malignant neoplasm of bladder..... (C67)	4.3	7.2	2.1	4.7	8.0	2.2	3.5	5.2	2.4	2.7	4.4	*	1.6	2.7	0.9	2.4	4.0	1.4
Malignant neoplasms of meninges, brain and other parts of central nervous system..... (C70-C72)	4.4	5.3	3.6	5.1	6.1	4.2	2.7	3.2	2.3	2.5	2.7	2.4	2.1	2.6	1.7	3.1	3.6	2.6
Non-Hodgkin lymphoma..... (C82-C85)	5.3	6.9	4.0	5.6	7.3	4.3	4.1	5.5	3.1	3.3	4.3	2.5	3.5	4.7	2.5	4.4	5.4	3.6
Multiple myeloma and immunoproliferative neoplasms..... (C88,C90)	3.3	4.2	2.6	3.1	4.0	2.3	6.2	7.9	5.2	3.1	3.5	2.8	1.7	2.1	1.3	2.5	3.1	2.1
Leukemia..... (C91-C95)	6.1	8.1	4.6	6.5	8.7	4.9	5.2	6.5	4.2	3.7	4.6	3.0	3.5	5.0	2.5	4.4	5.3	3.6
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior..... (D00-D48)	4.1	5.2	3.3	4.4	5.6	3.5	3.7	4.6	3.1	2.6	3.1	2.3	2.4	3.0	1.9	2.5	3.1	2.1
Anemias..... (D50-D64)	1.4	1.5	1.3	1.3	1.4	1.2	2.8	2.9	2.7	1.3	*	*	0.7	0.8	0.7	0.9	1.0	0.9
Diabetes mellitus..... (E10-E14)	21.5	26.8	17.1	18.8	24.0	14.6	38.7	46.6	32.8	46.1	55.0	38.3	16.5	20.1	13.7	25.5	31.3	20.9
Nutritional deficiencies..... (E40-E64)	2.0	1.8	2.1	2.0	1.8	2.2	2.7	2.9	2.5	2.4	2.5	2.3	1.1	1.2	1.1	1.4	1.4	1.4

See footnotes at end of table.

Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Obesity (E66)	2.1	2.3	1.9	2.2	2.4	1.9	3.3	3.3	3.3	3.1	3.9	2.2	0.3	0.4	0.2	1.2	1.3	1.1
Parkinson disease (G20–G21)	8.4	12.6	5.5	9.2	13.7	6.1	4.6	7.5	3.0	6.0	8.7	4.2	5.1	7.1	3.8	6.1	8.8	4.2
Alzheimer disease (G30)	31.0	24.9	34.8	32.8	26.2	36.9	28.5	22.7	31.2	20.6	16.2	23.5	15.3	12.0	17.2	24.7	19.8	27.7
Major cardiovascular diseases (I00–I78)	218.1	264.1	180.1	220.1	266.4	181.1	285.5	351.3	236.5	199.6	244.2	162.8	127.7	153.3	107.4	158.2	191.9	130.5
Diseases of heart (I00–I09,I11,I13,I20–I51)	165.0	209.0	129.6	168.9	214.0	131.9	208.0	264.8	166.3	151.4	196.0	115.2	85.5	108.1	67.7	114.1	143.9	90.1
Essential hypertension and hypertensive renal disease (I10,I12,I15)	9.0	9.5	8.4	8.0	8.4	7.6	17.1	19.1	15.5	8.5	9.8	7.5	8.3	8.7	7.9	8.3	9.1	7.5
Cerebrovascular diseases (I60–I69)	37.6	38.0	36.6	36.4	36.0	36.0	52.7	57.9	48.3	34.1	33.3	34.4	30.3	32.1	28.7	31.8	34.0	29.6
Atherosclerosis (I70)	1.4	1.5	1.3	1.5	1.6	1.4	1.3	1.5	1.2	*	*	*	0.7	0.8	0.7	0.9	1.1	0.8
Aortic aneurysm and dissection (I71)	2.6	3.4	1.9	2.8	3.6	2.0	2.7	3.7	1.9	1.8	2.3	1.5	1.8	2.4	1.3	1.2	1.8	0.7
Influenza and pneumonia (J09–J18)	14.3	16.5	12.7	14.4	16.5	13.0	15.2	18.4	13.1	17.3	18.3	16.4	13.0	16.1	10.8	11.3	13.1	9.9
Chronic lower respiratory diseases (J40–J47)	40.9	45.0	38.1	46.4	49.7	44.2	30.2	38.5	25.2	40.7	44.3	38.2	11.8	16.7	8.5	17.2	20.6	14.9
Pneumonitis due to solids and liquids (J69)	5.1	7.1	3.8	5.4	7.5	4.0	5.4	7.4	4.2	4.0	5.1	3.3	3.2	4.5	2.2	3.1	4.2	2.4
Chronic liver disease and cirrhosis (K70,K73–K74)	10.9	14.5	7.6	11.3	14.6	8.2	7.5	10.4	5.2	39.5	43.3	35.9	3.6	5.2	2.3	14.3	20.4	8.7
Alcoholic liver disease (K70)	5.9	8.5	3.6	6.2	8.5	4.1	3.7	5.4	2.4	29.5	34.5	24.9	1.4	2.5	0.5	7.3	12.3	2.7
Cholelithiasis and other disorders of gallbladder (K80–K82)	1.0	1.2	0.8	0.9	1.1	0.8	0.9	1.0	0.8	1.6	2.6	*	0.9	1.2	0.6	1.2	1.4	1.0
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	13.0	15.7	11.1	11.7	14.4	9.8	25.8	30.6	22.6	14.3	14.3	14.0	8.5	10.3	7.2	11.3	13.1	9.9
Pregnancy, childbirth and the puerperium (O00–O99)	0.4	...	0.8	0.3	...	0.6	0.9	...	1.8	*	...	*	0.2	...	0.4	0.3	...	0.7
Certain conditions originating in the perinatal period (P00–P96)	3.9	4.3	3.4	2.9	3.2	2.5	8.3	9.3	7.3	4.1	4.2	4.0	3.3	3.7	2.9	3.2	3.5	2.9
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	3.1	3.3	2.9	3.1	3.4	2.9	3.7	3.9	3.5	3.5	3.6	3.3	1.9	2.0	1.8	2.6	2.7	2.6
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	8.8	9.5	8.0	9.1	9.7	8.5	11.6	13.1	10.1	10.8	11.9	9.5	3.5	4.0	3.0	5.0	6.2	3.9
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	49.4	67.8	32.0	56.2	75.3	37.8	47.6	71.6	27.1	86.3	115.5	59.1	16.7	23.1	11.2	32.5	48.3	17.2
Motor vehicle accidents (V02–V04,V09.0,V09.2,V12–V14,V19.0–V19.2,V19.4–V19.6,V20–V79,V80.3–V80.5,V81.0–V81.1,V82.0–V82.1,V83–V86,V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	12.0	17.5	6.7	12.3	17.5	7.2	14.3	22.5	7.1	29.9	39.8	20.5	4.6	6.2	3.3	10.8	16.1	5.5
Falls (W00–W19)	9.4	11.5	7.7	10.5	12.6	8.8	4.2	5.9	3.0	10.4	13.0	8.2	5.2	6.8	4.0	5.9	7.9	4.2

See footnotes at end of table.

Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2017—Con.

[Age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Accidental discharge of firearms (W32–W34)	0.2	0.3	0.0	0.2	0.3	0.1	0.3	0.5	*	*	*	*	*	*	*	0.1	0.1	*
Accidental drowning and submersion (W65–W74)	1.1	1.7	0.5	1.1	1.6	0.6	1.4	2.2	0.6	2.2	3.4	*	1.1	1.6	0.6	0.8	1.4	0.3
Accidental hanging, strangulation and suffocation (W75–W84)	1.9	2.5	1.5	2.0	2.5	1.5	2.8	3.5	2.3	3.0	4.3	2.0	0.9	1.1	0.7	1.2	1.6	0.8
Accidental exposure to smoke, fire and flames (X00–X09)	0.8	1.0	0.6	0.8	1.0	0.6	1.3	1.7	1.0	1.9	2.6	*	0.2	*	0.2	0.4	0.7	0.2
Accidental poisoning and exposure to noxious substances (X40–X49)	20.1	27.9	12.4	25.2	33.9	16.3	19.3	29.3	10.6	30.0	39.3	21.1	3.1	5.0	1.3	10.7	16.6	4.7
Intentional self-harm (suicide) (*U03,X60–X84,Y87.0) ⁵	14.0	22.4	6.1	17.8	28.2	7.9	6.9	11.4	2.8	22.1	33.8	11.0	6.8	9.9	3.9	6.9	11.2	2.6
Intentional self-harm (suicide) by poisoning (X60–X69)	1.9	2.0	1.9	2.6	2.7	2.5	0.7	0.7	0.7	1.9	1.9	1.9	0.8	0.8	0.7	0.6	0.7	0.6
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	4.1	6.4	1.8	4.9	7.7	2.1	1.9	3.0	0.9	10.2	14.1	6.5	3.2	4.4	2.1	2.9	4.8	1.1
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	6.9	12.4	1.9	9.1	16.0	2.6	3.4	6.3	0.7	8.5	15.1	2.2	1.7	3.1	0.5	2.5	4.6	0.6
Assault (homicide) (*U01–*U02, X85–Y09,Y87.1) ⁵	6.2	9.8	2.5	2.9	3.9	1.9	22.7	40.6	5.7	9.9	15.1	4.9	1.6	2.3	1.0	5.2	8.2	2.0
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ⁵	4.6	7.8	1.4	1.8	2.6	1.1	19.1	35.2	3.7	4.5	7.2	1.8	0.9	1.4	0.5	3.6	6.0	1.1
Legal intervention (Y35,Y89.0)	0.2	0.4	0.0	0.2	0.3	0.0	0.4	0.7	*	0.7	1.5	*	*	*	*	0.2	0.4	*
Complications of medical and surgical care (Y40–Y84,Y88)	1.2	1.4	1.0	1.2	1.4	1.1	1.6	2.0	1.4	1.7	1.9	1.5	0.6	0.6	0.5	0.8	0.9	0.7
Drug-induced deaths ⁶	22.8	30.5	15.2	28.8	37.4	20.1	21.9	32.7	12.5	27.9	34.4	21.6	3.7	5.6	2.0	11.2	16.8	5.5
Alcohol-induced deaths ⁶	9.6	14.3	5.3	10.3	14.8	6.1	6.9	10.9	3.6	45.7	58.9	33.6	2.4	4.1	0.9	9.9	16.9	3.5
Injury by firearms ⁶	12.0	20.9	3.4	11.4	19.3	3.8	23.2	42.8	4.5	14.4	24.9	4.3	2.8	4.7	1.0	6.5	11.1	1.8

* Rate does not meet NCHS standards of reliability; see Technical Notes.

... Category not applicable.

0.0 Quantity more than zero but less than 0.05.

¹Includes deaths for origin not stated; see Technical Notes.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Includes Aleut and Eskimo persons.

⁴Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

⁵Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes.

⁶Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 11. Number of deaths, death rates, and age-adjusted death rates for injury deaths, by mechanism and intent of death for all injury death and the leading causes of injury death: United States, 2017

[Totals for selected causes of death may differ from those shown in other tables that use standard mortality tabulation lists; see Technical Notes in this report. Rates are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes. Populations used for computing death rates are postcensal estimates based on the 2010 census estimated as of July 1, 2017; see Technical Notes. Numbers in brackets [] apply to the code or range of codes preceding them. Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision (ICD-10)*; see Technical Notes]

Mechanism and intent of death (based on ICD-10)	Number	Rate	Age-adjusted rate ¹
All injury (*U01-*U03,V01-Y36,Y85-Y87,Y89)	243,039	74.6	71.5
Unintentional (V01-X59,Y85-Y86)	169,936	52.2	49.4
Suicide (*U03,X60-X84,Y87.0)	47,173	14.5	14.0
Homicide (*U01-*U02,X85-Y09,Y87.1)	19,510	6.0	6.2
Undetermined (Y10-Y34,Y87.2,Y89.9)	5,799	1.8	1.8
Legal intervention/war (Y35-Y36,Y89[.0,.1])	621	0.2	0.2
Poisoning (*U01[.6-.7],X40-X49,X60-X69,X85-X90,Y10-Y19,Y35.2)	75,354	23.1	23.2
Unintentional (X40-X49)	64,795	19.9	20.1
Suicide (X60-X69)	6,554	2.0	1.9
Homicide (*U01[.6-.7],X85-X90)	151	0.0	0.0
Undetermined (Y10-Y19)	3,854	1.2	1.2
Legal intervention/war (Y35.2)	-	*	*
Motor vehicle traffic (V02-V04[.1,.9],V09.2,V12-V14[.3-.9],V19[.4-.6],V20-V28[.3-.9],V29-V79[.4-.9],V80[.3-.5],V81.1,V82.1,V83-V86[.0-.3],V87[.0-.8],V89.2) ²	38,659	11.9	11.5
Occupant (V30-V79[.4-.9],V83-V86[.0-.3]) ²	9,463	2.9	2.8
Motorcyclist (V20-V28[.3-.9],V29[.4-.9]) ²	4,777	1.5	1.4
Pedal cyclist (V12-V14[.3-.9],V19[.4-.6]) ²	679	0.2	0.2
Pedestrian (V02-V04[.1,.9],V09.2) ²	6,480	2.0	1.9
Other (V80[.3-.5],V81.1,V82.1) ²	15	*	*
Unspecified (V87[.0-.8],V89.2) ²	17,245	5.3	5.2
Firearm (*U01.4,W32-W34,X72-X74,X93-X95,Y22-Y24,Y35.0)	39,773	12.2	12.0
Unintentional (W32-W34)	486	0.1	0.2
Suicide (X72-X74)	23,854	7.3	6.9
Homicide (*U01.4,X93-X95)	14,542	4.5	4.6
Undetermined (Y22-Y24)	338	0.1	0.1
Legal intervention/war (Y35.0)	553	0.2	0.2
Fall (W00-W19,X80,Y01,Y30)	37,587	11.5	9.8
Unintentional (W00-W19)	36,338	11.2	9.4
Suicide (X80)	1,124	0.3	0.3
Homicide (Y01)	6	*	*
Undetermined (Y30)	119	0.0	0.0

0.0 Quantity more than zero but less than 0.05.

- Quantity zero.

* Rate does not meet NCHS standards of reliability; see Technical Notes.

¹For method of computation, see Technical Notes.

