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# Deaths: Final Data for 2018

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## Abstract

*Objectives*—This report presents final 2018 data on U.S. deaths, death rates, life expectancy, infant and maternal mortality, and trends by selected characteristics such as age, sex, Hispanic origin and race, state of residence, and cause of death. The race categories are consistent with 1997 Office of Management and Budget (OMB) standards, which are different from previous reports (1977 OMB standards).

*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 according to the *International Classification of Diseases, 10th Revision*. As of 2018, all states and the District of Columbia were using the 2003 revised certificate of death, which includes the 1997 OMB revised standards for race. The 2018 data based on the revised standards are not completely comparable to previous years. Selected estimates are presented in this report for both the revised and previous race standards to provide some reference for interpretation of trends.

*Results*—In 2018, a total of 2,839,205 deaths were reported in the United States. The age-adjusted death rate was 723.6 deaths per 100,000 U.S. standard population, a decrease of 1.1% from the 2017 rate. Life expectancy at birth was 78.7 years, an increase of 0.1 year from 2017. Age-specific death rates decreased in 2018 from 2017 for age groups 15–24, 25–34, 45–54, 65–74, 75–84, and 85 and over. The 15 leading causes of death in 2018 remained the same as in 2017. The infant mortality rate decreased 2.2% to a historically low figure of 5.66 infant deaths per 1,000 live births in 2018.

*Conclusions*—The age-adjusted death rate for the total, male, and female populations decreased from 2017 to 2018, and life expectancy at birth increased in 2018 for the total, male, and female populations.

**Keywords:** mortality • cause of death • life expectancy • National Vital Statistics System

## Highlights

### Mortality experience in 2018

- In 2018, a total of 2,839,205 resident deaths were registered in the United States, yielding a crude death rate of 867.8 per 100,000 population.
- The age-adjusted death rate, which accounts for the aging of the population, was 723.6 deaths per 100,000 U.S. standard population.
- Life expectancy at birth was 78.7 years.
- The 15 leading causes of death in 2018 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 2018, the infant mortality rate was 5.66 infant deaths per 1,000 live births.
- The 10 leading causes of infant death were:

    1. Congenital malformations, deformations and chromosomal abnormalities (congenital malformations)

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*NCHS reports can be downloaded from: https://www.cdc.gov/nchs/products/index.htm.*

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

### Comparison to previous year

- The age-adjusted death rate decreased 1.1% from 731.9 per 100,000 standard population in 2017 to 723.6 in 2018.
- The age-adjusted death rate was 1.2 times greater for the non-Hispanic black population (892.6) than for the non-Hispanic white population (748.7).
- The age-adjusted death rate for the non-Hispanic white population (748.7) was 1.4 times greater than for the Hispanic population (524.1).
- Life expectancy for the total population increased 0.1 year from 78.6 in 2017 to 78.7 in 2018.
- Life expectancy for females was 5.0 years higher than for males, the same as in 2017. The difference in life expectancy between the sexes has narrowed since 1979, when it was 7.8 years.
- The difference in life expectancy between the Hispanic and non-Hispanic white populations was 3.2 years in 2018.
- The 15 leading causes of death in 2018 were the same as in 2017.
- Age-adjusted death rates decreased significantly in 2018 from 2017 for 8 of the 15 leading causes of death: heart disease, cancer, unintentional injuries, Chronic lower respiratory diseases, stroke, Alzheimer disease, Septicemia, and Pneumonitis due to solids and liquids. Significant increases occurred in 2018 from 2017 for 4 of the 15 leading causes of death: Influenza and pneumonia, suicide, Chronic liver disease and cirrhosis, and Parkinson disease.
- Age-adjusted death rates decreased in 2018 from 2017 for drug-induced causes (4.4%) and increased for alcohol-induced causes (3.1%).
- The increase in life expectancy at birth for the total population in 2018 was mainly due to decreases in mortality from cancer, unintentional injuries, Chronic lower respiratory diseases, heart disease, and homicide.
- The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations was 3.9 years in 2018.
- Among external causes of injury death, unintentional poisoning has been the leading mechanism of injury mortality since 2011.
- The infant mortality rate decreased 2.2% in 2018 to a record low of 5.66 infant deaths per 1,000 live births.
- The 10 leading causes of infant death in 2018 remained the same as in 2017.

## Introduction

This report presents detailed 2018 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, and 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 racial and ethnic 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.

Beginning with the 2018 data year, all 50 states and the District of Columbia reported deaths based on the 2003 revision of the U.S. Standard Certificate of Death for the entire year (4). The 2003 revision uses the revised 1997 Office of Management and Budget (OMB) standards for the collection of race and Hispanic ethnicity, so it is possible to report mortality statistics using the revised standards for the first time when reporting 2018 mortality data (5). The 1997 standards allowed individuals to report more than one race and increased the race choices from four to five by separating the Asian and Pacific Islander groups. The category "Hispanic" did not change, remaining consistent with previous reports.

The new categories in this report include non-Hispanic white; non-Hispanic black or African American; non-Hispanic American Indian or Alaska Native (AIAN); non-Hispanic Asian; and non-Hispanic Native Hawaiian or Other Pacific Islander (NHOPI). Data presented in this report according to the new race and Hispanic-origin categories represent the official data by race and origin for 2018. The new categories differ from the bridged-race categories shown in previous reports. To evaluate the impact of changing from reporting according to bridged-race and Hispanic-origin categories to the single-race categories, select 2018 results were tabulated using both categorizations. See Methods and Technical Notes for additional information on how race and Hispanic-origin categories were redefined and, an accompanying report, "Comparability of Race-specific Mortality Data Based on 1977 Versus 1997 Reporting Standards," (6) for more information on differences between single- and bridged-race groups.

In addition to the tabulations included in this report, more detailed analysis is possible by using the annual mortality public-use file. The data file may be downloaded from: https://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm (7). The public-

use file does not include geographic detail, but a file with this information may be available upon request (8). Death data also may be accessed via the Centers for Disease Control and Prevention's (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER), a web-based system that makes CDC's information resources available to public health professionals and the general public (9).

## 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 (10). This report provides detailed death data in Tables 1–16 and supplemental Internet Tables I–1 through I–27.

Tables showing data by state also provide information for Puerto Rico, Guam, and the Commonwealth of the Northern Mariana Islands (Northern Marianas). Cause-of-death statistics presented in this report are classified according to the *International Classification of Diseases, 10th Revision* (ICD–10) (11–13). 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, postneonatal, and maternal mortality rates; life expectancy; and rate ratios. Changes in death rates in 2018 compared with 2017 and differences in death rates across demographic groups in 2018 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 are presented in Technical Notes.

According to the revised standards issued by OMB in 1997, the 2003 revision of the U.S. Standard Certificate of Death provides for the reporting of more than one race (multiple races) and increased the race choices from four to five by separating the Asian and Pacific Islander groups (4,5). Starting in 2018, all 50 states and the District of Columbia reported deaths using the 2003 revision for the entire year.

The race and Hispanic-origin groups in this report follow the 1997 standards and differ from the race categories used in previous reports (14,15). The new categories include non-Hispanic, single-race white; non-Hispanic, single-race black or African American; non-Hispanic, single-race AIAN; non-Hispanic, single-race Asian; non-Hispanic, single-race NHOPI; and Hispanic. For brevity, text references to race refer to "single race" in this report. Because the number of deaths reported with more than one race in 2018 is relatively small (0.5%), these deaths are included in totals but are shown separately in only one report table (Table 2).

Jurisdictions adopted the 2003 standard certificate at different times throughout the period 2003–2017. To provide consistent mortality statistics by race and Hispanic origin during the period 2003–2017, multiple-race data for states that had adopted the 2003 standard certificate were bridged back to the 1977 OMB standard single-race categories; see Technical Notes. Because all states collected data on race according to the 1997 OMB guidelines for the full data year in 2018, use of the bridged-race process is no longer necessary. Data presented in this report by the revised race and Hispanic-origin categories represent the official statistics by race and origin for 2018. Because single-race data are not available for the entire United States before 2018, data by race for 2018 are not completely comparable with data for previous years, and comparisons should be made with this consideration. However, data for select estimates for 2018 also were tabulated for bridged-race categories to evaluate the impact of the change in categorization. The Hispanic-origin category is a separate item on the death certificate and was not affected by the revised standards; therefore, data by Hispanic origin for 2018 and earlier years are comparable.

Consequently, the changes in rates and life expectancies in 2018 from 2017 are discussed primarily for the total, male, female, Hispanic, Hispanic male, and Hispanic female populations in this report. However, for the continuity of trend data by bridged-race, age-adjusted death rates by race (based on both bridged and single race), Hispanic origin and sex for 2018, which provides a comparison of data by bridged- and single-race categories, are presented also (Tables A, 1, 4, and 13). Tables I–20 through I–27 show trend data by bridged-race categories for 2018 and previous years and single-race data for 2018. A more detailed analysis of bridged-race data compared with single-race data is available in "Comparability of Race-specific Mortality Data Based on 1977 Versus 1997 Reporting Standards" (6).

The population data used to calculate death rates for 2018 shown in this report are postcensal population estimates based on the 2010 decennial census and are available from the U.S. Census website: https://www2.census.gov/programs-surveys/popest/datasets/2010-2018/state/asrh/sc-est2018-alldata6.csv (16). Reflecting the 1997 OMB guidelines on race and ethnicity reporting, the 2010 census included an option for individuals to report more than one race and provided for the reporting of Asian persons separately from NHOPI persons (5).

The populations used to calculate death rates for 2000–2017 and for 2018 for selected tables were produced under a collaborative arrangement with the U.S. Census Bureau whereby population data for multiple-race persons were bridged back to single-race categories. Populations for 2010–2018 and the intercensal period 2001–2009 are consistent with the 2010 census (16–25). In addition, the 2010 census counts were modified to be consistent with the 1977 OMB race categories, that is, to report the data for Asian persons and NHOPI persons as a combined category (Asian or Pacific Islander) and to reflect age as of the census reference date (15). The procedures used to produce the bridged populations are described elsewhere (26,27).

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. The availability of mortality microdata is described in Technical Notes.

# Results and Discussion

## Deaths and death rates

In 2018, a total of 2,839,205 resident deaths were registered in the United States—25,702 more deaths than in 2017. The crude death rate for 2018 (867.8 deaths per 100,000 population) was 0.5% higher than the 2017 rate (863.8) (Tables B, 1, 2, 5, 7, and 9).

The age-adjusted death rate in 2018 was 723.6 deaths per 100,000 U.S. standard population—1.1% lower than the rate of 731.9 in 2017 (Tables B 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) (9).

**Table A. Age-adjusted death rates based on bridged race versus unbridged race, by race and Hispanic origin and sex: United States, 2018**

[Age-adjusted rates are per 100,000 U.S. standard population. Bridged-race categories are consistent with the 1977 Office of Management and Budget (OMB) standards; unbridged categories are consistent with 1997 OMB standards. Race and Hispanic origin are reported separately on the death certificate. Hispanic persons may be of any race. Data for specified categories other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Bridged race[1] | | Single race[2] | |
|---|---|---|---|
| Race and Hispanic origin and sex | Age-adjusted death rate | Race and Hispanic origin and sex | Age-adjusted death rate |
| All races and origins[3] | 723.6 | All races and origins[3] | 723.6 |
| Male | 855.5 | Male | 855.5 |
| Female | 611.3 | Female | 611.3 |
| Non-Hispanic: | | Non-Hispanic: | |
| White | 745.7 | White | 748.7 |
| Male | 874.3 | Male | 878.0 |
| Female | 634.1 | Female | 636.5 |
| Black | 879.5 | Black | 892.6 |
| Male | 1,085.2 | Male | 1,102.8 |
| Female | 724.2 | Female | 733.7 |
| American Indian or Alaska Native[4] | 780.8 | American Indian or Alaska Native[4] | 790.8 |
| Male | 937.4 | Male | 918.7 |
| Female | 641.7 | Female | 673.1 |
| Asian or Pacific Islander[5] | 392.2 | Asian or Pacific Islander[5] | … |
| Male | 467.6 | Male | … |
| Female | 332.4 | Female | … |
| Asian[6] | … | Asian[6] | 381.2 |
| Male | … | Male | 454.1 |
| Female | … | Female | 324.1 |
| Native Hawaiian or Other Pacific Islander | … | Native Hawaiian or Other Pacific Islander | 675.7 |
| Male | … | Male | 758.1 |
| Female | … | Female | 597.3 |
| Non-Hispanic, two or more races[7] | … | Non-Hispanic, two or more races[7] | 338.1 |
| Male | … | Male | 403.0 |
| Female | … | Female | 283.0 |
| Hispanic | 524.1 | Hispanic | 524.1 |
| Male | 633.1 | Male | 633.1 |
| Female | 431.7 | Female | 431.7 |