²Intent of death is unintentional.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 12. Number of deaths, death rates, and age-adjusted death rates for major causes of death: United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2017

[Rates are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Codes in parentheses after causes of death are categories of the *International Classification of Diseases, 10th Revision (ICD-10)*. Asterisks (*) preceding cause-of-death codes indicate they are not part of ICD-10; see Technical Notes]

Area	All causes			Malignant neoplasms (C00-C97)			Diseases of heart (I00-I09,I11,I13,I20-I51)			Accidents (unintentional injuries) (V01-X59,Y85-Y86)		
	Number	Rate	Age- adjusted rate ¹	Number	Rate	Age- adjusted rate ¹	Number	Rate	Age- adjusted rate ¹	Number	Rate	Age- adjusted rate ¹
United States ²	2,813,503	863.8	731.9	599,108	183.9	152.5	647,457	198.8	165.0	169,936	52.2	49.4
Alabama	53,238	1,092.1	917.7	10,410	213.5	170.0	13,110	268.9	223.2	2,703	55.4	53.8
Alaska	4,411	596.2	708.8	926	125.2	139.2	814	110.0	135.0	436	58.9	63.7
Arizona	57,758	823.2	678.5	12,008	171.1	135.8	12,398	176.7	141.9	4,184	59.6	56.2
Arkansas	32,588	1,084.7	900.1	6,517	216.9	173.6	8,270	275.3	223.8	1,625	54.1	51.8
California	268,189	678.3	618.7	59,516	150.5	136.7	62,797	158.8	142.9	13,840	35.0	33.1
Colorado	38,063	678.8	663.4	7,829	139.6	130.9	7,060	125.9	122.7	3,037	54.2	53.6
Connecticut	31,312	872.6	651.2	6,608	184.2	139.5	7,138	198.9	141.6	2,078	57.9	53.2
Delaware	9,178	954.1	749.6	2,085	216.7	160.4	1,990	206.9	158.4	608	63.2	61.9
District of Columbia	4,965	715.4	725.4	1,031	148.6	152.8	1,284	185.0	189.8	427	61.5	61.0
Florida	203,636	970.4	672.1	45,131	215.1	145.9	46,440	221.3	145.8	13,059	62.2	56.1
Georgia	83,098	796.8	793.7	17,135	164.3	154.9	18,389	176.3	175.8	4,712	45.2	45.2
Hawaii	11,390	797.9	584.9	2,456	172.0	128.6	2,575	180.4	129.8	585	41.0	35.7
Idaho	14,011	816.0	741.8	3,020	175.9	153.2	3,084	179.6	162.4	876	51.0	49.8
Illinois	109,721	857.1	724.2	24,150	188.6	157.9	25,394	198.4	163.3	6,019	47.0	44.4
Indiana	65,597	983.9	848.6	13,462	201.9	170.0	14,445	216.7	183.2	3,978	59.7	58.7
Iowa	30,530	970.5	737.0	6,449	205.0	158.0	7,180	228.2	167.4	1,536	48.8	42.7
Kansas	27,063	929.0	771.2	5,494	188.6	157.2	5,723	196.5	157.9	1,567	53.8	49.4
Kentucky	48,212	1,082.4	929.9	10,145	227.8	185.7	10,343	232.2	195.9	3,264	73.3	72.9
Louisiana	45,804	977.8	881.1	9,513	203.1	174.9	11,260	240.4	214.4	2,780	59.3	58.8
Maine	14,676	1,098.6	771.6	3,391	253.8	170.8	2,844	212.9	143.5	990	74.1	68.0
Maryland	49,926	824.9	718.1	10,796	178.4	151.5	11,653	192.5	164.5	2,408	39.8	36.9
Massachusetts	58,803	857.2	677.1	12,934	188.5	149.3	12,140	177.0	134.6	3,821	55.7	51.5
Michigan	97,602	979.7	783.5	20,671	207.5	161.3	25,187	252.8	196.1	5,623	56.4	53.0
Minnesota	44,371	795.7	656.4	9,896	177.5	146.8	8,230	147.6	119.1	2,788	50.0	44.6
Mississippi	32,280	1,081.7	951.3	6,526	218.7	183.1	7,944	266.2	231.6	1,738	58.2	56.3
Missouri	61,876	1,012.1	820.1	12,971	212.2	167.2	14,820	242.4	191.1	3,776	61.8	58.8
Montana	10,200	971.0	757.5	2,145	204.2	152.6	2,164	206.0	155.0	579	55.1	50.2
Nebraska	16,878	879.0	726.0	3,502	182.4	152.6	3,581	186.5	149.3	811	42.2	38.5
Nevada	24,657	822.4	765.5	5,283	176.2	155.3	6,417	214.0	199.3	1,496	49.9	47.8
New Hampshire	12,504	931.2	717.2	2,760	205.5	153.5	2,721	202.6	149.7	907	67.5	62.9
New Jersey	74,846	831.1	667.5	16,264	180.6	144.6	18,840	209.2	162.3	4,482	49.8	47.3
New Mexico	18,673	894.3	754.7	3,620	173.4	138.3	3,896	186.6	151.4	1,460	69.9	68.2
New York	155,358	782.7	623.6	34,956	176.1	141.2	44,092	222.1	171.2	7,687	38.7	35.5
North Carolina	93,157	906.8	785.6	19,474	189.6	157.1	18,808	183.1	156.5	5,985	58.3	56.3
North Dakota	6,415	849.2	692.7	1,280	169.4	142.6	1,326	175.5	137.8	339	44.9	41.3
Ohio	123,648	1,060.6	849.7	25,643	219.9	171.2	28,008	240.2	186.2	8,971	76.9	75.1
Oklahoma	40,452	1,029.1	902.4	8,203	208.7	177.3	10,772	274.0	237.2	2,563	65.2	62.5
Oregon	36,624	884.0	717.2	8,083	195.1	154.2	6,942	167.6	134.0	2,076	50.1	44.7
Pennsylvania	135,656	1,059.4	777.3	28,387	221.7	161.0	32,312	252.3	176.0	9,527	74.4	70.2
Rhode Island	10,157	958.5	713.4	2,154	203.3	154.2	2,339	220.7	155.7	718	67.8	60.0
South Carolina	49,441	984.0	828.0	10,356	206.1	162.7	10,418	207.3	172.0	3,147	62.6	60.2
South Dakota	7,996	919.4	736.6	1,715	197.2	156.9	1,710	196.6	150.1	537	61.7	56.1
Tennessee	70,096	1,043.7	897.1	14,302	213.0	173.4	16,019	238.5	202.2	4,435	66.0	63.0
Texas	198,106	699.9	735.7	40,668	143.7	146.5	45,346	160.2	169.2	10,763	38.0	38.8
Utah	18,035	581.4	700.1	3,161	101.9	120.3	3,749	120.9	150.2	1,238	39.9	44.2
Vermont	6,007	963.2	714.9	1,434	229.9	164.5	1,332	213.6	152.5	394	63.2	56.9
Virginia	68,579	809.7	719.4	15,064	177.9	152.6	14,861	175.5	154.5	3,922	46.3	44.0
Washington	56,995	769.6	688.6	12,664	171.0	148.4	11,582	156.4	138.8	3,455	46.7	44.0
West Virginia	23,276	1,281.8	957.1	4,654	256.3	179.4	4,849	267.0	192.0	1,892	104.2	100.3
Wisconsin	52,681	909.0	722.0	11,318	195.3	153.2	11,860	204.6	157.6	3,746	64.6	58.3
Wyoming	4,768	823.0	714.5	948	163.6	136.1	1,001	172.8	148.9	348	60.1	56.9
Puerto Rico	30,777	922.2	658.0	5,210	156.1	109.1	5,557	166.5	113.6	966	28.9	23.3
U.S. Virgin Islands	707	659.1	625.6	115	107.2	92.5	153	142.6	124.6	36	33.6	34.1
Guam	990	591.5	870.8	182	108.7	146.1	336	200.8	316.5	44	26.3	27.1
American Samoa	304	590.2	1,087.7	41	79.6	153.0	79	153.4	260.4	16	*	*
Northern Marianas	232	443.9	805.3	45	86.1	135.2	39	74.6	117.9	22	42.1	55.0

See footnotes at end of table.

Table 12. Number of deaths, death rates, and age-adjusted death rates for major causes of death: United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2017—Con.

[Rates are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Codes in parentheses after causes of death are categories of the *International Classification of Diseases, 10th Revision (ICD-10)*. Asterisks (*) preceding cause-of-death codes indicate they are not part of ICD-10; see Technical Notes]

Area	Motor vehicle accidents ³			Accidental poisoning and exposure to noxious substances (X40–X49)			Intentional self-harm (suicide) (*U03,X60–X84,Y87.0)			Assault (homicide) (*U01–*U02,X85–Y09,Y87.1)		
	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹
	United States ²	40,231	12.4	12.0	64,795	19.9	20.1	47,173	14.5	14.0	19,510	6.0	6.2
Alabama	1,034	21.2	20.9	787	16.1	17.0	836	17.1	16.6	602	12.3	12.9
Alaska	101	13.7	14.2	154	20.8	21.1	200	27.0	27.0	78	10.5	10.6
Arizona	1,017	14.5	14.2	1,405	20.0	20.7	1,327	18.9	18.2	441	6.3	6.6
Arkansas	579	19.3	18.9	376	12.5	13.1	631	21.0	20.8	278	9.3	9.8
California	4,194	10.6	10.3	4,652	11.8	11.2	4,312	10.9	10.5	2,022	5.1	5.1
Colorado	678	12.1	11.8	896	16.0	15.6	1,181	21.1	20.3	261	4.7	4.6
Connecticut	293	8.2	7.8	1,048	29.2	30.1	405	11.3	10.5	109	3.0	3.2
Delaware	127	13.2	12.9	333	34.6	36.4	112	11.6	11.6	63	6.5	6.9
District of Columbia	33	4.8	4.7	291	41.9	41.3	47	6.8	6.6	117	16.9	15.6
Florida	3,229	15.4	14.8	4,809	22.9	23.9	3,227	15.4	14.0	1,269	6.0	6.4
Georgia	1,556	14.9	14.6	1,466	14.1	14.1	1,451	13.9	13.6	810	7.8	7.9
Hawaii	106	7.4	7.2	166	11.6	11.4	227	15.9	15.2	35	2.5	2.5
Idaho	271	15.8	15.5	199	11.6	12.1	392	22.8	23.2	50	2.9	3.0
Illinois	1,232	9.6	9.3	2,629	20.5	20.5	1,474	11.5	11.2	1,120	8.7	9.0
Indiana	917	13.8	13.5	1,761	26.4	28.0	1,092	16.4	16.3	456	6.8	7.2
Iowa	396	12.6	12.0	307	9.8	10.4	479	15.2	15.0	104	3.3	3.4
Kansas	461	15.8	15.6	298	10.2	10.7	553	19.0	19.1	185	6.4	6.5
Kentucky	831	18.7	18.3	1,508	33.9	35.9	770	17.3	16.9	310	7.0	7.3
Louisiana	825	17.6	17.6	1,024	21.9	22.6	720	15.4	15.2	653	13.9	14.4
Maine	190	14.2	13.7	395	29.6	32.6	274	20.5	18.9	19	*	*
Maryland	574	9.5	9.2	670	11.1	10.7	630	10.4	9.8	587	9.7	10.2
Massachusetts	416	6.1	5.7	2,109	30.7	31.0	682	9.9	9.5	171	2.5	2.6
Michigan	1,057	10.6	10.2	2,302	23.1	23.8	1,457	14.6	14.1	588	5.9	6.3
Minnesota	452	8.1	7.8	718	12.9	13.1	783	14.0	13.8	122	2.2	2.2
Mississippi	771	25.8	25.7	321	10.8	11.1	445	14.9	15.0	360	12.1	12.7
Missouri	999	16.3	16.0	1,273	20.8	21.9	1,151	18.8	18.5	655	10.7	11.3
Montana	179	17.0	17.0	111	10.6	10.9	311	29.6	28.9	42	4.0	4.3
Nebraska	260	13.5	13.3	148	7.7	7.9	275	14.3	14.7	50	2.6	2.7
Nevada	353	11.8	11.2	585	19.5	18.7	627	20.9	20.3	221	7.4	7.6
New Hampshire	108	8.0	7.3	437	32.5	34.9	265	19.7	18.9	17	*	*
New Jersey	647	7.2	6.7	2,605	28.9	29.3	795	8.8	8.3	352	3.9	4.1
New Mexico	399	19.1	19.3	487	23.3	24.9	491	23.5	23.3	173	8.3	8.5
New York	1,146	5.8	5.5	3,697	18.6	18.3	1,696	8.5	8.1	577	2.9	3.0
North Carolina	1,520	14.8	14.4	2,253	21.9	22.7	1,521	14.8	14.3	679	6.6	6.9
North Dakota	118	15.6	15.4	65	8.6	8.9	154	20.4	20.1	15	*	*
Ohio	1,322	11.3	11.1	4,992	42.8	45.3	1,740	14.9	14.8	828	7.1	7.5
Oklahoma	723	18.4	18.1	746	19.0	19.4	756	19.2	19.1	318	8.1	8.5
Oregon	509	12.3	11.7	454	11.0	10.6	825	19.9	19.0	127	3.1	3.1
Pennsylvania	1,262	9.9	9.5	5,205	40.6	43.0	2,030	15.9	15.0	791	6.2	6.6
Rhode Island	105	9.9	9.4	318	30.0	30.4	129	12.2	11.8	19	*	*
South Carolina	1,059	21.1	20.8	980	19.5	20.0	838	16.7	16.3	444	8.8	9.3
South Dakota	165	19.0	18.9	70	8.0	8.2	191	22.0	22.5	34	3.9	4.2
Tennessee	1,088	16.2	15.7	1,691	25.2	25.4	1,166	17.4	16.8	557	8.3	8.8
Texas	3,892	13.8	13.8	2,796	9.9	9.8	3,778	13.3	13.4	1,653	5.8	5.8
Utah	293	9.4	9.9	508	16.4	17.4	663	21.4	22.7	79	2.5	2.6
Vermont	81	13.0	12.3	119	19.1	21.0	112	18.0	18.3	15	*	*
Virginia	896	10.6	10.1	1,427	16.8	16.9	1,179	13.9	13.4	455	5.4	5.4
Washington	663	9.0	8.8	1,073	14.5	14.0	1,297	17.5	16.9	266	3.6	3.6
West Virginia	337	18.6	18.2	961	52.9	57.0	393	21.6	21.1	112	6.2	6.5
Wisconsin	657	11.3	10.9	1,099	19.0	19.8	926	16.0	15.4	202	3.5	3.7
Wyoming	110	19.0	19.1	71	12.3	13.0	157	27.1	26.9	19	*	*

Table 12. Number of deaths, death rates, and age-adjusted death rates for major causes of death: United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2017—Con.

[Rates are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Codes in parentheses after causes of death are categories of the *International Classification of Diseases, 10th Revision (ICD-10)*. Asterisks (*) preceding cause-of-death codes indicate they are not part of ICD-10; see Technical Notes]

Area	Motor vehicle accidents ³			Accidental poisoning and exposure to noxious substances (X40–X49)			Intentional self-harm (suicide) (*U03,X60–X84,Y87.0)			Assault (homicide) (*U01–*U02,X85–Y09,Y87.1)		
	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹
Puerto Rico	317	9.5	8.5	71	2.1	2.1	247	7.4	6.5	684	20.5	22.0
U.S. Virgin Islands	11	*	*	–	*	*	10	*	*	54	50.3	57.0
Guam	18	*	*	2	*	*	36	21.5	24.6	7	*	*
American Samoa	2	*	*	–	*	*	3	*	*	–	*	*
Northern Marianas	6	*	*	3	*	*	8	*	*	2	*	*

* Rate does not meet NCHS standards of reliability; see Technical Notes.

– Quantity zero.

¹Death rates are affected by the population composition of the area. Age-adjusted death rates should be used for comparisons between areas; for method of computation, see Technical Notes.

²Excludes data for Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas.

³ICD-10 codes for Motor vehicle accidents are V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, and V89.2; see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000–2017

[Rates are infant (under 1 year), neonatal (under 28 days), and postneonatal (28 days–11 months) deaths per 1,000 live births in specified group. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards]

Year	Total ¹			Non-Hispanic white ^{2,3}			Non-Hispanic black ^{2,3}			Hispanic ³		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Infant mortality rate												
2017.....	5.79	6.32	5.24	4.61	5.07	4.12	11.46	12.59	10.29	5.35	5.76	4.93
2016.....	5.87	6.38	5.34	4.80	5.24	4.34	11.76	12.67	10.82	5.24	5.72	4.75
2015.....	5.90	6.39	5.38	4.82	5.27	4.36	11.73	12.75	10.67	5.20	5.56	4.83
2014.....	5.82	6.31	5.30	4.81	5.26	4.34	11.37	12.33	10.39	5.22	5.63	4.79
2013.....	5.96	6.52	5.38	4.96	5.53	4.36	11.61	12.48	10.73	5.27	5.65	4.88
2012.....	5.98	6.50	5.43	4.97	5.38	4.54	11.59	12.80	10.35	5.30	5.76	4.83
2011.....	6.07	6.58	5.52	5.05	5.52	4.56	11.98	13.13	10.80	5.25	5.59	4.90
2010.....	6.15	6.69	5.57	5.10	5.54	4.64	11.99	13.08	10.85	5.47	5.96	4.96
2009.....	6.39	7.01	5.75	5.25	5.76	4.71	13.07	14.60	11.49	5.43	5.86	4.98
2008.....	6.61	7.21	5.97	5.52	6.04	4.97	13.14	14.37	11.88	5.66	6.16	5.13
2007.....	6.75	7.38	6.09	5.63	6.20	5.03	13.76	15.04	12.43	5.71	6.17	5.23
2006.....	6.69	7.32	6.03	5.59	6.15	5.00	13.78	14.98	12.53	5.52	5.99	5.03
2005.....	6.87	7.56	6.15	5.71	6.69	4.79	14.28	15.75	12.76	5.81	6.34	5.25
2004.....	6.79	7.47	6.09	5.68	6.28	5.05	14.20	15.65	12.70	5.62	6.10	5.12
2003.....	6.85	7.60	6.07	5.69	6.37	4.98	14.16	15.70	12.57	5.79	6.32	5.24
2002.....	6.97	7.64	6.27	5.86	6.54	5.14	14.32	15.39	13.23	5.64	6.14	5.11
2001.....	6.85	7.52	6.14	5.72	6.30	5.12	14.03	15.53	12.49	5.49	5.99	4.97
2000.....	6.91	7.57	6.21	5.72	6.32	5.08	14.11	15.50	12.66	5.64	6.04	5.22
1990.....	9.22	10.26	8.13	---	---	---	---	---	---	---	---	---
1980.....	12.60	13.93	11.21	---	---	---	---	---	---	---	---	---
1970.....	20.01	22.37	17.52	---	---	---	---	---	---	---	---	---
1960.....	26.04	29.33	22.59	---	---	---	---	---	---	---	---	---
1950.....	29.21	32.75	25.48	---	---	---	---	---	---	---	---	---
1940.....	47.02	52.45	41.29	---	---	---	---	---	---	---	---	---
Neonatal mortality rate												
2017.....	3.84	4.19	3.49	3.05	3.34	2.74	7.28	8.04	6.51	3.73	4.00	3.46
2016.....	3.87	4.19	3.54	3.10	3.33	2.86	7.64	8.32	6.95	3.63	3.94	3.30
2015.....	3.93	4.22	3.64	3.16	3.37	2.92	7.60	8.16	7.02	3.73	4.02	3.42
2014.....	3.94	4.25	3.62	3.23	3.48	2.97	7.51	8.13	6.87	3.67	3.98	3.34
2013.....	4.04	4.37	3.68	3.33	3.67	2.97	7.66	8.16	7.14	3.73	3.99	3.45
2012.....	4.01	4.34	3.67	3.31	3.54	3.06	7.58	8.30	6.83	3.71	4.05	3.35
2011.....	4.06	4.36	3.73	3.34	3.62	3.06	7.85	8.53	7.14	3.67	3.87	3.46
2010.....	4.05	4.37	3.71	3.34	3.58	3.07	7.71	8.32	7.09	3.73	4.07	3.37
2009.....	4.18	4.53	3.81	3.42	3.68	3.14	8.42	9.34	7.46	3.63	3.89	3.36
2008.....	4.29	4.67	3.89	3.53	3.84	3.21	8.46	9.24	7.64	3.81	4.16	3.45
2007.....	4.42	4.79	4.02	3.64	3.96	3.31	8.97	9.82	8.09	3.82	4.12	3.51
2006.....	4.45	4.84	4.05	3.69	4.04	3.32	9.10	9.85	8.32	3.79	4.07	3.49
2005.....	4.54	4.93	4.12	3.74	4.26	3.24	9.40	10.33	8.44	3.92	4.29	3.52
2004.....	4.52	4.94	4.09	3.76	4.13	3.37	9.36	10.21	8.48	3.84	4.17	3.49
2003.....	4.62	5.08	4.14	3.84	4.26	3.39	9.46	10.47	8.42	3.95	4.24	3.65
2002.....	4.66	5.06	4.25	3.92	4.32	3.51	9.46	10.07	8.83	3.80	4.13	3.45
2001.....	4.54	4.97	4.08	3.82	4.17	3.45	9.20	10.16	8.20	3.65	4.08	3.21
2000.....	4.63	5.06	4.17	3.84	4.21	3.45	9.36	10.35	8.34	3.74	4.01	3.45
1990.....	5.85	6.50	5.16	---	---	---	---	---	---	---	---	---
1980.....	8.48	9.31	7.60	---	---	---	---	---	---	---	---	---
1970.....	15.08	16.96	13.10	---	---	---	---	---	---	---	---	---
1960.....	18.73	21.24	16.09	---	---	---	---	---	---	---	---	---
1950.....	20.50	23.34	17.50	---	---	---	---	---	---	---	---	---
1940.....	28.75	32.56	24.74	---	---	---	---	---	---	---	---	---

Table 13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000–2017—Con.

[Rates are infant (under 1 year), neonatal (under 28 days), and postneonatal (28 days–11 months) deaths per 1,000 live births in specified group. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards]

Year	Total ¹			Non-Hispanic white ^{2,3}			Non-Hispanic black ^{2,3}			Hispanic ³		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Postneonatal mortality rate											
2017.....	1.95	2.13	1.76	1.56	1.73	1.38	4.17	4.55	3.78	1.62	1.76	1.47
2016.....	2.00	2.19	1.80	1.70	1.90	1.48	4.11	4.35	3.87	1.62	1.78	1.45
2015.....	1.96	2.17	1.74	1.67	1.89	1.43	4.13	4.59	3.65	1.47	1.54	1.41
2014.....	1.88	2.07	1.68	1.58	1.78	1.37	3.86	4.21	3.51	1.55	1.66	1.45
2013.....	1.93	2.15	1.70	1.63	1.86	1.38	3.96	4.31	3.59	1.54	1.66	1.43
2012.....	1.97	2.16	1.76	1.66	1.84	1.47	4.02	4.49	3.52	1.60	1.71	1.47
2011.....	2.01	2.22	1.79	1.71	1.90	1.50	4.14	4.60	3.67	1.58	1.72	1.44
2010.....	2.10	2.32	1.87	1.76	1.96	1.56	4.28	4.77	3.77	1.74	1.89	1.59
2009.....	2.22	2.48	1.94	1.83	2.07	1.57	4.65	5.26	4.03	1.80	1.96	1.62
2008.....	2.32	2.54	2.08	1.99	2.20	1.76	4.69	5.12	4.23	1.84	2.00	1.68
2007.....	2.34	2.58	2.07	1.98	2.23	1.72	4.79	5.22	4.34	1.89	2.05	1.72
2006.....	2.24	2.48	1.98	1.91	2.11	1.68	4.68	5.13	4.21	1.73	1.92	1.53
2005.....	2.34	2.63	2.03	1.98	2.43	1.55	4.88	5.41	4.32	1.89	2.05	1.73
2004.....	2.27	2.53	2.00	1.92	2.15	1.68	4.84	5.45	4.22	1.78	1.93	1.63
2003.....	2.23	2.52	1.94	1.86	2.11	1.59	4.70	5.23	4.15	1.84	2.08	1.59
2002.....	2.31	2.58	2.03	1.94	2.22	1.64	4.87	5.32	4.40	1.84	2.01	1.66
2001.....	2.31	2.55	2.06	1.90	2.13	1.66	4.83	5.36	4.28	1.84	1.92	1.76
2000.....	2.28	2.51	2.04	1.88	2.11	1.63	4.74	5.15	4.32	1.90	2.02	1.77
1990.....	3.38	3.76	2.97	---	---	---	---	---	---	---	---	---
1980.....	4.13	4.62	3.61	---	---	---	---	---	---	---	---	---
1970.....	4.93	5.41	4.42	---	---	---	---	---	---	---	---	---
1960.....	7.31	8.10	6.49	---	---	---	---	---	---	---	---	---
1950.....	8.71	9.41	7.98	---	---	---	---	---	---	---	---	---
1940.....	18.27	19.89	16.55	---	---	---	---	---	---	---	---	---

--- Data not available.

¹Includes races and origins not shown separately.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes in this report.

³Infant deaths are based on race or Hispanic origin of child as stated on the death certificate; live births are based on race or Hispanic origin of mother as stated on the birth certificate; see Technical Notes. Race and Hispanic-origin categories are consistent with 1977 OMB standards.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 14. Number of infant deaths and infant mortality rates for selected causes, by race and Hispanic origin: United States, 2017

[Rates are infant deaths (under 1 year) per 100,000 live births in specified group. Infant deaths are based on race or Hispanic origin of decedent; live births are based on race or Hispanic origin of mother. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Number ¹				Rate			
	Total ²	Non- Hispanic white ³	Non- Hispanic black ³	Hispanic	Total ²	Non- Hispanic white ³	Non- Hispanic black ³	Hispanic
All causes	22,335	9,359	6,730	4,808	579.3	460.9	1,145.8	535.0
Certain intestinal infectious diseases (A00–A08)	8	–	1	4	*	*	*	*
Diarrhea and gastroenteritis of infectious origin (A09)	180	60	66	38	4.7	3.0	11.2	4.2
Tuberculosis (A16–A19)	1	–	–	1	*	*	*	*
Tetanus (A33, A35)	–	–	–	–	*	*	*	*
Diphtheria (A36)	–	–	–	–	*	*	*	*
Whooping cough (A37)	5	3	1	1	*	*	*	*
Meningococcal infection (A39)	4	2	1	1	*	*	*	*
Septicemia (A40–A41)	147	53	51	31	3.8	2.6	8.7	3.4
Congenital syphilis (A50)	7	1	3	3	*	*	*	*
Gonococcal infection (A54)	–	–	–	–	*	*	*	*
Acute poliomyelitis (A80)	–	–	–	–	*	*	*	*
Varicella (chickenpox) (B01)	–	–	–	–	*	*	*	*
Measles (B05)	–	–	–	–	*	*	*	*
Human immunodeficiency virus (HIV) disease (B20–B24)	–	–	–	–	*	*	*	*
Mumps (B26)	–	–	–	–	*	*	*	*
Candidiasis (B37)	1	–	–	1	*	*	*	*
Malaria (B50–B54)	–	–	–	–	*	*	*	*
Pneumocystosis (B59)	2	–	1	1	*	*	*	*
Malignant neoplasms (C00–C97)	57	28	9	16	1.5	1.4	*	*
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	41	18	8	10	1.1	*	*	*
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89)	84	38	21	18	2.2	1.9	3.6	*
Short stature, not elsewhere classified (E34.3)	4	3	1	–	*	*	*	*
Nutritional deficiencies (E40–E64)	6	2	3	–	*	*	*	*
Cystic fibrosis (E84)	5	3	1	1	*	*	*	*
Volume depletion, disorders of fluid, electrolyte and acid- base balance (E86–E87)	55	23	16	11	1.4	1.1	*	*
Meningitis (G00, G03)	47	20	10	14	1.2	1.0	*	*
Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) (G12.0)	3	3	–	–	*	*	*	*
Infantile cerebral palsy (G80)	1	–	–	1	*	*	*	*
Anoxic brain damage, not elsewhere classified (G93.1)	30	14	10	4	0.8	*	*	*
Diseases of the ear and mastoid process (H60–H93)	4	1	–	3	*	*	*	*
Diseases of the circulatory system (I00–I99)	449	190	140	75	11.6	9.4	23.8	8.3
Acute upper respiratory infections (J00–J06)	12	6	2	2	*	*	*	*
Influenza and pneumonia (J09–J18)	157	59	54	35	4.1	2.9	9.2	3.9
Acute bronchitis and acute bronchiolitis (J20–J21)	42	12	18	7	1.1	*	*	*
Bronchitis, chronic and unspecified (J40–J42)	11	4	4	3	*	*	*	*
Asthma (J45–J46)	1	–	1	–	*	*	*	*
Pneumonitis due to solids and liquids (J69)	6	4	–	–	*	*	*	*
Gastritis, duodenitis, and noninfective enteritis and colitis (K29, K50–K55)	23	9	5	6	0.6	*	*	*
Hernia of abdominal cavity and intestinal obstruction without hernia (K40–K46, K56)	34	17	6	5	0.9	*	*	*
Renal failure and other disorders of kidney (N17–N19, N25, N27)	73	29	25	15	1.9	1.4	4.3	*
Newborn affected by maternal hypertensive disorders (P00.0)	56	20	19	12	1.5	1.0	*	*
Newborn affected by other maternal conditions which may be unrelated to present pregnancy (P00.1–P00.9)	87	37	24	19	2.3	1.8	4.1	*
Newborn affected by maternal complications of pregnancy (P01)	1,432	480	492	349	37.1	23.6	83.8	38.8

See footnotes at end of table.

Table 14. Number of infant deaths and infant mortality rates for selected causes, by race and Hispanic origin: United States, 2017—Con.

[Rates are infant deaths (under 1 year) per 100,000 live births in specified group. Infant deaths are based on race or Hispanic origin of decedent; live births are based on race or Hispanic origin of mother. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Number ¹				Rate			
	Total ²	Non-Hispanic white ³	Non-Hispanic black ³	Hispanic	Total ²	Non-Hispanic white ³	Non-Hispanic black ³	Hispanic
Newborn affected by complications of placenta, cord and membranes (P02)	843	371	246	174	21.9	18.3	41.9	19.4
Newborn affected by other complications of labor and delivery (P03)	80	34	20	20	2.1	1.7	3.4	2.2
Newborn affected by noxious influences transmitted via placenta or breast milk (P04)	58	29	19	6	1.5	1.4	*	*
Slow fetal growth and fetal malnutrition (P05)	103	41	39	18	2.7	2.0	6.6	*
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	3,749	1,290	1,404	790	97.2	63.5	239.0	87.9
Disorders related to long gestation and high birth weight (P08)	—	—	—	—	*	*	*	*
Birth trauma (P10–P15)	12	5	3	4	*	*	*	*
Intrauterine hypoxia and birth asphyxia (P20–P21)	328	150	90	63	8.5	7.4	15.3	7.0
Respiratory distress of newborn (P22)	440	173	142	99	11.4	8.5	24.2	11.0
Other respiratory conditions originating in the perinatal period (P23–P28)	734	312	234	141	19.0	15.4	39.8	15.7
Congenital pneumonia (P23)	37	18	10	7	1.0	*	*	*
Neonatal aspiration syndromes (P24)	48	20	18	6	1.2	1.0	*	*
Interstitial emphysema and related conditions originating in the perinatal period (P25)	65	28	17	17	1.7	1.4	*	*
Pulmonary hemorrhage originating in the perinatal period (P26)	133	47	47	33	3.4	2.3	8.0	3.7
Chronic respiratory disease originating in the perinatal period (P27)	121	48	50	17	3.1	2.4	8.5	*
Atelectasis (P28.0–P28.1)	257	111	75	51	6.7	5.5	12.8	5.7
Bacterial sepsis of newborn (P36)	592	219	184	135	15.4	10.8	31.3	15.0
Omphalitis of newborn with or without mild hemorrhage (P38)	—	—	—	—	*	*	*	*
Neonatal hemorrhage (P50–P52, P54)	379	176	82	99	9.8	8.7	14.0	11.0
Hemorrhagic disease of newborn (P53)	—	—	—	—	*	*	*	*
Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice (P55–P59)	11	8	—	3	*	*	*	*
Hematological disorders (P60–P61)	108	49	31	21	2.8	2.4	5.3	2.3
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	14	7	3	3	*	*	*	*
Necrotizing enterocolitis of newborn (P77)	338	117	119	83	8.8	5.8	20.3	9.2
Hydrops fetalis not due to hemolytic disease (P83.2)	165	84	31	43	4.3	4.1	5.3	4.8
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	4,580	2,200	891	1,218	118.8	108.3	151.7	135.5
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	2,692	1,211	943	432	69.8	59.6	160.5	48.1
Sudden infant death syndrome (R95)	1,363	651	472	186	35.4	32.1	80.4	20.7
Accidents (unintentional injuries) (V01–X59)	1,317	596	455	207	34.2	29.4	77.5	23.0
Assault (homicide) (*U01, X85–Y09) ⁴	302	119	119	56	7.8	5.9	20.3	6.2
Complications of medical and surgical care (Y40–Y84)	14	8	2	4	*	*	*	*

— Quantity zero.