… Category not applicable.
[1]Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards; see Technical Notes in this report.
[2]Multiple-race data reported according to 1997 OMB standards. For race-specific categories, only one race was reported on the death certificate; see Technical Notes in this report.
[3]Includes deaths for origin not stated or not classifiable; see Technical Notes in this report.
[4]Includes Aleut and Eskimo persons.
[5]Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.
[6]Includes Chinese, Filipino, Japanese, and other Asian persons.
[7]Two or more races were reported on the death certificate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

**Table B. Percent change in death rates and age-adjusted death rates in 2018 from 2017, by sex and age: 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]

| Age group (years) | Both sexes | Male | Female |
|---|---|---|---|
| All ages | Percent change | | |
| Crude | 0.5 | 0.9 | 0.0 |
| Age adjusted | –1.1 | –1.0 | –1.4 |
| Under 1[1] | –1.6 | –0.9 | –2.5 |
| 1–4 | –1.2 | 0.7 | –3.3 |
| 5–14 | –2.2 | –5.8 | 3.5 |
| 15–24 | –5.1 | –5.7 | –4.0 |
| 25–34 | –3.0 | –3.9 | –1.0 |
| 35–44 | –0.3 | 0.0 | –0.8 |
| 45–54 | –1.4 | –0.9 | –2.1 |
| 55–64 | 0.1 | 0.6 | –0.7 |
| 65–74 | –0.4 | 0.3 | –1.3 |
| 75–84 | –1.9 | –1.9 | –2.1 |
| 85 and over | –0.9 | –1.3 | –0.7 |

[1]Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Death rates by race and Hispanic origin

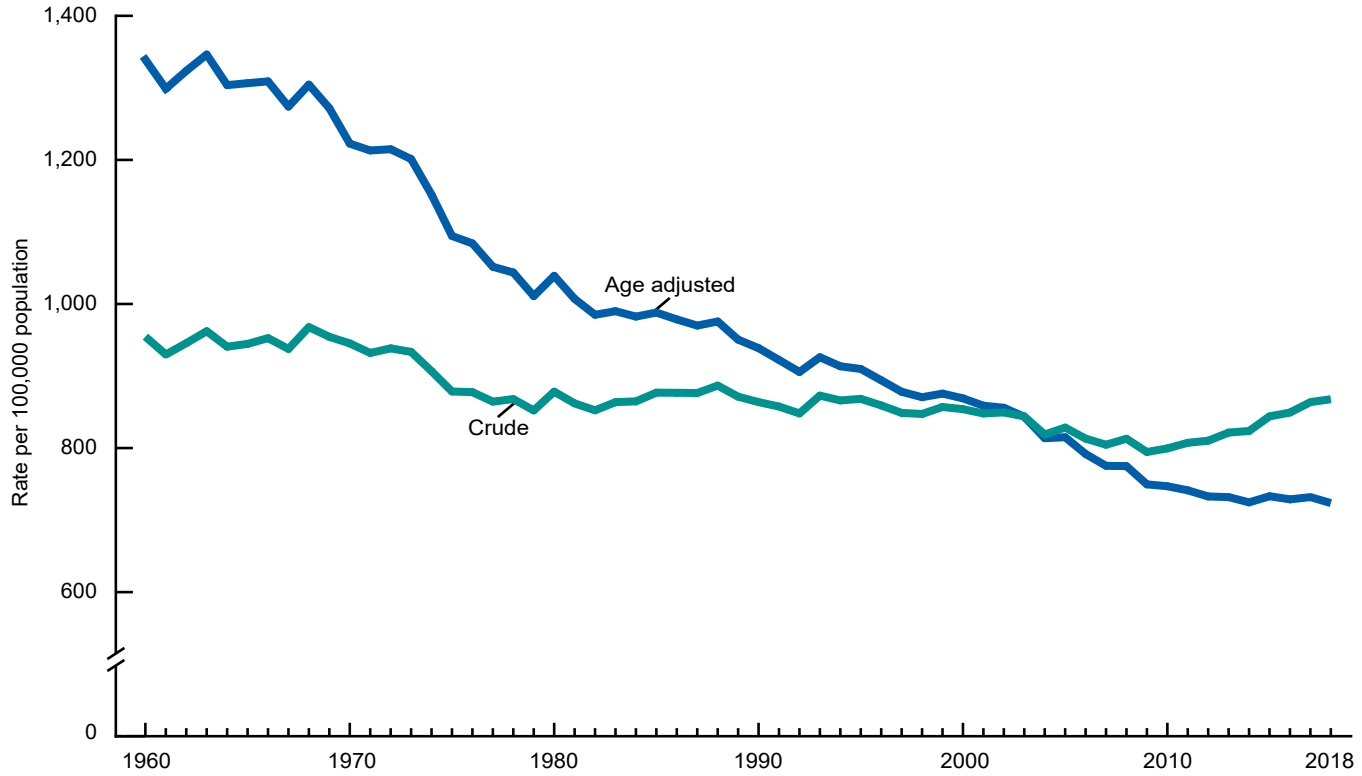
In 2018, age-adjusted death rates for the major race and ethnicity groups (Table 1) were:

- Non-Hispanic white population: 748.7 deaths per 100,000 U.S. standard population
- Non-Hispanic black population: 892.6
- Hispanic population: 524.1

In 2018, 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 C).