* Rate does not meet NCHS standards of reliability; see Technical Notes in this report.

¹Only selected causes of deaths are shown; therefore, subcategories do not add to totals; see Technical Notes.

²Includes races and origins not shown separately.

³Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

⁴Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision*; see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 15. Number of infant deaths and mortality rates, by race and Hispanic origin for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, and by sex for the United States, 2017

[Rates are infant (under 1 year) deaths per 1,000 live births in specified group. Infant deaths are based on race or Hispanic origin of decedent; live births are based on race or Hispanic origin of mother; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards; see Technical Notes]

Area and sex	Total ¹		Non-Hispanic white ²		Non-Hispanic black ²		Hispanic	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
United States ³	22,335	5.79	9,359	4.61	6,730	11.46	4,808	5.35
Male	12,468	6.32	5,281	5.07	3,760	12.59	2,635	5.76
Female	9,867	5.24	4,078	4.12	2,970	10.29	2,173	4.93
Alabama	434	7.36	196	5.63	205	11.17	22	4.84
Alaska	59	5.65	25	4.35	4	*	2	*
Arizona	469	5.73	145	4.21	54	11.31	205	5.96
Arkansas	307	8.18	176	7.20	94	12.89	24	5.93
California	1,973	4.18	436	3.27	222	8.40	1,089	4.95
Colorado	291	4.52	149	3.90	31	8.71	96	5.30
Connecticut	160	4.54	63	3.28	47	10.29	41	4.64
Delaware	72	6.63	19	*	38	12.82	12	*
District of Columbia	77	8.05	13	*	57	12.19	7	*
Florida	1,358	6.07	453	4.64	515	10.22	353	5.26
Georgia	932	7.21	286	4.94	525	11.52	92	5.12
Hawaii	92	5.25	16	*	12	*	21	7.86
Idaho	102	4.60	77	4.42	1	*	19	*
Illinois	912	6.10	347	4.35	352	13.28	168	5.35
Indiana	600	7.30	361	5.91	163	15.34	58	7.56
Iowa	203	5.28	145	4.79	31	10.62	22	6.24
Kansas	221	6.05	130	5.00	34	11.79	43	7.21
Kentucky	355	6.48	275	6.15	54	10.07	20	6.33
Louisiana	431	7.06	146	4.59	252	11.05	28	5.86
Maine	70	5.69	64	5.75	4	*	2	*
Maryland	460	6.42	121	3.97	257	11.14	57	4.66
Massachusetts	262	3.71	121	2.91	50	6.82	71	5.22
Michigan	755	6.78	354	4.61	306	14.04	57	7.77
Minnesota	328	4.78	171	3.58	81	9.35	25	4.98
Mississippi	322	8.62	118	6.30	188	11.60	6	*
Missouri	456	6.24	284	5.18	146	12.95	18	*
Montana	64	5.42	42	4.39	—	*	4	*
Nebraska	144	5.58	94	5.18	20	10.36	20	4.56
Nevada	208	5.82	68	4.94	52	10.44	71	5.39
New Hampshire	51	4.21	41	3.87	3	*	4	*
New Jersey	453	4.47	139	3.00	155	10.98	124	4.53
New Mexico	140	5.89	33	4.96	4	*	81	6.06
New York	1,047	4.56	381	3.37	304	8.64	230	4.33
North Carolina	847	7.05	329	5.02	360	12.38	106	5.74
North Dakota	46	4.28	27	3.33	8	*	1	*
Ohio	983	7.18	527	5.26	383	15.89	54	7.23
Oklahoma	387	7.71	183	5.92	69	14.29	63	8.47
Oregon	236	5.41	138	4.57	18	*	58	7.01
Pennsylvania	841	6.11	435	4.63	268	13.53	100	6.31
Rhode Island	66	6.20	35	5.59	15	*	13	*
South Carolina	371	6.51	164	4.99	176	10.12	26	4.98
South Dakota	94	7.75	64	7.24	8	*	3	*
Tennessee	597	7.37	325	5.98	211	12.66	50	6.51
Texas	2,237	5.86	634	4.89	529	10.70	989	5.49
Utah	285	5.87	206	5.55	8	*	52	6.64
Vermont	27	4.77	22	4.25	4	*	—	*
Virginia	592	5.90	254	4.52	219	10.11	71	5.07
Washington	341	3.89	182	3.48	50	10.23	75	4.70
West Virginia	131	7.01	114	6.64	15	*	2	*
Wisconsin	414	6.37	205	4.37	128	17.28	49	7.69
Wyoming	32	4.64	26	4.72	—	*	4	*

Table 15. Number of infant deaths and mortality rates, by race and Hispanic origin for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, and by sex for the United States, 2017—Con.

[Rates are infant (under 1 year) deaths per 1,000 live births in specified group. Infant deaths are based on race or Hispanic origin of decedent; live births are based on race or Hispanic origin of mother; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards; see Technical Notes]

Area and sex	Total ¹		Non-Hispanic white ²		Non-Hispanic black ²		Hispanic	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Puerto Rico	163	6.71	—	*	—	*	163	6.91
Virgin Islands	10	*	—	*	4	*	2	*
Guam	24	7.28	—	*	—	*	2	*
American Samoa	12	*	—	*	—	*	—	*
Northern Marianas	8	*	1	*	—	*	—	*

* Rate does not meet NCHS standards of reliability; see Technical Notes.

— Quantity zero.

¹Includes races and origins not shown separately.

²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.

³Excludes data for Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Technical Notes

Nature and sources of data

Data in this report are based on information from all death certificates filed in the 50 states and the District of Columbia, and are processed by the National Center for Health Statistics (NCHS). Death certificates are completed by funeral directors, attending physicians, medical examiners, coroners, or other persons legally authorized to certify deaths. Data for 2017 are based on records of deaths that occurred during 2017 and were received as of July 25, 2018. Data for earlier years can be obtained via CDC WONDER (19).

The U.S. Standard Certificate of Death, which the states use as a model, was revised in 2003 (34). Prior to 2003, the standard certificate of death had not been revised since 1989 (35). This report includes data for 49 states (Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming) and the District of Columbia that used the 2003 revision of the U.S. Standard Certificate of Death in 2017; and data for West Virginia that collected and reported death data in 2017 based on the 1989 revision of the U.S. Standard Certificate of Death for part of the year and the 2003 revision for the remainder of the year.

Because most of the items presented in this report appear largely comparable despite changes to item wording and format in the 2003 death certificate revision, data from all states are combined unless otherwise stated. Data for American Samoa, Guam, Commonwealth of the Northern Mariana Islands (Northern Marianas), Puerto Rico, and U.S. Virgin Islands are included in tables showing data by state but are not included in U.S. totals. In 2017, Guam, Northern Marianas, and Puerto Rico collected and reported death data using the 2003 revision of the U.S. Standard Certificate of Death. U.S. Virgin Islands collected and reported death data in 2017 using the 1989 revision. American Samoa collected and reported death data in 2017 using an older pre-1989 version of the death certificate.

Mortality statistics are based on information submitted by the jurisdictions and coded by NCHS through the Vital Statistics Cooperative Program. For the 2017 data year, all states, the District of Columbia, New York City, and Puerto Rico submitted mortality medical data electronically to NCHS. American Samoa, Guam, Northern Marianas, and U.S. Virgin Islands submitted copies of death certificates from which NCHS entered and coded all medical data. All states, the District of Columbia, New York City, American Samoa, and Puerto Rico submitted mortality demographic data electronically to NCHS. All demographic data for Guam, Northern Marianas, and U.S. Virgin Islands were entered and coded by NCHS from copies of death certificates submitted by the territories.

Data for the entire United States refer to events occurring within the United States. Data shown for geographic areas are by place of residence. Beginning with 1970, mortality statistics for the United States exclude deaths of nonresidents of the United States. All data exclude fetal deaths.

Mortality statistics for American Samoa, Northern Marianas, Puerto Rico, and U.S. Virgin Islands exclude deaths of nonresidents for each area. For Guam, however, mortality statistics exclude deaths that occurred to a resident of any place other than Guam or the United States (50 states and the District of Columbia).

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with World Health Organization (WHO) regulations, which specify that member countries classify and code causes of death in accordance with the current revision of the *International Classification of Diseases* (ICD). ICD provides the basic guidance used in virtually all countries to code and classify causes of death. Effective with deaths occurring in 1999, the United States began using the 10th Revision of this classification (ICD-10) (36). For earlier years, causes of death were classified according to the revisions then in use: 1979–1998, Ninth Revision; 1968–1978, Eighth Revision, adapted for use in the United States; 1958–1967, Seventh Revision; and 1949–1957, Sixth Revision.

Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Consequently, cause-of-death comparisons among revisions require consideration of comparability ratios and, where available, estimates of their standard errors. Comparability ratios between the Ninth and Tenth revisions, Eighth and Ninth revisions, Seventh and Eighth revisions, and Sixth and Seventh revisions may be found in other NCHS reports and independent tabulations (37–42).

ICD 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. Cause-of-death data presented in this publication were coded by procedures outlined in annual issues of the NCHS Instruction Manual (6,43,44). ICD includes rules for selecting the underlying cause of death and regulations on the use of ICD.

Prior to data year 1968, mortality medical data were based on manual coding of an underlying cause of death for each certificate, in accordance with WHO rules. Effective with data year 1968, NCHS converted to computerized coding of the underlying cause and manual coding of all causes (multiple causes) on the death certificate. In this system, called Automated Classification of Medical Entities (ACME) (45), multiple-cause codes are inputted to computer software that uses WHO rules to select the underlying cause. All cause-of-death data in this report are coded using ACME.

The ACME system is used to select the underlying cause of death for all death certificates in the United States. In addition, NCHS developed two computer systems as inputs to ACME. Beginning with 1990 data, the Mortality Medical Indexing,

Classification, and Retrieval system (MICAR) (46,47) was introduced to automate the coding of multiple causes of death. In addition, MICAR provides more detailed information on the conditions reported on death certificates than is available through ICD code structure. Beginning with data year 1993, SuperMICAR (48), an enhancement of the MICAR system, was introduced, allowing for literal entry of the multiple cause-of-death text as reported by the certifier. This information is then automatically processed by the MICAR and ACME computer systems. Records that cannot be automatically processed by MICAR are manually multiple-cause coded and then further processed through ACME to determine the underlying cause of death. In 2017, SuperMICAR was used to process all of the country's death records.

In this report, tabulations of cause-of-death statistics are based solely on the underlying cause of death. The underlying cause is defined by WHO as “the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury” (5). The underlying cause is selected from the conditions entered by the medical certifier in the cause-of-death section of the death certificate. When more than one cause or condition is entered by the medical certifier, the underlying cause is determined by the sequence of conditions on the certificate, provisions of ICD, and associated selection rules and modifications. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. This is captured in NCHS multiple cause-of-death statistics (49–51).

Tabulation lists and cause-of-death ranking

Tabulation lists for ICD–10 are published in NCHS Instruction Manual, Part 9, “ICD–10 Cause-of-Death Lists for Tabulating Mortality Statistics” (52). Beginning with data year 2017, cause-of-death titles previously appearing in the possessive form were changed to the nonpossessive form (e.g., “Alzheimer’s disease” was changed to “Alzheimer disease”). Tabulation lists: a) “List of 113 Selected Causes of Death and Enterocolitis due to *Clostridium difficile*” (the title of which was modified in 2009 to include Enterocolitis due to *Clostridium difficile*), used for deaths of all ages; and b) “List of 130 Selected Causes of Infant Death,” used for infants, are used to rank leading causes of death for the two population groups (52). Prior to the 2015 data year, annual reports of final data presented cause-of-death data based on these two tabulation lists. To streamline cause-of-death information shown in this report, beginning with the 2015 data year, cause-of-death data are presented for only select causes of death. The select causes include all rankable causes as well as other select causes based on public health impact and future planning. Data for all causes on the “List of 113 Selected Causes of Death” and “List of 130 Selected Causes of Infant Death” are still available from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf and through CDC’s WONDER system at <https://wonder.cdc.gov/>. In the list of 113 causes, the group titles of Major cardiovascular diseases (ICD–10 codes I00–I78) and Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) are not ranked. In addition, category titles that begin with the

words “other” and “all other” are not ranked to determine the leading causes of death. When one of the titles that represents a subtotal is ranked—for example, Tuberculosis (A16–A19)—its component parts are not ranked, as in this case, Respiratory tuberculosis (A16) and Other tuberculosis (A17–A19). For the list of 130 causes of infant death, the same ranking procedures are used except that the category of Major cardiovascular diseases is not on the list. More detail regarding ranking procedures can be found in “Deaths: Leading Causes for 2017” (2).

Leading cause-of-death trends discussed in this report are based on cause-of-death data according to ICD–10 for 1999–2017 and ICD–9 for the most comparable cause-of-death titles for 1979–1998. Although, in some cases, categories from the “List of 113 Selected Causes of Death” are identical to those in the earlier “List of 72 Selected Causes of Death” used with ICD–9, caution must be used because many of these categories are not comparable even though the cause-of-death titles may be the same. Tables showing ICD–9 categories that are comparable with ICD–10 titles in the “List of 113 Selected Causes of Death” may be found in the reports, “Comparability of Cause of Death Between ICD–9 and ICD–10: Preliminary Estimates” (39) and “Deaths: Final Data for 1999” (53).

Trend data for 1979–1998 that are classified by ICD–9 but sorted into the “List of 113 Selected Causes of Death” developed for ICD–10 are available from the mortality website: <https://www.cdc.gov/nchs/data/statab/hist001r.pdf>.

Revision of ICD and resulting changes in classification and rules for selecting the underlying cause of death have important implications for the analysis of mortality trends by cause of death. For some causes of death, the discontinuity in trend can be substantial (37,39). Therefore, considerable caution should be used in analyzing cause-of-death trends for periods of time that extend across more than one revision of ICD.

Codes added or deleted in 2017

No ICD–10 codes were added or deleted in data year 2017. Information on categories added or deleted in previous years is available from: <https://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2017.pdf> (52).

Codes for terrorism

Beginning with data for 2001, NCHS introduced categories *U01–*U03 for classifying and coding deaths due to acts of terrorism. The asterisks before the category codes indicate that they are not part of ICD–10. Deaths classified to the terrorism categories are included in the 113 causes of death list in the categories for Assault (homicide) and Intentional self-harm (suicide), and in the 130 causes of death list for infants in the category for Assault (homicide). Additional information on these new categories is available from: https://www.cdc.gov/nchs/icd/terrorism_code.htm. This report includes two deaths from the 2017 New York City truck attack that were assigned to terrorism categories. Only deaths to residents of the United States are included in this report.

In any given year, it is possible that deaths resulting from acts of terrorism may not be identified as such if: a) information

identifying an incident as an act of terrorism is not available to the certifier at the time of certification; b) the certificate is not updated with the information if it later becomes available; or c) official results of the investigation declaring the incident to be an act of terrorism have not yet been made public.

Enterocolitis due to *Clostridium difficile*

The number of deaths from Enterocolitis due to *Clostridium difficile* (*C. difficile*) (ICD-10 code A04.7) was 6,118 in 2017. Deaths from this cause increased dramatically from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (19). Because of the increasing importance of this cause of death (28,29), beginning with data year 2006, *C. difficile* was added to the list of rankable causes.

Quality of reporting and processing cause of death

Quality of mortality data is largely dependent on proper and thorough completion of death certificates by certifiers. Accuracy and completeness of information entered on death certificates can vary by state from year to year.

One index of the quality of reporting causes of death is the proportion of death certificates coded to Chapter XVIII—Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (ICD-10 codes R00–R99). Although it is impossible to determine which deaths occur from which underlying causes, the proportion coded to R00–R99 indicates the consideration given to the cause-of-death statement by the medical certifier. This proportion also may be used as a rough measure of specificity of medical diagnoses made by the certifier in various areas. The percentage of all reported deaths in the United States assigned to Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified, decreased from 1.22% in 2016 to 1.16% in 2017.

Rules for coding a cause or causes of death may sometimes require modification when evidence suggests it will improve the quality of cause-of-death data. Prior to 1999, such modifications were made only when a new ICD revision was implemented. A process for updating ICD was introduced with ICD-10 that allows for midrevision changes. These changes, however, may affect comparability of data between years for selected causes of death.

Detail on coding and classification rule changes can be found in the instruction manual under Part 2, available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm. No new coding or classification rule changes occurred in 2017. Trend data for causes of death affected by coding rule changes in previous years should be interpreted with caution.

Rare causes of death

Selected causes of death considered to be of public health concern are supposed to be routinely confirmed by states according to agreed-upon procedures between state vital statistics programs and NCHS. These causes, termed “infrequent and rare causes of death,” are listed in the NCHS Instruction

Manual, Parts 2a, 11, and 20 (43,54,55). In 2017, some states did not confirm some or all deaths from rare causes.

Codes for drug-induced deaths

Causes of death attributable to drug-induced mortality include ICD-10 codes D52.1, Drug-induced folate deficiency anemia; D59.0, Drug-induced hemolytic anemia; D59.2, Drug-induced nonautoimmune hemolytic anemia; D61.1, Drug-induced aplastic anemia; D64.2, Secondary sideroblastic anemia due to drugs and toxins; E06.4, Drug-induced thyroiditis; E16.0, Drug-induced hypoglycemia without coma; E23.1, Drug-induced hypopituitarism; E24.2, Drug-induced Cushing syndrome; E27.3, Drug-induced adrenocortical insufficiency; E66.1, Drug-induced obesity; selected codes from the ICD-10 title of Mental and behavioral disorders due to psychoactive substance use, specifically, F11.1–F11.5, F11.7–F11.9, F12.1–F12.5, F12.7–F12.9, F13.1–F13.5, F13.7–F13.9, F14.1–F14.5, F14.7–F14.9, F15.1–F15.5, F15.7–F15.9, F16.1–F16.5, F16.7–F16.9, F17.3–F17.5, F17.7–F17.9, F18.1–F18.5, F18.7–F18.9, F19.1–F19.5, and F19.7–F19.9; G21.1, Other drug-induced secondary parkinsonism; G24.0, Drug-induced dystonia; G25.1, Drug-induced tremor; G25.4, Drug-induced chorea; G25.6, Drug-induced tics and other tics of organic origin; G44.4, Drug-induced headache, not elsewhere classified; G62.0, Drug-induced polyneuropathy; G72.0, Drug-induced myopathy; I95.2, Hypotension due to drugs; J70.2, Acute drug-induced interstitial lung disorders; J70.3, Chronic drug-induced interstitial lung disorders; J70.4, Drug-induced interstitial lung disorder, unspecified; K85.3, Drug-induced acute pancreatitis; L10.5, Drug-induced pemphigus; L27.0, Generalized skin eruption due to drugs and medicaments; L27.1, Localized skin eruption due to drugs and medicaments; M10.2, Drug-induced gout; M32.0, Drug-induced systemic lupus erythematosus; M80.4, Drug-induced osteoporosis with pathological fracture; M81.4, Drug-induced osteoporosis; M83.5, Other drug-induced osteomalacia in adults; M87.1, Osteonecrosis due to drugs; R50.2, Drug-induced fever; R78.1, Finding of opiate drug in blood; R78.2, Finding of cocaine in blood; R78.3, Finding of hallucinogen in blood; R78.4, Finding of other drugs of addictive potential in blood; R78.5, Finding of psychotropic drug in blood; X40–X44, Accidental poisoning by and exposure to drugs, medicaments and biological substances; X60–X64, Intentional self-poisoning (suicide) by and exposure to drugs, medicaments and biological substances; X85, Assault (homicide) by drugs, medicaments and biological substances; and Y10–Y14, Poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent. Drug-induced causes exclude unintentional injuries, homicide, and other causes indirectly related to drug use, as well as newborn deaths associated with the mother’s drug use.

Codes for alcohol-induced deaths

Causes of death attributable to alcohol-induced mortality include ICD-10 codes E24.4, Alcohol-induced pseudo-Cushing syndrome; F10, Mental and behavioral disorders due to alcohol use; G31.2, Degeneration of nervous system due to alcohol; G62.1, Alcoholic polyneuropathy; G72.1, Alcoholic myopathy;

I42.6, Alcoholic cardiomyopathy; K29.2, Alcoholic gastritis; K70, Alcoholic liver disease; K85.2, Alcohol-induced acute pancreatitis; K86.0, Alcohol-induced chronic pancreatitis; R78.0, Finding of alcohol in blood; X45, Accidental poisoning by and exposure to alcohol; X65, Intentional self-poisoning by and exposure to alcohol; and Y15, Poisoning by and exposure to alcohol, undetermined intent. Alcohol-induced causes exclude unintentional injuries, homicides, and other causes indirectly related to alcohol use, as well as newborn deaths associated with maternal alcohol use.

Codes for firearm-related deaths

Causes of death attributable to firearm-related injuries include ICD-10 codes *U01.4, Terrorism involving firearms (homicide); W32–W34, Accidental discharge of firearms; X72–X74, Intentional self-harm (suicide) by discharge of firearms; X93–X95, Assault (homicide) by discharge of firearms; Y22–Y24, Discharge of firearms, undetermined intent; and Y35.0, Legal intervention involving firearm discharge. Deaths from firearm-related injuries exclude deaths due to explosives and other causes indirectly related to firearms.

Race and Hispanic origin

The 2003 revision of the U.S. Standard Certificate of Death allows the reporting of more than one race (multiple races) (34). This change was implemented to reflect the increasing diversity of the U.S. population and to be consistent with the decennial census. The race and ethnicity items on the revised certificate are compliant with the 1997 “Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity,” issued by the Office of Management and Budget (OMB) (17). This revision replaced standards that were issued in 1977 (56). The new standards mandate the collection of more than one race where applicable for federal data (17). In addition, the new death certificate is compliant with the OMB-mandated minimum set of five races to be reported for federal data (34). Multiple race includes any combination of white, black or African American, American Indian or Alaska Native (AIAN), Asian, and Native Hawaiian or Other Pacific Islander (NHOPI). If two or more specific subgroups such as Korean and Chinese are reported, these count as a single race of Asian rather than as multiple races.

The number of states reporting multiple race has increased, from 7 states in 2003 to all 50 states and the District of Columbia in 2017 (Table I), although West Virginia began collecting multiple-race data on death certificates in September. In 2017, more than one race was reported for 0.5% of decedents of non-Hispanic origin and for 0.9% of Hispanic origin (Table II). Although still uncommon, multiple races were reported more often for younger decedents than for older decedents (3.3% of decedents under age 25 compared with 0.8% of decedents aged 25–64 and 0.3% of decedents aged 65 and over). In 2017, no decedents were reported as having more than four races.

Data from vital records based on the 1989 revision of the U.S. Standard Certificate of Death follow the 1977 OMB standard, allowing only a single race to be reported (35,56).

The 1977 standard stipulates that states must report a minimum set of four races: white, black or African American, AIAN, and Asian or Pacific Islander (API). Under these standards, data for API persons were collected as a single group; that is, data for Asian persons were not reported separately from NHOPI persons (56). The 1997 OMB guidelines provide for the reporting of Asian persons separately from NHOPI persons (17).

Multiple-race data were collected and reported for the entire year by 49 states and the District of Columbia. West Virginia collected single-race data for part of 2017 and multiple-race data for the remainder of the year. Data by race for death certificates collecting only one race—the source of the numerators for death rates—are incompatible with population data collected in the 2000 and 2010 censuses, intercensal estimates for 1991–1999 and 2001–2009, and postcensal estimates for 2011–2017—the denominators for the rates. To produce death rates by race, the reported population data for multiple-race persons had to be “bridged” to single-race categories. To provide uniformity and comparability of data until all data become available in the multiple-race format, the responses of those for whom more than one race was reported (multiple race) must be bridged to a single race. The bridging procedure is similar to that used to bridge multiracial population estimates (18,57). Multiracial decedents are imputed to a single race (white, black, AIAN, or API) according to their combination of races, Hispanic origin, sex, and age indicated on the death certificate. The imputation procedure is described in detail at: https://www.cdc.gov/nchs/data/dvs/Multiple_race_documentation_5-10-04.pdf. Similarly, when calculating infant mortality rates, multiracial infants are bridged to a single race. The bridging procedure for multiple-race mothers and fathers is based on the procedure used to bridge the multiple-race population estimates (33); see “Infant mortality rates” in this section. Use of the bridged-race process will be discontinued once all states collect data on race according to 1997 OMB guidelines for the entire year.

Race and Hispanic origin are two distinct attributes and are reported separately on the death certificate. Therefore, data shown by Hispanic origin and race are based on a combination of the two attributes for the non-Hispanic population. Data shown for the Hispanic population include persons of any race. Hispanic origin is not imputed if it is not reported.

Quality of race and Hispanic-origin data—Death rates for Hispanic, non-Hispanic AIAN, and non-Hispanic API persons should be interpreted with caution because of inconsistencies in reporting Hispanic origin or race on the death certificate compared with censuses, surveys, and birth certificates. Studies have shown underreporting on death certificates of non-Hispanic AIAN, non-Hispanic API, and Hispanic decedents, as well as undercounts of these groups in censuses (20,21,58,59).

A number of studies have been conducted on the reliability of race and Hispanic origin reported on the death certificate by comparing it with race and Hispanic origin reported on another data collection instrument, such as the census or a survey (20,21,60,61). Inconsistencies may arise because of differences in who provides race and ethnicity information on the compared records. Race and Hispanic-origin information on the death certificate is reported by a funeral director as provided by an

Table I. Year state started reporting multiple race and year state began using the revised standard certificate of death: Each state, 2003–2017

Area	Year ¹ state began reporting multiple race	Year state began using the 2003 standard certificate	Area	Year ¹ state began reporting multiple race	Year state began using the 2003 standard certificate
Alabama	2016	2016	Montana	2003	2003
Alaska	2014	2014	Nebraska	2005	2005
Arizona	2010	2010	Nevada	2008	2008
Arkansas	2008	2008	New Hampshire	⁹ 2004	¹⁰ 2004
California	2003	2003	New Jersey	2004	2004
Colorado	2015	2015	New Mexico	2006	2006
Connecticut	2005	2005	New York	2003	2003
Delaware	2007	2007	North Carolina	2014	2014
District of Columbia	² 2005	³ 2005	North Dakota	2008	2008
Florida	2005	2005	Ohio	2007	2007
Georgia	2008	2008	Oklahoma	2004	2004
Hawaii	2003	2014	Oregon	2006	2006
Idaho	2003	2003	Pennsylvania	2012	2012
Illinois	2008	2008	Rhode Island	2006	2006
Indiana	2008	2008	South Carolina	2005	2005
Iowa	2011	2011	South Dakota	2004	2004
Kansas	2005	2005	Tennessee	2012	2012
Kentucky	⁴ 2010	⁵ 2010	Texas	2006	2006
Louisiana	⁴ 2012	⁵ 2012	Utah	2005	2005
Maine	2003	⁶ 2010	Vermont	⁴ 2008	⁵ 2008
Maryland	2015	2015	Virginia	¹¹ 2014	¹² 2014
Massachusetts	⁷ 2014	⁸ 2014	Washington	2004	2004
Michigan	2004	2004	West Virginia	⁷ 2017	⁸ 2017
Minnesota	2004	³ 2011	Wisconsin	2003	⁵ 2013
Mississippi	2012	2012	Wyoming	2004	2004
Missouri	2010	2010			

¹Indicates year in which National Center for Health Statistics first received multiple-race data from each state, although the state may have begun collecting such data at an earlier date.

²Began reporting multiple race in March.

³Began implementing revised certificate in March.

⁴Began reporting multiple race in July.

⁵Began implementing revised certificate in July.

⁶Began implementing revised certificate in June.

⁷Began implementing revised certificate in September.

⁸Began reporting multiple race in September.

⁹Began reporting multiple race in mid-April.

¹⁰Began implementing revised certificate in mid-April.

¹¹Began reporting multiple race in November.

¹²Began implementing revised certificate in November.

SOURCE: NCHS, National Vital Statistics System, Mortality.

informant or, in the absence of an informant, on the basis of observation. In contrast, race and Hispanic origin in the census or the U.S. Census Bureau's American Community Survey (ACS) is obtained while the person is alive; in these cases, race and ethnicity is self-reported or reported by another member of the household familiar with the person and, therefore, may be considered more valid. A high level of agreement between the death certificate and the census or survey report is essential to ensure unbiased death rates by race and ethnicity.

Studies (20,59) show that a person self-reported as non-Hispanic AIAN or non-Hispanic API on census or survey records was sometimes reported as non-Hispanic white on the death certificate. Using the National Longitudinal Mortality Study, Arias et al. examined the reliability of race and Hispanic origin reported on about 559,007 death certificates compared with that reported on 38 Current Population Surveys (CPSs) conducted by the Census Bureau for 1979–2011 (20,21). Agreement between the two sources was found to be excellent for the non-Hispanic

white and non-Hispanic black populations, both exhibiting CPS-to-death certificate ratios of 1.00. On the other hand, substantial differences were found for other race and ethnicity groups. The ratio of CPS to death certificates was found to be 1.33 for the non-Hispanic AIAN population and 1.03 for the non-Hispanic API population, indicating net underreporting on death certificates of 33% for non-Hispanic AIAN and 3% for non-Hispanic API persons. The ratio of deaths for CPS to death certificates for Hispanic persons was found to be 1.03, indicating a net underreporting on death certificates for the Hispanic population of 3%. The net effect of misclassification is an underestimation of deaths and death rates for the non-Hispanic API, non-Hispanic AIAN, and Hispanic populations.