From 2017 through 2018, the age-adjusted death rate decreased for the total (1.1%), male (1.0%), and female (1.4%) populations (Tables B and 1). The transition to the 1997 race classifications for data year 2018 should be considered when estimating change in mortality statistics between 2017 (based on bridged race) and 2018 (based on single race) and when evaluating trends that span 2017–2018. Mortality statistics were estimated for both the bridged- and single-race groups in 2018 to inform these comparisons. When compared to the bridged-race estimates for 2017, the age-adjusted, single-race death rate decreased in 2018 for the total (0.8%), male (0.8%), and female (1.0%) non-Hispanic white population. The bridged-race estimates for 2018 were very similar to the single-race estimates for the non-Hispanic white population, so the estimates of change between 2017 and 2018 using the bridged estimate were

**Figure 1. Crude and age-adjusted death rates: United States, 1960–2018**




NOTE: 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.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

similar to those based on single race for 2018 (1.2% for the total population and for males and 1.4% for females) (Table 1).

For the non-Hispanic black population, there was more variability between single- and bridged-race estimates. Based on the single-race estimates in 2018, the age-adjusted death rate increased 1.3% for the total, 1.8% for males, and 0.8% for females from 2017 (when compared with the bridged-race estimates), while there were no significant changes between 2017 and 2018 when using the bridged estimates for 2018 (Table 1). Observed changes in age-adjusted rates for the Hispanic total, 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%); see Technical Notes. Misclassification of Hispanic origin on the death certificate is relatively stable across age groups (28). Although non-Hispanic white and non-Hispanic black populations are not affected by problems of underreporting (28,29), rates by race for other non-Hispanic populations should be interpreted with consideration that racial misclassification on death certificates exists (28).

## Death rates by age and sex

For the total population, age-specific death rates decreased significantly from 2017 to 2018 for age groups 15–24, 25–34, 45–54, 65–74, 75–84, and 85 and over. Changes in rates for other age groups were not significant (Tables B, 5, and 7; Figure 2).

The age-adjusted death rate for males was 1.4 times the rate for females in 2018 (Table C). The male-to-female death rate ratio was unchanged from the ratio in 2017.

Death rates for males decreased significantly for age groups 5–14, 15–24, 25–34, 45–54, 75–84, and 85 and over. The rate increased significantly for the age group 55–64. Changes in rates for males in other age groups were not statistically significant. Death rates for females decreased significantly for age groups 15–24, 45–54, 65–74, 75–84, and 85 and over. Changes in rates for females in other age groups were not statistically significant.

**Table C. Number of deaths, percentage of total deaths, death rates, and age-adjusted death rates for 2018, percent change in age-adjusted death rates in 2018 from 2017, 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 2018: United States**

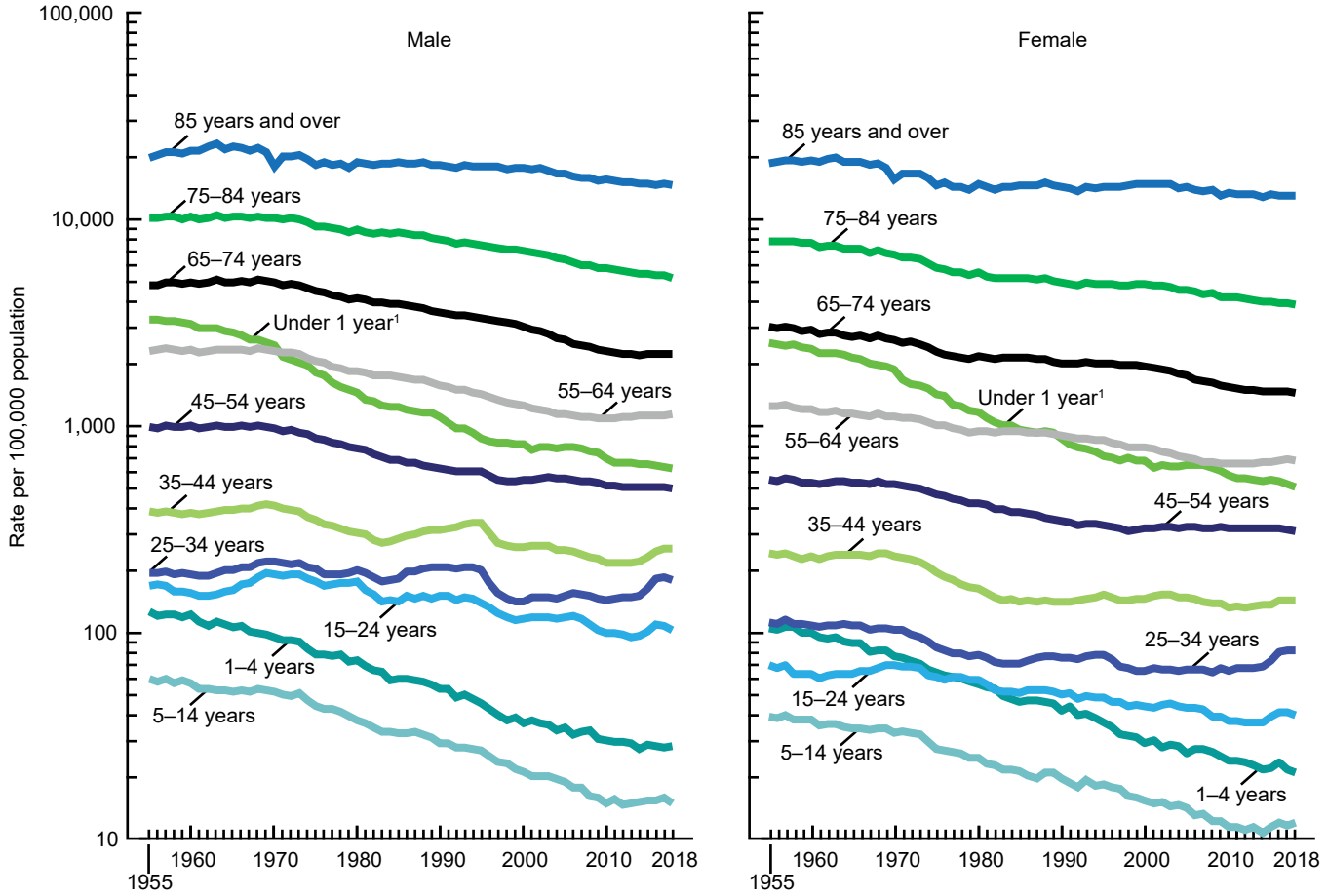
[Crude death rates are on an annual basis per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in this report. Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget (OMB) standards]