In addition, undercoverage of minority groups in the census and resultant population estimates introduces biases into death rates by race and Hispanic origin (20,21,58–61). Unlike the 1990 census, coverage error in the 2000 census was found to be statistically significant only for the non-Hispanic white

Table II. Deaths, by race and Hispanic origin: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming, 2017

[By state of occurrence. Data exclude deaths with origin not stated]

Race and origin	Deaths	Percent of non-Hispanic deaths	Race and origin	Deaths	Percent of Hispanic deaths
Non-Hispanic	2,584,912	100.0	Hispanic	197,191	100.0
One race	2,572,417	99.5	One race	195,464	99.1
Non-Hispanic white	2,149,102	83.1	Hispanic white	171,208	86.8
Non-Hispanic black	332,426	12.9	Hispanic other ¹	20,098	10.2
Non-Hispanic Asian	66,151	2.6	Hispanic black	2,640	1.3
Non-Hispanic AIAN	17,561	0.7	Hispanic AIAN	811	0.4
Non-Hispanic other	4,042	0.2	Hispanic Asian	532	0.3
Non-Hispanic NHOPI	3,135	0.1	Hispanic NHOPI	175	0.1
Two or more races	12,495	0.5	Two or more races	1,727	0.9
Two races	11,730	0.5	Two races	1,575	0.8
Non-Hispanic AIAN and non-Hispanic white	4,765	0.2	Hispanic AIAN and Hispanic white	615	0.3
Non-Hispanic Asian and non-Hispanic white	2,181	0.1	Hispanic Asian and Hispanic white	434	0.2
Non-Hispanic black and non-Hispanic white	2,043	0.1	Hispanic black and Hispanic white	352	0.2
Non-Hispanic Asian and non-Hispanic NHOPI	920	0.0	Hispanic NHOPI and Hispanic white	99	0.1
Non-Hispanic NHOPI and non-Hispanic white	718	0.0	Hispanic black and Hispanic AIAN	27	0.0
Non-Hispanic black and non-Hispanic AIAN	666	0.0	Hispanic Asian and Hispanic NHOPI	21	0.0
Non-Hispanic black and non-Hispanic Asian	229	0.0	Hispanic black and Hispanic Asian	13	0.0
Non-Hispanic AIAN and non-Hispanic Asian	98	0.0	Hispanic AIAN and Hispanic Asian	9	0.0
Non-Hispanic black and non-Hispanic NHOPI	93	0.0	Hispanic black and Hispanic NHOPI	3	0.0
Non-Hispanic AIAN and non-Hispanic NHOPI	17	0.0	Hispanic AIAN and Hispanic NHOPI	2	0.0
Three races	755	0.0	Three races	145	0.1
Non-Hispanic Asian, non-Hispanic NHOPI, and non-Hispanic white	473	0.0	Hispanic Asian, Hispanic NHOPI, and Hispanic white	87	0.0
Non-Hispanic black, non-Hispanic AIAN, and non-Hispanic white	166	0.0	Hispanic black, Hispanic AIAN, and Hispanic white	29	0.0
Non-Hispanic black, non-Hispanic Asian, and non-Hispanic white	43	0.0	Hispanic AIAN, Hispanic Asian, and Hispanic white	13	0.0
Non-Hispanic AIAN, non-Hispanic Asian, and non-Hispanic white	27	0.0	Hispanic black, Hispanic Asian, and Hispanic white	12	0.0
Non-Hispanic black, non-Hispanic AIAN, and non-Hispanic Asian	11	0.0	Hispanic AIAN, Hispanic NHOPI, and Hispanic white	2	0.0
Non-Hispanic AIAN, non-Hispanic NHOPI, and non-Hispanic white	10	0.0	Hispanic black, Hispanic AIAN, and Hispanic Asian	1	0.0
Non-Hispanic black, non-Hispanic Asian, and non-Hispanic NHOPI	8	0.0	Hispanic black, Hispanic NHOPI, and Hispanic white	1	0.0
Non-Hispanic AIAN, non-Hispanic Asian, and non-Hispanic NHOPI	8	0.0			
Non-Hispanic black, non-Hispanic NHOPI, and non-Hispanic white	6	0.0			
Non-Hispanic black, non-Hispanic AIAN, and non-Hispanic NHOPI	3	0.0			

See footnotes at end of table.

Table II. Deaths, by race and Hispanic origin: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming, 2017—Con.

[By state of occurrence. Data exclude deaths with origin not stated]

Race and origin	Deaths	Percent of non-Hispanic deaths	Race and origin	Deaths	Percent of Hispanic deaths
Non-Hispanic—Con.			Hispanic—Con.		
Four races	10	0.0	Four races	7	0.0
Non-Hispanic AIAN, non-Hispanic Asian, non-Hispanic NHOPI, and non-Hispanic white	7	0.0	Hispanic AIAN, Hispanic Asian, Hispanic NHOPI, and Hispanic white	4	0.0
Non-Hispanic black, non-Hispanic Asian, non-Hispanic AIAN, and non-Hispanic white	2	0.0	Hispanic black, Hispanic Asian, Hispanic NHOPI, and Hispanic white	2	0.0
Non-Hispanic black, non-Hispanic AIAN, non-Hispanic NHOPI, and non-Hispanic white	1	0.0	Hispanic black, Hispanic AIAN, Hispanic NHOPI, and Hispanic white	1	0.0

0.0 Quantity more than zero but less than 0.05.

¹Includes records for which race was reported as "other." Further processing assigns "other" race to one of the recognized categories. "Other" race comprises a wide variety of responses; however, the most common is to check "other" and not provide further specification or to report a Hispanic group as a race.

NOTES: AIAN is American Indian or Alaska Native. NHOPI is Native Hawaiian or Other Pacific Islander.

SOURCE: NCHS, National Vital Statistics System, Mortality.

population (overcounted by approximately 1.13%) and non-Hispanic black population (undercounted by approximately 1.84%) (60). Overall, the 2010 census coverage error was minor, with a net overcount of 0.01%. The net undercounts were statistically different from zero for the following groups: non-Hispanic black (2.07%), non-Hispanic white (−0.84%), Hispanic (1.54%), and on-reservation AIAN (4.88%) populations. The net undercounts were not statistically different from zero for the non-Hispanic Asian (0.08%), non-Hispanic NHOPI (1.34%), and off-reservation AIAN (−1.95%) populations (62).

Data year 1997 was the first year in which mortality data by Hispanic origin were available for the entire United States.

Other races, race not stated, and Hispanic origin not stated—Beginning in 1992, all records coded as “other races” (0.8% of total deaths in 2017) were assigned to the specified race of the previous record. Records for which race was unknown, not stated, or not classifiable (0.2%) were assigned the racial designation of the previous record. Records for which Hispanic origin was not stated or not classifiable (0.5%) did not have this information imputed.

Infant mortality rates—Infant deaths in this report are tabulated by the race and Hispanic origin of the decedent. Live births, the denominators of infant mortality rates, are tabulated by race and Hispanic origin of mother.

In 2017, multiple race was reported on the revised birth certificates of all 50 states, District of Columbia, Puerto Rico, U.S. Virgin Islands, Guam, and Northern Marianas using the 2003 revision of the U.S. Standard Certificate of Birth (63). American Samoa continued to report births based on the 1989 birth certificate revision, reporting race according to the 1977 OMB standards.

Infant mortality rates for the Hispanic-origin population are based on numbers of resident infant deaths reported to be of Hispanic origin and numbers of resident live births by Hispanic origin of mother for the United States. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. In the United States in 2017, the percentage of infant deaths of unknown origin was 0.9%, and the percentage of live births to mothers of unknown origin was 0.8%.

Small numbers of infant deaths for specific Hispanic-origin groups result in infant mortality rates subject to relatively large random variation (see “Random variation”).

Infant mortality rates calculated from the general mortality file for specified race and Hispanic origin contain errors because of reporting problems that affect the classification of race and Hispanic origin on the birth and death certificates for the same infant. Infant mortality rates by specified race and Hispanic origin are more accurate when based on the linked file of infant deaths and live births (33). The linked file computes infant mortality rates using the race and Hispanic origin of the mother from the birth certificate in both the numerator and denominator of the rate. In addition, the mother’s race and Hispanic origin from the birth certificate are considered to be more accurately reported than the infant’s race and Hispanic origin from the death certificate. On the birth certificate, race and Hispanic origin are generally reported by the mother at the time of delivery, whereas on the death certificate, the infant’s race and Hispanic origin are

reported by an informant, usually the mother but sometimes the funeral director. Estimates of reporting errors have been made by comparing rates based on the linked files with those in which the infant’s race and Hispanic origin are based on information from the death certificate (33,58).

Life tables

The life table provides a comprehensive measure of the effect of mortality on life expectancy. It is composed of sets of values showing the mortality experience of a hypothetical group of infants born at the same time and subject throughout their lifetime to the age-specific death rates of a particular time period, usually a given year. Prior to data year 1997, U.S. life tables were abridged and constructed by reference to a standard table (64). In addition, the age range for these life tables was limited to 5-year age groups ending with age group 85 and over. Beginning with final data reported for 1997, complete life tables were constructed by single years of age extending to age 100 (65), using a methodology similar to that of the 1989–1991 decennial life tables (66). The methodology was again revised for data years 2000–2007 using a methodology similar to that of the 1999–2001 decennial life tables (67).

Research into the methodology used for the 1999–2001 decennial life tables, which was applied to the 2000–2007 annual life tables, revealed that it is not necessary to model (or “smooth”) the probabilities of death beginning at age 66. The observed blended vital statistics and Medicare data for ages 66–85 are robust enough and do not require additional smoothing. Beginning with final data reported for 2008 (68), the life table methodology was refined by changing the smoothing technique used to estimate the life table functions at the oldest ages. Beginning with the 2008 data year, the methodology used to produce the life tables does not model the probabilities of death beginning at age 66, but rather at ages above 85 or so. See “United States Life Tables, 2008” for a detailed description of the new methodology (69). Life table data shown in this report for data years 2001–2017 are based on the new methodology. Because life table values presented in this report for 2001–2009 were re-estimated using the new methodology and revised 2001–2009 intercensal population estimates based on the 2010 decennial census (16), the values may differ from those previously published in annual final mortality and life table reports. Life expectancy values in this report for 2016 were revised using final Medicare data; therefore, these values may differ from those previously published (3).

Historically, NCHS has produced annual life tables by race including the white and black populations but did not produce life tables for other racial or ethnic groups. Beginning with data year 2006 (originally published elsewhere) (22), NCHS began producing life tables by Hispanic origin, after conducting research into the quality of race and ethnicity reporting on death certificates and developing methodologies to correct for misclassification of these populations on death certificates (20,21). These methods that adjust for misclassification are applied to the production of the life tables, but not to the death rates shown throughout this report. Life tables by race and ethnicity are shown in this report with trend data from 2006 through 2017 (Table 4).

Although the life table methodology used produces complete life tables (by single years of age), the life table data shown in this report are summarized in 5-year age groupings.

Causes of death contributing to changes in life expectancy

A life table partitioning technique was used to estimate causes of death contributing to changes in life expectancy in this report. The method partitions changes into component additive parts and identifies the causes of death having the greatest influence, positive or negative, on changes in life expectancy (70–72).

Injury mortality by mechanism and intent

Injury mortality data are presented using the external cause-of-injury mortality matrix for ICD–10 (Table 11). In this framework, cause-of-injury deaths are organized principally by mechanism (e.g., firearm or poisoning), and secondarily by manner or intent of death (e.g., unintentional, suicide, or homicide).

The number of deaths for selected causes in this framework may differ from those shown in tables that use the standard mortality tabulation lists. Following WHO conventions, standard mortality tabulations (Table 8) present external causes of death (ICD–10 codes *U01–*U03 and V01–Y89); in contrast, the matrix (Table 11) excludes deaths classified as Complications of medical and surgical care (Y40–Y84 and Y88). For additional information on injury data presented in this framework, see the report, “Deaths: Injuries, 2002,” available from: https://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_10.pdf (73). Data for later years are available through CDC’s WONDER system at: <https://wonder.cdc.gov/> or through CDC’s WISQARS at: <https://www.cdc.gov/injury/wisqars/index.html>. Implementation of changes to ICD–10 may affect the matrix, requiring modification of codes in selected categories. No changes were made to the matrix in 2017. For more information on the latest ICD–10 external cause-of-injury codes included in the matrix, see https://www.cdc.gov/nchs/injury/injury_tools.htm.

Infant mortality

Infant mortality rates are the most commonly used index for measuring the risk of dying during the first year of life. The rates presented in this report are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period, and are presented as rates per 1,000 or per 100,000 live births. For final birth figures used in the denominator for infant mortality rates, see the report “Births: Final Data for 2017” (63). In contrast to infant mortality rates based on live births, infant death rates are based on the estimated population under age 1 year. Infant death rates that appear in tabulations of age-specific death rates in this report are calculated by dividing the number of infant deaths by the July 1, 2017, population estimate of persons under age 1, based on 2010 census populations. These rates are presented per 100,000 population in this age group. Because of differences

in the denominators, infant death rates may differ from infant mortality rates.

There are two sources of infant mortality data: a) the general mortality file and b) the linked file of live births and infant deaths. Data from the linked file differ from the infant mortality data presented in this report because the linked file includes only those events in which both the birth and the death occur in the United States, and late-filed births. Processing of the linked file allows for further exclusion of infant records due to duplicates and records with additional information that raise questions about an infant’s age. Although the differences are usually very small, infant mortality rates based on the linked file tend to be somewhat smaller than those based on data from the general mortality file as presented in this report. The linked file is the preferred source for infant mortality by race because it uses the mother’s self-reported race from the child’s birth certificate (33), which is more reliable than the infant’s race listed on the death certificate, and because the numerator and denominator are referring to the same person’s race.

Other variables available online

Hispanic subgroup

Mortality data by Hispanic subgroup no longer appear in the printed version of this report but are available in Internet Table I–4 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf.

Marital status

Mortality data by marital status no longer appear in the printed version of this report but are available in Table I–5 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf.

Educational attainment

Mortality data by educational attainment no longer appear in the printed version of this report but are available in Internet Tables I–6 and I–7 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf.

Injury at work

Mortality data by injury at work no longer appear in the printed version of this report but are available in Tables I–8 and I–9 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09_tables.pdf.

Maternal mortality

Maternal mortality data are not included in this report. The 2003 revision of the U.S. Standard Certificate of Death introduced a checkbox question format with categories to take advantage of additional codes available in ICD–10 for deaths with a connection to pregnancy, childbirth, and the puerperium. As states revise their death certificates, most are adopting the checkbox format, resulting in wider adoption of a pregnancy status question nationwide and greater standardization of the

particular question used. In 2017, the District of Columbia and all states had a separate question (West Virginia adopted a separate question mid-year) related to pregnancy status of female decedents around the time of their death. The 2003 standard format of the question or a question that could provide comparable information was used by 48 states and the District of Columbia for the full year and by West Virginia for part of the year. The question used by California only specifies if pregnant within the last year. Unlike the other states, it does not indicate detail on whether pregnant at the time of death, pregnant 42 days before death, or pregnant 43 days to 1 year before death.

Adopting a pregnancy status question consistent with the standard death certificate increases the identification of maternal deaths (74,75). Maternal mortality rates are consistently greater for those states with the additional information from the separate question than for the states without it. In addition, state maternal mortality rates tend to be greater after adopting the standard question than before. Some research on this issue (75–77) indicates that this increase represents an improvement in identifying maternal deaths. For example, a study in Maryland that used multiple data sources as the standard showed an improvement in identifying maternal deaths (from 62% to 98%) after adoption of a pregnancy checkbox item consistent with the 2003 standard certificate (77). However, growing evidence suggests the pregnancy status question may increase false reporting of recent pregnancy, especially with increasing age (78,79). This may result in over reporting of maternal deaths.

Population bases for computing rates

Populations used for computing death rates and life tables shown in this report represent the population residing in the United States, enumerated as of April 1 for census years and estimated as of July 1 for all other years. Population estimates used to compute death rates for the United States for 2017 are shown for 5-year age groups by race and Hispanic origin in Table III. These estimates are available by single years of age from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm (15).

Populations used for computing death rates by state, shown in Table IV, represent state postcensal population estimates based on the 2010 census, estimated as of July 1, 2017 (15). Rates for Puerto Rico are also based on population estimates from the 2010 census as of July 1, 2017, and are provided by the Census Bureau (80). Rates for American Samoa, Guam, Northern Marianas, and Virgin Islands are based on population estimates provided by the Census Bureau's International Data Base (81). Population estimates for each state and territory are not subject to sampling variation because the sources used in demographic analysis are complete counts.