| Rank[1] | Cause of death (based on *International Classification of Diseases, 10th Revision*) | Number | Percent of total deaths, 2018 | Crude death rate, 2018 | Age-adjusted death rate | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2018 | Percent change | Ratio | | |
| | | | | | | 2017 to 2018 | Male to female | Non-Hispanic black[2] to non-Hispanic white[2] | Non-Hispanic white[2] to Hispanic[3] |
| … | All causes | 2,839,205 | 100.0 | 867.8 | 723.6 | –1.1 | 1.4 | 1.2 | 1.4 |
| 1 | Diseases of heart (I00–I09,I11,I13,I20–I51) | 655,381 | 23.1 | 200.3 | 163.6 | –0.8 | 1.6 | 1.3 | 1.5 |
| 2 | Malignant neoplasms (C00–C97) | 599,274 | 21.1 | 183.2 | 149.1 | –2.2 | 1.4 | 1.1 | 1.4 |
| 3 | Accidents (unintentional injuries) (V01–X59,Y85–Y86) | 167,127 | 5.9 | 51.1 | 48.0 | –2.8 | 2.1 | 0.9 | 1.7 |
| 4 | Chronic lower respiratory diseases (J40–J47) | 159,486 | 5.6 | 48.7 | 39.7 | –2.9 | 1.2 | 0.7 | 2.7 |
| 5 | Cerebrovascular diseases (I60–I69) | 147,810 | 5.2 | 45.2 | 37.1 | –1.3 | 1.0 | 1.5 | 1.1 |
| 6 | Alzheimer disease (G30) | 122,019 | 4.3 | 37.3 | 30.5 | –1.6 | 0.7 | 0.9 | 1.3 |
| 7 | Diabetes mellitus (E10–E14) | 84,946 | 3.0 | 26.0 | 21.4 | –0.5 | 1.6 | 2.1 | 0.8 |
| 8 | Influenza and pneumonia (J09–J18) | 59,120 | 2.1 | 18.1 | 14.9 | 4.2 | 1.3 | 1.1 | 1.3 |
| 9 | Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27) | 51,386 | 1.8 | 15.7 | 12.9 | –0.8 | 1.5 | 2.2 | 1.0 |
| 10 | Intentional self-harm (suicide) (*U03,X60-X84,Y87.0) | 48,344 | 1.7 | 14.8 | 14.2 | 1.4 | 3.7 | 0.4 | 2.4 |
| 11 | Chronic liver disease and cirrhosis (K70,K73–K74) | 42,838 | 1.5 | 13.1 | 11.1 | 1.8 | 1.9 | 0.6 | 0.8 |
| 12 | Septicemia (A40–A41) | 40,718 | 1.4 | 12.4 | 10.2 | –3.8 | 1.2 | 1.7 | 1.3 |
| 13 | Essential hypertension and hypertensive renal disease (I10,I12,I15) | 35,835 | 1.3 | 11.0 | 8.9 | –1.1 | 1.1 | 2.1 | 1.0 |
| 14 | Parkinson disease (G20–G21) | 33,829 | 1.2 | 10.3 | 8.7 | 3.6 | 2.3 | 0.5 | 1.5 |
| 15 | Pneumonitis due to solids and liquids (J69) | 19,239 | 0.7 | 5.9 | 4.8 | –5.9 | 1.8 | 1.0 | 1.6 |
| … | All other causes (residual) | 571,853 | 20.1 | 174.8 | … | … | … | … | … |

… Category not applicable.
[1]Rank based on number of deaths; see Technical Notes in this report.
[2]Includes only one race reported on the death certificate.
[3]Includes persons of Hispanic origin of any race; see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

**Figure 2. Death rates, by age and sex: United States, 1955–2018**




[1]Rates are based on population estimates that differ from infant mortality rates (based on live births); see Figure 5 in this report for infant mortality rates and Technical Notes in this report for further discussion of the difference.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## 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 2010–2018 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 (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.

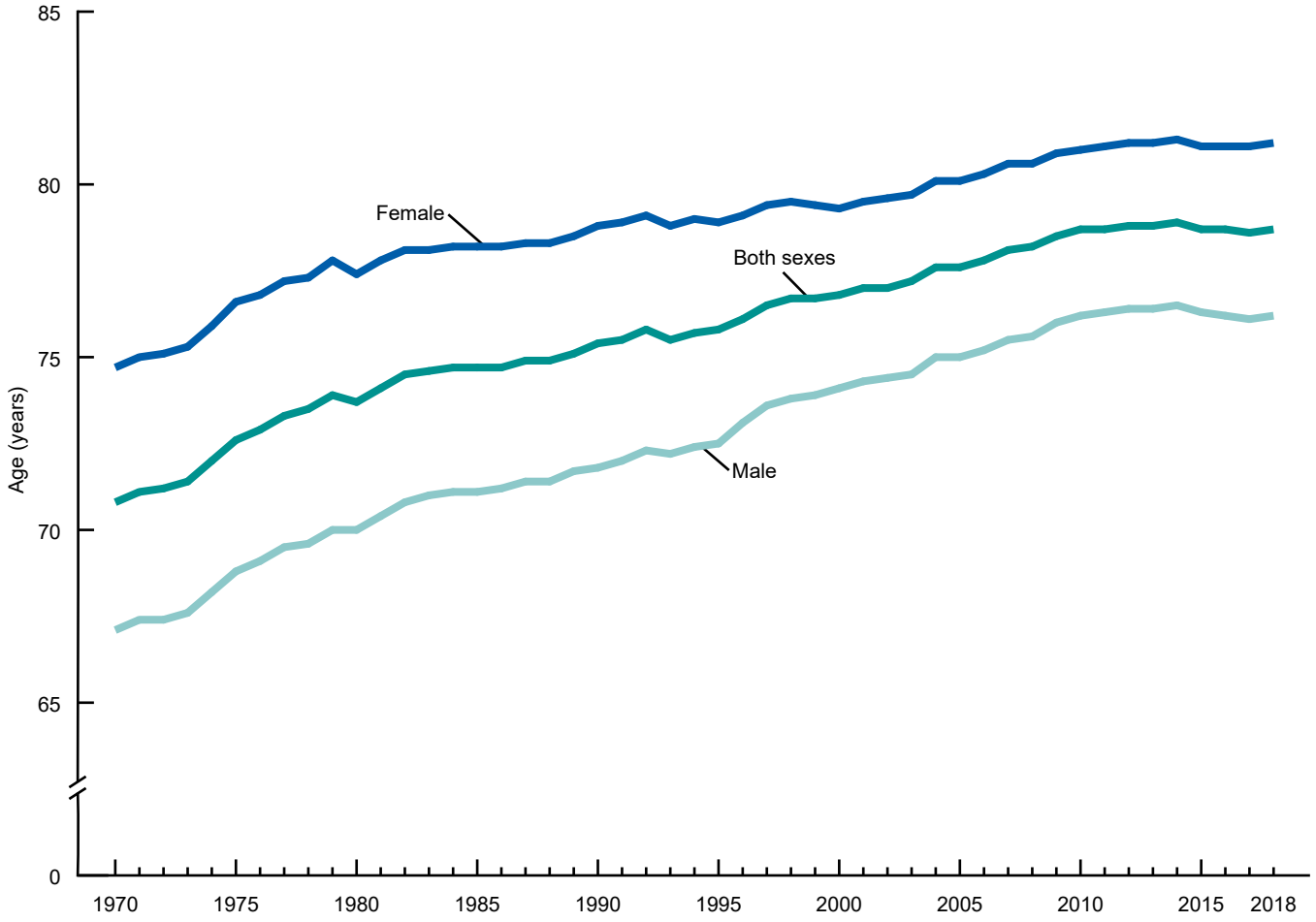
Life tables were generated for both sexes and by each sex for the following populations:

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

In 2018, life expectancy at birth for the U.S. population was 78.7 years, 0.1 year higher than 2017 (Tables 3 and 4). The general trend in U.S. life expectancy since 1900 has been one of improvement. The only decreases in life expectancy in the last 20 years occurred in 2015 and 2017. In 2018, life expectancy for males (76.2 years) was 0.1 year higher than in 2017. Life expectancy for females (81.2 years) was 0.1 year higher than in 2017. 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 (Figure 3; Table 4). In 2018, the difference in life expectancy between the sexes was 5.0 years, the same as in 2017.

Life expectancy figures by Hispanic origin have been available starting with data for 2006 (30). The difference in life

**Figure 3. Life expectancy at birth, by sex: United States, 1970–2018**




SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

expectancy between the non-Hispanic white and non-Hispanic black populations was 3.9 years in 2018 (Table 4).

Life expectancy for the Hispanic population was 81.8 years in 2018, unchanged since 2016 (Tables 3 and 4). Life expectancy was 1.5 years higher in 2018 compared with 2006. The difference in life expectancy between the Hispanic and non-Hispanic white population was 3.2 years in 2018 (Table 4). The transition from bridged-race (1977 OMB standards) to single-race (1997 OMB standards) classifications for data year 2018 should be considered when estimating change in life expectancy between 2017 and 2018. Life expectancies were estimated for both the bridged- and single-race groups in 2018 to inform these comparisons. The 2018 life expectancy estimates for single race were 0.1 year lower for the non-Hispanic white population, 0.2 year lower for the non-Hispanic black population and non-Hispanic black males, and 0.1 year lower for non-Hispanic black females than life expectancy based on 2018 bridged-race estimates. Life expectancy for non-Hispanic white males and non-Hispanic white females were the same for the single race and bridged race (Table 4). For more information on the differences in life expectancy for non-Hispanic white and non-Hispanic black populations based on bridged-race compared with single-race categories, see "United States Life Tables, 2018" (3).

Among the six Hispanic-origin–race–sex groups in 2018, Hispanic females had the highest life expectancy at birth (84.3 years), followed by non-Hispanic white females (81.1), Hispanic males (79.1), non-Hispanic black females (78.0), non-Hispanic white males (76.2), and non-Hispanic black males (71.3) (Tables 3 and 4).

Life expectancy in 2018 remained unchanged since 2016 for Hispanic males and since 2015 for Hispanic females.

Life expectancy in 2018 was 2.9 years higher for the Hispanic male population than for the non-Hispanic white male population and was 3.2 years higher for the Hispanic female population than for the non-Hispanic white female population. 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 (31,32).

Life tables shown in this report may be used to compare life expectancies at selected ages from birth to 100 years. For example, based on mortality experienced in 2018, a person aged 50 could expect to live an average of 31.7 more years, for a total of 81.7 years. A person aged 65 could expect to live an average of 19.5 more years, for a total of 84.5 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). Life expectancy increased from 2017 to 2018 (at ages 0–50, 65, and 70) and was unchanged at all other ages (Table 3) (3).

## Leading causes of death

The 15 leading causes of death in 2018 accounted for 79.9% of all deaths in the United States (Table C). The leading causes of death in 2018 remained the same as in 2017. Causes of death are ranked according to the number of deaths; for ranking procedures, see Technical Notes. By rank, the 15 leading causes of death in 2018 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, eliminate the influence of such differences in the population age structure. Consequently, 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 (Figure 4; Tables C and 5).

From 2017 through 2018, age-adjusted death rates decreased significantly for 8 of the 15 leading causes of death and increased for 4 of the 15 leading causes (Table C). The rate for the top leading cause of death, heart disease, decreased 0.8% in 2018 from 2017 (Figure 4; Tables C and 5) (9). The rate for the second leading cause of death, cancer, decreased 2.2%, continuing a gradual but consistent downward trend since 1993. Deaths from these two diseases combined accounted for 44.2% of deaths in the United States in 2018 (Table C).

Other leading causes of death that showed significant decreases in 2018 from 2017 were unintentional injuries (2.8%), Chronic lower respiratory diseases (2.9%), stroke (1.3%), Alzheimer disease (1.6%), Septicemia (3.8%), and Pneumonitis due to solids and liquids (5.9%).

The age-adjusted rate increased significantly in 2018 from 2017 for Influenza and pneumonia (4.2%), suicide (1.4%), Chronic liver disease and cirrhosis (1.8%), and Parkinson disease (3.6%).

The observed changes from 2017 to 2018 in the age-adjusted death rates for diabetes, kidney disease, and hypertension were not significant.