Rates for 2011–2017 are based on postcensal population estimates consistent with the 2010 census, estimated as of July 1 (9–15). Rates for 2010 are based on populations enumerated as of April 1, 2010 (8). Rates for 2001–2009 shown in this report were revised using revised intercensal population estimates based on the 2010 census, estimated as of July 1 (16). Death rates for 2000 are based on populations enumerated as of April 1, 2000 (82). Rates for 1991–1999 are based on intercensal

population estimates consistent with the 2000 census levels (83). These estimates were produced under a collaborative arrangement with the Census Bureau and are based on the 2000 census counts by age, race, and sex, modified for consistency with 1977 OMB race categories and historical categories for death data (56,84). The modification procedures are described in detail elsewhere (19,57). The bridged population data are anticipated to be used over the next few years for computing population-based rates by race.

Computing rates

Except for infant mortality rates, rates are on an annual basis per 100,000 estimated population residing in the specified area. Infant mortality rates are per 1,000 or per 100,000 live births. Comparisons made in the text among rates, unless otherwise specified, are statistically significant at the 0.05 level of significance. Lack of comment in this report about any two rates does not mean that the difference was tested and found not to be significant at this level.

Age-adjusted rates (R') are used to compare relative mortality risks among groups and over time. However, they should be viewed as relative indexes rather than as actual measures of mortality risk. They were computed by the direct method—that is, by applying age-specific death rates (R) to the U.S. standard population age distribution (Table V), as in

$$R' = \sum_i \frac{P_{si}}{P_s} R_i$$

where P_{si} is the standard population for age group i and P_s is the total U.S. standard population (all ages combined).

Beginning with the 1999 data year, NCHS adopted a new population standard for use in age adjusting death rates. Based on the projected year 2000 population of the United States, the new standard replaced the 1940 standard population that had been used for more than 50 years. The new population standard affects levels of mortality and, to some extent, trends and group comparisons. Of particular note are the effects on race mortality comparisons. For detailed discussion, see the report, “Age Standardization of Death Rates: Implementation of the Year 2000 Standard” (85). Beginning with 2003 data, the traditional standard million population along with corresponding standard weights to six decimal places were replaced by the projected year 2000 population age distribution (Table V). The effect of the change is negligible and does not significantly affect comparability with age-adjusted rates calculated using the previous method.

All age-adjusted rates shown in this report are based on the 2000 U.S. standard population.

Age-adjusted rates for Puerto Rico, Guam, American Samoa, and Northern Marianas were computed by applying the age-specific death rates to the U.S. standard population. The 2000 standard population used for computing age-adjusted rates for the territories is shown in Table V.

Using the same standard population, death rates for the total population and for each race–sex group were adjusted separately. The age-adjusted rates were based on 10-year age groups. Age-adjusted death rates are not comparable with crude rates.

Table III. Estimated population by 5-year age groups, according to race and Hispanic origin and sex: United States, 2017

[Populations are postcensal estimates based on 2010 census estimated as of July 1, 2017; see Technical Notes in this report]

Race, Hispanic origin, and sex	Total	Age group (years)								
		Under 1	1–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39
All origins ¹	325,719,178	3,939,295	15,999,565	20,304,238	20,778,454	21,131,660	22,118,635	23,370,460	21,972,212	21,231,997
Male	160,408,119	2,015,150	8,180,818	10,368,141	10,605,072	10,800,491	11,349,142	11,902,230	11,089,131	10,615,985
Female	165,311,059	1,924,145	7,818,747	9,936,097	10,173,382	10,331,169	10,769,493	11,468,230	10,883,081	10,616,012
Non-Hispanic white	201,240,793	2,041,317	8,285,748	10,542,044	11,099,720	11,597,893	12,217,849	13,081,004	12,574,207	12,198,753
Male	99,231,457	1,045,373	4,249,222	5,398,897	5,689,440	5,949,101	6,279,933	6,656,483	6,354,187	6,142,103
Female	102,009,336	995,944	4,036,526	5,143,147	5,410,280	5,648,792	5,937,916	6,424,521	6,220,020	6,056,650
Non-Hispanic black	42,624,362	605,983	2,453,540	3,104,446	3,087,625	3,199,179	3,410,969	3,538,867	2,951,229	2,811,289
Male	20,416,272	309,368	1,246,451	1,576,851	1,566,146	1,625,167	1,733,291	1,765,639	1,431,359	1,336,143
Female	22,208,090	296,615	1,207,089	1,527,595	1,521,479	1,574,012	1,677,678	1,773,228	1,519,870	1,475,146
Non-Hispanic American Indian or Alaska Native	2,729,175	39,235	158,905	204,274	205,509	208,980	216,832	222,596	188,526	172,477
Male	1,338,910	19,977	80,889	103,326	103,871	105,864	110,066	113,060	93,768	85,125
Female	1,390,265	19,258	78,016	100,948	101,638	103,116	106,766	109,536	94,758	87,352
Non-Hispanic Asian or Pacific Islander	20,178,119	221,939	951,247	1,185,403	1,217,117	1,226,980	1,436,887	1,735,340	1,730,210	1,632,164
Male	9,642,283	113,798	489,094	604,479	613,072	618,028	727,668	855,600	831,642	765,640
Female	10,535,836	108,141	462,153	580,924	604,045	608,952	709,219	879,740	898,568	866,524
Hispanic	58,946,729	1,030,821	4,150,125	5,268,071	5,168,483	4,898,628	4,836,098	4,792,653	4,528,040	4,417,314
Male	29,779,197	526,634	2,115,162	2,684,588	2,632,543	2,502,331	2,498,184	2,511,448	2,378,175	2,286,974
Female	29,167,532	504,187	2,034,963	2,583,483	2,535,940	2,396,297	2,337,914	2,281,205	2,149,865	2,130,340

Race, Hispanic origin, and sex	Age group (years)									
	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85 and over
All origins ¹	19,643,373	20,973,858	21,401,094	22,007,956	19,987,702	16,836,381	12,847,065	8,741,261	5,965,290	6,468,682
Male	9,753,115	10,386,175	10,520,182	10,700,520	9,557,283	7,929,868	5,947,272	3,898,816	2,509,059	2,279,669
Female	9,890,258	10,587,683	10,880,912	11,307,436	10,430,419	8,906,513	6,899,793	4,842,445	3,456,231	4,189,013
Non-Hispanic white	11,340,216	12,995,468	14,068,236	15,384,319	14,503,527	12,639,754	9,974,087	6,805,862	4,686,224	5,204,565
Male	5,696,250	6,507,420	6,978,435	7,558,976	7,031,812	6,052,363	4,696,082	3,089,031	2,006,679	1,849,670
Female	5,643,966	6,488,048	7,089,801	7,825,343	7,471,715	6,587,391	5,278,005	3,716,831	2,679,545	3,354,895
Non-Hispanic black	2,549,416	2,663,295	2,691,396	2,645,633	2,254,937	1,732,223	1,153,740	770,977	506,760	492,858
Male	1,197,949	1,249,902	1,259,223	1,224,431	1,015,295	753,775	485,493	306,720	185,236	147,833
Female	1,351,467	1,413,393	1,432,173	1,421,202	1,239,642	978,448	668,247	464,257	321,524	345,025
Non-Hispanic American Indian or Alaska Native	156,609	162,296	170,569	173,876	148,422	114,529	78,759	49,960	29,815	27,006
Male	76,625	79,097	81,979	81,973	68,924	53,347	36,400	22,392	12,486	9,741
Female	79,984	83,199	88,590	91,903	79,498	61,182	42,359	27,568	17,329	17,265
Non-Hispanic Asian or Pacific Islander	1,542,278	1,458,223	1,269,960	1,153,415	1,029,518	849,525	591,172	409,439	268,995	268,307
Male	721,808	681,607	592,245	530,365	463,369	375,991	263,096	181,657	114,029	99,095
Female	820,470	776,616	677,715	623,050	566,149	473,534	328,076	227,782	154,966	169,212
Hispanic	4,054,854	3,694,576	3,200,933	2,650,713	2,051,298	1,500,350	1,049,307	705,023	473,496	475,946
Male	2,060,483	1,868,149	1,608,300	1,304,775	977,883	694,392	466,201	299,016	190,629	173,330
Female	1,994,371	1,826,427	1,592,633	1,345,938	1,073,415	805,958	583,106	406,007	282,867	302,616

¹Includes origin not stated.

SOURCE: NCHS, estimates of July 1, 2017, U.S. resident population by age, sex, race, and Hispanic origin prepared under collaborative arrangement with U.S. Census Bureau, 2018.

Table IV. Estimated population for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2017

[Populations are postcensal estimates based on 2010 census, estimated as of July 1, 2017]

Area	Total	Area	Total
United States	325,719,178	Nevada	2,998,039
Alabama	4,874,747	New Hampshire	1,342,795
Alaska	739,795	New Jersey	9,005,644
Arizona	7,016,270	New Mexico	2,088,070
Arkansas	3,004,279	New York	19,849,399
California	39,536,653	North Carolina	10,273,419
Colorado	5,607,154	North Dakota	755,393
Connecticut	3,588,184	Ohio	11,658,609
Delaware	961,939	Oklahoma	3,930,864
District of Columbia	693,972	Oregon	4,142,776
Florida	20,984,400	Pennsylvania	12,805,537
Georgia	10,429,379	Rhode Island	1,059,639
Hawaii	1,427,538	South Carolina	5,024,369
Idaho	1,716,943	South Dakota	869,666
Illinois	12,802,023	Tennessee	6,715,984
Indiana	6,666,818	Texas	28,304,596
Iowa	3,145,711	Utah	3,101,833
Kansas	2,913,123	Vermont	623,657
Kentucky	4,454,189	Virginia	8,470,020
Louisiana	4,684,333	Washington	7,405,743
Maine	1,335,907	West Virginia	1,815,857
Maryland	6,052,177	Wisconsin	5,795,483
Massachusetts	6,859,819	Wyoming	579,315
Michigan	9,962,311	Puerto Rico	3,337,177
Minnesota	5,576,606	U.S. Virgin Islands	107,268
Mississippi	2,984,100	Guam	167,358
Missouri	6,113,532	American Samoa	51,504
Montana	1,050,493	Northern Marianas	52,263
Nebraska	1,920,076		

SOURCES: NCHS, Vintage 2017 bridged-race postcensal population estimates (available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm); U.S. Census Bureau, Population Division, Annual estimates of the resident population by single year of age and sex: April 1, 2010, to July 1, 2017 (available from: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2017_PEPSYASEX&prodType=table); and International Data Base, 2017 (available from: <https://www.census.gov/data-tools/demo/ldb/informationGateway.php>).

Table V. U.S. standard population

Age group (years)	Population
All ages	274,633,642
Under 1	3,794,901
1-4	15,191,619
5-14	39,976,619
15-24	38,076,743
25-34	37,233,437
35-44	44,659,185
45-54	37,030,152
55-64	23,961,506
65-74	18,135,514
75-84	12,314,793
85 and over	4,259,173

SOURCE: NCHS, National Vital Statistics System, Mortality.

Random variation

The mortality data presented in this report, with the exception of data for 1972, are not subject to sampling error. In 1972, mortality data were based on a 50% sample of deaths because of resource constraints. Mortality data, even based on

complete counts, may be affected by random variation—that is, the number of deaths that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances (86,87). When the number of deaths is small, perhaps fewer than 100, random variation tends to be relatively large. Therefore, considerable caution must be observed in interpreting statistics based on small numbers of deaths.

Measuring random variability—To quantify the random variation associated with mortality statistics, an assumption must be made regarding the appropriate underlying distribution. Deaths, as infrequent events, can be viewed as deriving from a Poisson probability distribution. The Poisson distribution is simple conceptually and computationally, and provides reasonable, conservative variance estimates for mortality statistics when the probability of dying is relatively low (86). Using the properties of the Poisson distribution, the standard error (SE) associated with the number of deaths (D) is

$$SE(D) = \sqrt{\text{var}(D)} = \sqrt{D} \quad [1]$$

where $\text{var}(D)$ denotes the variance of D .

Table VI. Lower and upper 95% confidence limit factors for the number of deaths and death rate when number of deaths is less than 100

Number of deaths (D)	Lower confidence limit (L)	Upper confidence limit (U)	Number of deaths (D)	Lower confidence limit (L)	Upper confidence limit (U)
1.....	0.025318	5.571643	51.....	0.744566	1.314815
2.....	0.121105	3.612344	52.....	0.746848	1.311367
3.....	0.206224	2.922424	53.....	0.749069	1.308025
4.....	0.272466	2.560397	54.....	0.751231	1.304783
5.....	0.324697	2.333666	55.....	0.753337	1.301637
6.....	0.366982	2.176579	56.....	0.755389	1.298583
7.....	0.402052	2.060382	57.....	0.757390	1.295616
8.....	0.431729	1.970399	58.....	0.759342	1.292732
9.....	0.457264	1.898311	59.....	0.761246	1.289927
10.....	0.479539	1.839036	60.....	0.763105	1.287198
11.....	0.499196	1.789276	61.....	0.764921	1.284542
12.....	0.516715	1.746799	62.....	0.766694	1.281955
13.....	0.532458	1.710030	63.....	0.768427	1.279434
14.....	0.546709	1.677830	64.....	0.770122	1.276978
15.....	0.559692	1.649348	65.....	0.771779	1.274582
16.....	0.571586	1.623937	66.....	0.773400	1.272245
17.....	0.582537	1.601097	67.....	0.774986	1.269965
18.....	0.592663	1.580431	68.....	0.776539	1.267738
19.....	0.602065	1.561624	69.....	0.778060	1.265564
20.....	0.610826	1.544419	70.....	0.779549	1.263440
21.....	0.619016	1.528606	71.....	0.781008	1.261364
22.....	0.626695	1.514012	72.....	0.782438	1.259335
23.....	0.633914	1.500491	73.....	0.783840	1.257350
24.....	0.640719	1.487921	74.....	0.785215	1.255408
25.....	0.647147	1.476197	75.....	0.786563	1.253509
26.....	0.653233	1.465232	76.....	0.787886	1.251649
27.....	0.659006	1.454947	77.....	0.789184	1.249828
28.....	0.664493	1.445278	78.....	0.790459	1.248045
29.....	0.669716	1.436167	79.....	0.791709	1.246298
30.....	0.674696	1.427562	80.....	0.792938	1.244587
31.....	0.679451	1.419420	81.....	0.794144	1.242909
32.....	0.683999	1.411702	82.....	0.795330	1.241264
33.....	0.688354	1.404372	83.....	0.796494	1.239650
34.....	0.692529	1.397400	84.....	0.797639	1.238068
35.....	0.696537	1.390758	85.....	0.798764	1.236515
36.....	0.700388	1.384422	86.....	0.799871	1.234992
37.....	0.704092	1.378368	87.....	0.800959	1.233496
38.....	0.707660	1.372578	88.....	0.802029	1.232028
39.....	0.711098	1.367033	89.....	0.803082	1.230586
40.....	0.714415	1.361716	90.....	0.804118	1.229170
41.....	0.717617	1.356613	91.....	0.805138	1.227778
42.....	0.720712	1.351709	92.....	0.806141	1.226411
43.....	0.723705	1.346993	93.....	0.807129	1.225068
44.....	0.726602	1.342453	94.....	0.808102	1.223747
45.....	0.729407	1.338079	95.....	0.809060	1.222448
46.....	0.732126	1.333860	96.....	0.810003	1.221171
47.....	0.734762	1.329788	97.....	0.810933	1.219915
48.....	0.737321	1.325855	98.....	0.811848	1.218680
49.....	0.739806	1.322053	99.....	0.812751	1.217464
50.....	0.742219	1.318375			

SOURCE: NCHS, National Vital Statistics System, Mortality.