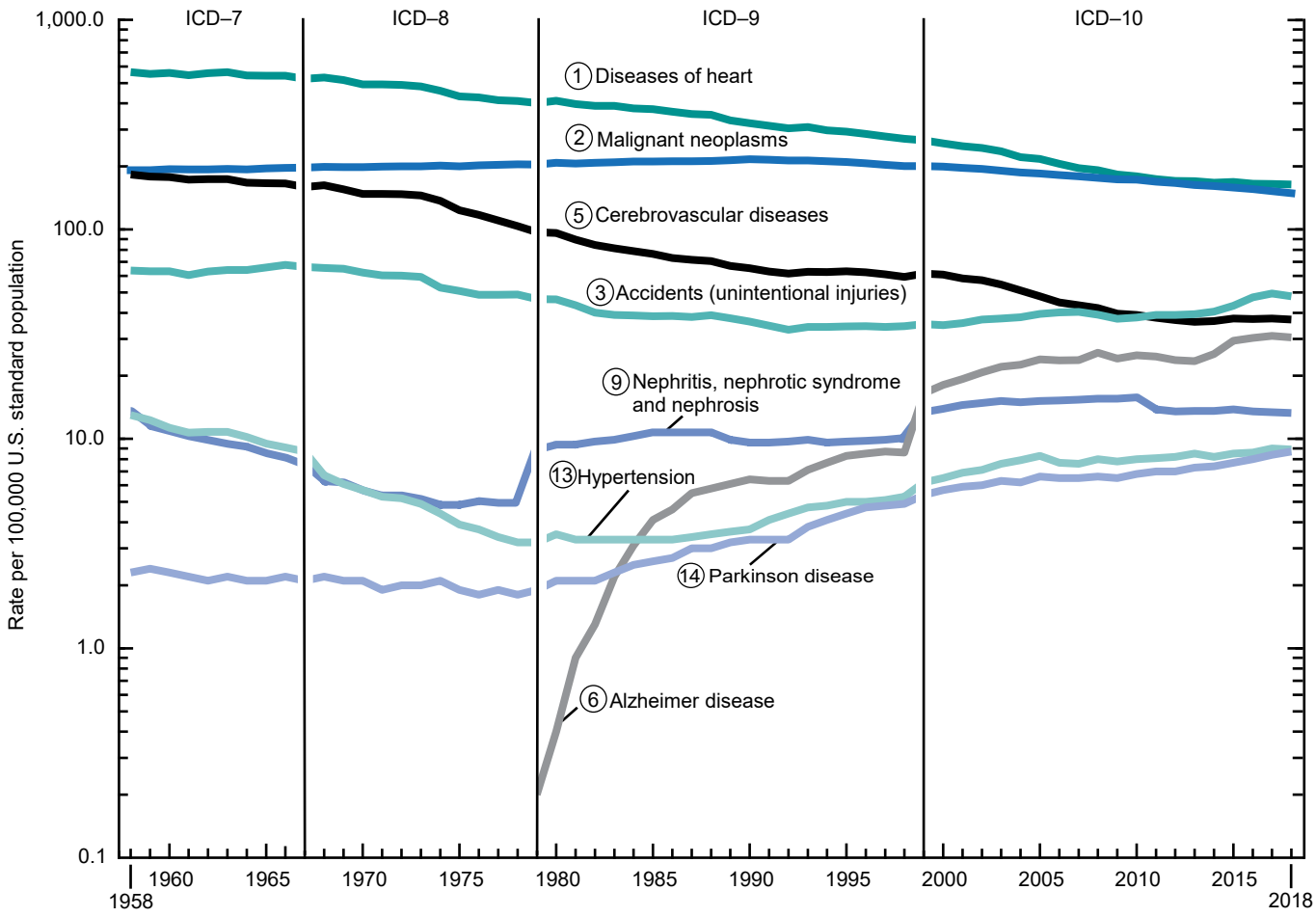
Assault (homicide), the 16th leading cause of death in 2018, dropped from among the 15 leading causes of death in 2010. In 2018, the age-adjusted rate for homicide decreased 4.8%, but homicide remains a major issue for some age groups. Homicide was among the 15 leading causes of death in 2018 for age groups under 1 year (13th), 1–4 (3rd), 5–14 (5th), 15–24 (3rd), 25–34 (3rd), 35–44 (5th), and 45–54 (12th) (9).

Although Human immunodeficiency virus (HIV) disease has not been among the 15 leading causes of death since 1997 (33), 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 2018 (9,34). In 2018, HIV disease was among the 15 leading causes of death for age groups 25–34 (9th), 35–44 (11th), 45–54 (14th), and 55–64 (14th).

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—has been of growing concern in recent years. The disease is often acquired in hospitals or other health care facilities with long-term patients or residents (35,36). The number of deaths from *C. difficile* climbed from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (9,34). In 2018, the number of deaths from *C. difficile* was 5,249. In 2018, the age-adjusted death rate for this cause was 1.3 deaths per 100,000 U.S. standard population, a decrease of 18.8% from the rate in 2017 (1.6). In 2018, *C. difficile* ranked as the 19th leading cause of death for the population aged 65 and over. Approximately 86% 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 C), 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 high ratios were evident for Parkinson disease (2.3), unintentional injuries (2.1), Chronic liver disease and cirrhosis (1.9), Pneumonitis due to solids and liquids (1.8), heart disease and diabetes (1.6 each), kidney disease (1.5), cancer (1.4), 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).

**Figure 4. Age-adjusted death rates for selected leading causes of death: United States, 1958–2018**




NOTES: ICD is the *International Classification of Diseases*. Circled numbers indicate ranking of conditions as leading causes of death in 2018.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

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 C). 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 (1.5), heart disease (1.3), 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 liver disease and cirrhosis (0.6), Chronic lower respiratory diseases (0.7), and unintentional injuries and Alzheimer disease (0.9 each).

Leading causes of death in 2018 for the total population and for specific subpopulations are detailed further 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 C). The largest ratios were for Chronic lower respiratory diseases (2.7) and suicide (2.4). Other causes for which the ratio was high include unintentional injuries (1.7); Pneumonitis due to solids and liquids (1.6); heart disease and Parkinson disease (1.5 each); cancer (1.4); 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 and Chronic liver disease and cirrhosis (0.8 each).