The SE associated with crude and age-specific death rates (R) assumes that the population denominator (P) is a constant and is

$$SE(R) = \sqrt{\text{var}\left(\frac{D}{P}\right)} = \sqrt{\frac{1}{P^2} \text{var}(D)} = \sqrt{\frac{D}{P^2}} = \frac{R}{\sqrt{D}} \quad [2]$$

The coefficient of variation or relative standard error (RSE) is a useful measure of relative variation. The RSE is calculated by dividing the statistic (e.g., number of deaths or death rate) into its SE and multiplying by 100. For the number of deaths,

$$RSE(D) = 100 \frac{SE(D)}{D} = 100 \frac{\sqrt{D}}{D} = 100 \sqrt{\frac{1}{D}}$$

For crude and age-specific death rates,

$$RSE(R) = 100 \frac{SE(R)}{R} = 100 \frac{R/\sqrt{D}}{R} = 100 \sqrt{\frac{1}{D}}$$

Thus,

$$RSE(D) = RSE(R) = 100 \sqrt{\frac{1}{D}} \quad [3]$$

The SE of the age-adjusted death rate (R') is

$$SE(R') = \sqrt{\sum_i \left(\frac{P_{si}}{P_s}\right)^2 \text{var}(R_i)} = \sqrt{\sum_i \left(\left(\frac{P_{si}}{P_s}\right)^2 \left(\frac{R_i^2}{D_i}\right)\right)} \quad [4]$$

where:

- R_i is the age-specific rate for the i th age group.
- P_{si} is the age-specific standard population for the i th age group from the U.S. standard population age distribution (see [Table V](#) and *Age-adjusted death rate* in the following "Definition of terms").
- P_s is the total U.S. standard population (all ages combined).
- D_i is the number of deaths for the i th age group.

RSE for the age-adjusted rate, $RSE(R')$, is calculated by dividing $SE(R')$ from Formula 4 by the age-adjusted death rate, R' , and multiplying by 100, as in

$$RSE(R') = 100 \frac{SE(R')}{R'}$$

For tables showing infant mortality rates based on live births (B) in the denominator, calculation of SE assumes random variability in both the numerator and denominator. SE for the infant mortality rate (IMR) is:

$$SE(IMR) = IMR \sqrt{\frac{\text{var}(D)}{E(D)^2} + \frac{\text{var}(B)}{E(B)^2}} = IMR \sqrt{\frac{1}{D} + \frac{1}{B}} \quad [5]$$

where the number of births, B , is also assumed to be distributed according to a Poisson distribution, and $E(B)$ is the expectation of B .

RSE for IMR is:

$$RSE(IMR) = 100 \frac{SE(IMR)}{IMR} = 100 \sqrt{\frac{1}{D} + \frac{1}{B}} \quad [6]$$

Formulas 1–6 may be used for all tables presented in this report except for death rates and age-adjusted death rates shown in [Tables I–4](#), [I–5](#), and [I–6](#), which are calculated using population figures that are subject to sampling error.

Suppression of unreliable rates—Beginning with 1989 data, an asterisk is shown in place of a crude or age-specific death rate based on fewer than 20 deaths, the equivalent of an RSE of 23% or more. The limit of 20 deaths is a convenient, if somewhat arbitrary, benchmark, below which rates are considered to be too statistically unreliable for presentation. For infant mortality rates, the same threshold of fewer than 20 deaths is used to determine whether an asterisk is presented in place of the rate. For age-adjusted death rates, the suppression criterion is based on the sum of age-specific deaths; that is, if the sum of the age-specific deaths is less than 20, an asterisk replaces the rate.

Confidence intervals and statistical tests based on 100 deaths or more—When the number of deaths is large, a normal approximation may be used in calculating confidence intervals and statistical tests. How large, in terms of number of deaths, is to some extent subjective. In general, for crude and age-specific death rates and for infant mortality rates, the normal approximation performs well when the number of deaths is 100 or greater. For age-adjusted rates, the criterion for use of the normal approximation is somewhat more complicated (4,85,87). Formula 7 is used to calculate 95% confidence limits for the death rate when the normal approximation is appropriate:

$$L(R) = R - 1.96(SE(R)) \text{ and } U(R) = R + 1.96(SE(R)) \quad [7]$$

where $L(R)$ and $U(R)$ are the lower and upper limits of the confidence interval, respectively. The resulting 95% confidence interval can be interpreted to mean that the chances are 95 in 100 that the "true" death rate falls between $L(R)$ and $U(R)$. For example, suppose that the crude death rate for Malignant neoplasms is 186.0 per 100,000 population based on 565,469 deaths. Lower and upper 95% confidence limits using Formula 7 are calculated as

$$L(186.0) = 186.0 - 1.96(0.25) = 185.5$$

and

$$U(186.0) = 186.0 + 1.96(0.25) = 186.5$$

Thus, the chances are 95 in 100 that the true death rate for Malignant neoplasms is between 185.5 and 186.5. Formula 7 can also be used to calculate 95% confidence intervals for the number of deaths, age-adjusted death rates, infant mortality rates, and other mortality statistics when the normal approximation is appropriate by replacing R with D , R' , IMR , or others.

When testing the difference between two rates, R_1 and R_2 (each based on 100 or more deaths), the normal approximation may be used to calculate a test statistic, z , such that

$$z = \frac{R_1 - R_2}{\sqrt{SE(R_1)^2 + SE(R_2)^2}} \quad [8]$$

If $|z| \geq 1.96$, then the difference between the rates is statistically significant at the 0.05 level. If $|z| < 1.96$, then the difference is not statistically significant. Formula 8 can also be used to perform tests for other mortality statistics when the normal approximation is appropriate (when both statistics being compared meet the normal criteria) by replacing R_1 and R_2 with D_1 and D_2 , R_1' and R_2' , or others. For example, suppose that the male age-adjusted death rate for Malignant neoplasms of trachea, bronchus, and lung (lung cancer) is 65.1 per 100,000 U.S. standard population in the previous data year (R_1) and 63.6 per 100,000 U.S. standard population in the current data year (R_2). SE for each of these figures, $SE(R_1)$ and $SE(R_2)$, is calculated using Formula 4. A test using Formula 8 can determine if the decrease in the age-adjusted rate is statistically significant:

$$z = \frac{65.1 - 63.6}{\sqrt{(0.222)^2 + (0.217)^2}} = 4.83$$

Because $z = 4.83 > 1.96$, the decrease from the previous data year to the current data year in the male age-adjusted death rate for lung cancer is statistically significant.

Confidence intervals and statistical tests based on fewer than 100 deaths—When the number of deaths is not large (fewer than 100), the Poisson distribution cannot be approximated by the normal distribution. The normal distribution is symmetrical, with a range from $-\infty$ to $+\infty$. As a result, confidence intervals based on the normal distribution also have this range. The number of deaths or the death rate, however, cannot be less than zero. When the number of deaths is very small, approximating confidence intervals for deaths and death rates using the normal distribution will sometimes produce lower confidence limits that are negative. The Poisson distribution, in contrast, is an asymmetric distribution with zero as a lower bound—confidence limits based on this distribution will never be less than zero. A simple method based on the more general family of gamma distributions, of which the Poisson is a member, can be used to approximate confidence intervals for deaths and death rates when the number of deaths is small (85,87). For more information regarding how the gamma method is derived, see “Derivation of gamma method” at the end of this section.

Calculations using the gamma method can be made using commonly available spreadsheet programs or statistical software (e.g., Excel or SAS) that include an inverse gamma function. In Excel, the function “gammainv (probability, alpha, beta)” returns values associated with the inverse gamma function for a given probability between 0 and 1. For 95% confidence limits, the probability associated with the lower limit is $0.05/2 = 0.025$, and with the upper limit, $1 - (0.05/2) = 0.975$. Alpha and beta are parameters associated with the gamma distribution. For the number of deaths and crude and age-specific death rates, $\alpha = D$ (the number of deaths) and $\beta = 1$. In Excel, the following formulas can be used to calculate lower and upper 95% confidence limits for the number of deaths and crude and age-specific death rates:

$$L(D) = \text{GAMMAINV}(0.025, D, 1)$$

and

$$U(D) = \text{GAMMAINV}(0.975, D + 1, 1)$$

Confidence limits for the death rate are then calculated by dividing $L(D)$ and $U(D)$ by the population (P) at risk of dying (see Formula 15).

Alternatively, 95% confidence limits can be estimated using the lower and upper confidence limit factors shown in Table VI. For the number of deaths, D , and the death rate, R ,

$$L(D) = L \times D \text{ and } U(D) = U \times D \quad [9]$$

$$L(R) = L \times R \text{ and } U(R) = U \times R \quad [10]$$

where L and U in both formulas are the lower and upper confidence limit factors that correspond to the appropriate number of deaths, D , in Table VI. For example, suppose that the death rate for non-Hispanic AIAN females aged 1–4 years is 39.5 per 100,000 and based on 50 deaths. Applying Formula 10, values for L and U from Table VI for 50 deaths are multiplied by the death rate, 39.5, such that

$$L(R) = L(39.5) = 0.742219 \times 39.5 = 29.3$$

and

$$U(R) = U(39.5) = 1.318375 \times 39.5 = 52.1$$

These confidence limits indicate that the chances are 95 in 100 that the actual death rate for non-Hispanic AIAN females aged 1–4 is between 29.3 and 52.1 per 100,000.

Although the calculations are similar, confidence intervals based on small numbers for age-adjusted death rates, infant mortality rates, and rates that are subject to sampling variability in the denominator are somewhat more complicated (5,87).

Refer to the most recent version of the “Mortality Technical Appendix” for more details: <https://www.cdc.gov/nchs/products/vsus/ta.htm>.

When comparing the difference between two rates (R_1 and R_2), where one or both of the rates are based on fewer than 100 deaths, a comparison of 95% confidence intervals may be used as a statistical test. If the 95% confidence intervals do not overlap, then the difference can be said to be statistically significant at the 0.05 level. A simple rule of thumb is: If $R_1 > R_2$, then test if $L(R_1) > U(R_2)$, or if $R_2 > R_1$, then test if $L(R_2) > U(R_1)$. Positive tests denote statistical significance at the 0.05 level. For example, suppose that non-Hispanic AIAN females aged 1–4 have a death rate (R_1) of 39.5 based on 50 deaths, and non-Hispanic API females aged 1–4 have a death rate (R_2) of 20.1 per 100,000 based on 86 deaths. The 95% confidence limits for R_1 and R_2 calculated using Formula 10 would be:

$$L(R_1) = L(39.5) = 0.742219 \times 39.5 = 29.3$$

and

$$U(R_1) = U(39.5) = 1.318375 \times 39.5 = 52.1$$

$$L(R_2) = L(20.1) = 0.799871 \times 17.9 = 16.1$$

and

$$U(R_2) = U(20.1) = 1.234992 \times 17.9 = 24.8$$

Because $R_1 > R_2$ and $L(R_1) > U(R_2)$, it can be concluded that that the difference between the death rates for non-Hispanic AIAN females aged 1–4 and non-Hispanic API females of the same age is statistically significant at the 0.05 level. That is, taking into account random variability, non-Hispanic API females aged 1–4 have a death rate significantly lower than that for non-Hispanic AIAN females of the same age.

This test may also be used to perform tests for other statistics when the normal approximation is not appropriate for one or both of the statistics being compared, by replacing R_1 and R_2 with D_1 and D_2 , R_1' and R_2' , or others.

Users of the method of comparing confidence intervals should be aware that this method is a conservative test for statistical significance—the difference between two rates may, in fact, be statistically significant even though confidence intervals for the two rates overlap (88). Caution should be observed when interpreting a nonsignificant difference between two rates, especially when the lower and upper limits being compared overlap only slightly.

Derivation of gamma method—For a random variable X that follows a gamma distribution $\Gamma(y, z)$, where y and z are the parameters that determine the shape of the distribution (89), $E(X) = yz$ and $\text{Var}(X) = yz^2$. For the number of deaths, D , $E(D) = D$ and $\text{Var}(D) = D$. It follows that $y = D$ and $z = 1$, and thus,

$$D \sim \Gamma(D, 1) \quad [11]$$

From Formula 11, it is clear that the shape of the distribution of deaths depends only on the number of deaths.

For the death rate, R , $E(R) = R$ and $\text{Var}(R) = D/P^2$. It follows, in this case, that $y = D$ and $z = P^{-1}$, and thus,

$$R \sim \Gamma(D, P^{-1}) \quad [12]$$

A useful property of the gamma distribution is that for $X \sim \Gamma(y, z)$, X can be divided by z such that $X/z \sim \Gamma(y, 1)$. This converts the gamma distribution into a simplified, standard form, dependent only on parameter y . Expressing Formula 12 in its simplified form gives:

$$R/P^{-1} = D \sim \Gamma(D, 1) \quad [13]$$

From Formula 13, it is clear that the shape of the distribution of the death rate is also dependent solely on the number of deaths.

Using the results of Formulas 11 and 13, the inverse gamma distribution can be used to calculate upper and lower confidence limits. Lower and upper $100(1 - \alpha)$ percent confidence limits for the number of deaths, $L(D)$ and $U(D)$, are estimated as

$$L(D) = \Gamma^{-1}_{(D, 1)}(\alpha / 2) \text{ and } U(D) = \Gamma^{-1}_{(D+1, 1)}(1 - \alpha / 2) \quad [14]$$

where Γ^{-1} represents the inverse of the gamma distribution, and $D + 1$ in the formula for $U(D)$ reflects a continuity correction, which is necessary because D is a discrete random variable and the gamma distribution is a continuous distribution. For a 95% confidence interval, $\alpha = 0.05$. For the death rate, it can be shown that:

$$L(R) = L(D)/P \text{ and } U(R) = U(D)/P \quad [15]$$

For more detail regarding the derivation of the gamma method and its application to age-adjusted death rates and other mortality statistics, see references 4, 85, and 87.

Availability of mortality data

Mortality data are available in publications, unpublished tables, and electronic products as described on the NCHS mortality website at: <https://www.cdc.gov/nchs/deaths.htm>. More detailed analysis than this report provides can be obtained from the mortality public-use data set issued each data year. Since 1968, the data set has been available through NCHS in ASCII format and can now be downloaded from https://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm. Additional resources available from NCHS include *Vital Statistics of the United States, Mortality*; *Vital and Health Statistics, Series 20 reports*; and *National Vital Statistics Reports*.

Definition of terms

Age-adjusted death rate—The death rate used to make comparisons of relative mortality risks across groups and over time. This rate should be viewed as a construct or an index rather than a direct or actual measure of mortality risk. Statistically, it is a weighted average of age-specific death rates, where the weights represent the fixed population proportions by age.

Age-specific death rate—Deaths per 100,000 population in a specified age group, such as 1–4 or 5–9 years, for a specified period.

Crude death rate—Total deaths per 100,000 population for a specified period. This rate represents the average chance of dying during a specified period for persons in the entire population.

Infant deaths—Deaths of infants under age 1 year.

Neonatal deaths—Deaths of infants aged 0–27 days.

Postneonatal deaths—Deaths of infants aged 28 days–11 months.

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Contents

Abstract 1
Highlights 1
 Mortality experience in 2017 1
 Trends 2
Introduction 2
Methods 2
Results and Discussion 3
 Deaths and death rates 3
 Expectation of life at birth and at specified ages 7
 Leading causes of death 9
 Other select causes 12
 Effect on life expectancy of changes in mortality by age and
 cause of death 12
 Injury mortality by mechanism and intent 13
 State of residence 13
 Infant mortality 14
 Additional mortality tables based on 2017 final data 14
References 16
List of Detailed Tables 19
List of Internet Tables 19
Technical Notes 61

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