## Other select causes

### Dementia-related mortality

In 2018, 266,957 persons died of dementia-related causes in the United States (Tables 6, 8, and I–1). Deaths from dementia-related causes are presented for the first time in this report to provide a more comprehensive estimate of the burden of mortality from Alzheimer disease and other dementias in the United States.

Dementia-related causes include conditions with similar physical signs and symptoms that, collectively, are considered to be a good indicator of dementia mortality (37). Dementia is characterized by memory impairment and cognitive decline (38). Causes of death attributable to dementia-related mortality include ICD–10 codes F01, Vascular dementia; F03, Unspecified dementia; G30, Alzheimer disease; and G31, Other degenerative diseases of nervous system, not elsewhere classified. Alzheimer disease, the sixth leading cause of death, is the most common cause of dementia, but other dementias, including Lewy body dementia, frontotemporal degeneration, vascular dementia, and mixed dementias, are often indistinguishable from Alzheimer disease in their symptoms and outcomes and may coexist with Alzheimer disease (37–39).

Certification and coding rule changes can impact data analysis of component causes of dementia. In 2018, Alzheimer disease accounted for 45.7% of all dementia deaths; Unspecified dementia for 37.7%; Other degenerative diseases of nervous system, not elsewhere classified for 10.4%; and Vascular dementia for 6.2%. Changes in the percentage of deaths assigned to individual causes comprising dementia may be the result of many factors (40). Combining the types of dementia provides a more comprehensive and stable measure of dementia mortality.

The age-adjusted death rate for dementia-related causes did not change significantly in 2018 from 2017 for the total, male, and female populations (Tables 5, 10, and I–1).

### Drug-induced mortality

In 2018, a total of 71,147 persons died of drug-induced causes in the United States (Tables 6, 8, and I– 2). 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 2018, the age-adjusted death rate for drug-induced causes for the total population decreased significantly, by 4.4%, from 22.8 in 2017 to 21.8 in 2018 (Tables 5, 10, and I–2). For males in 2018, the age-adjusted death rate for drug-induced causes was 2.0 times the rate for females. The rate for drug-induced causes decreased 3.9% for males and 5.9% for females in 2018 from 2017. The age-adjusted death rate for non-Hispanic white males was 2.0% higher than for non-Hispanic black males and 101.7% higher than for Hispanic males. The rate for non-Hispanic white females was 54.5% higher than for non-Hispanic black females and 239.3% higher than for Hispanic females.

The age-adjusted death rate for drug-induced causes increased significantly in 2018 from 2017 for Hispanic males (4.2%). The rate for Hispanic females did not change significantly.

### Alcohol-induced mortality

In 2018, a total of 37,329 persons died of alcohol-induced causes in the United States (Tables 6, 8, and I–3). This category includes deaths from dependent and nondependent use of alcohol, and deaths from accidental poisoning by alcohol. It excludes unintentional injuries, homicides, and other causes indirectly related to alcohol use, and 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 population increased significantly, by 3.1%, from 9.6 in 2017 to 9.9 in 2018 (Tables 5, 10, and I–3). The rate for alcohol-induced causes increased 2.8% for males and 5.7% for females in 2018 from 2017 (Tables 5, 10, and I–3). For males, the age-adjusted death rate for alcohol-induced causes in 2018 was 2.6 times the rate for females. The age-adjusted death rate for non-Hispanic white males was 36.6% higher than for non-Hispanic black males and 10.5% lower than for Hispanic males. The rate for non-Hispanic white females was 66.7% higher than for non-Hispanic black females and 97.0% higher than for Hispanic females.

The age-adjusted rate for alcohol-induced death did not change significantly in 2018 from 2017 for Hispanic males and females.

### Firearm-related mortality

In 2018, 39,740 persons died from firearm-related injuries in the United States (Tables 6, 8, and I–4). The age-adjusted death rate for firearm-related injuries for the total, male, and female populations did not change significantly from 2017 to 2018 (Tables 5, 10, and I–4). For males in 2018, the age-adjusted death rate for firearm-related injuries was 6.1 times the rate for females. The age-adjusted death rate for non-Hispanic white males was 53.6% lower than for non-Hispanic black males and 68.1% higher than for Hispanic males. The rate for non-Hispanic white females was 31.5% lower than for non-Hispanic black females and 117.6% higher than for Hispanic females.

The age-adjusted death rates for firearm-related injuries did not change significantly in 2018 from 2017 for Hispanic males and Hispanic females.

## 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 increased by 0.1 year in 2018 from 2017 primarily because of decreases in mortality from cancer, unintentional injuries, Chronic lower respiratory diseases, heart disease, and homicide. The increase in life expectancy for the total population was slightly offset by increases in mortality from Influenza and pneumonia, suicide, Nutritional deficiencies, Chronic liver disease and cirrhosis, and Parkinson disease. Life expectancy at birth for males increased 0.1 year due to decreases in mortality from unintentional injuries, cancer, homicide, Chronic lower respiratory diseases, and Viral hepatitis. These decreases were offset somewhat by increases in mortality from Influenza and pneumonia, suicide, Chronic liver disease and cirrhosis, kidney disease, and diabetes. For the female population, life expectancy at birth increased 0.1 year

due to decreases in mortality from cancer, unintentional injuries, heart disease, Chronic lower respiratory diseases, and stroke, which were offset by increases in mortality from Influenza and pneumonia, Nutritional deficiencies, suicide, and Parkinson disease. (For a discussion of the major causes contributing to the change in life expectancy, see Technical Notes.) The difference in life expectancy between the male and female populations was 5.0 years in 2018, unchanged from 2017 (Table 4).

Life expectancy for the Hispanic population in 2018 remained the same (81.8 years) due to decreases in mortality from heart disease, congenital malformations, diabetes, Viral hepatitis, and homicide, which were offset somewhat by increases for suicide, Alzheimer disease, Influenza and pneumonia, kidney disease, and Chronic liver disease and cirrhosis. Life expectancy for the Hispanic male population in 2018 remained the same (79.1 years) due to decreases in mortality from heart disease, diabetes, Viral hepatitis, homicide, and cancer, which were offset somewhat by increases for suicide, Alzheimer disease, kidney disease, Influenza and pneumonia, and Chronic liver disease and cirrhosis. Life expectancy for the Hispanic female population in 2018 remained the same (84.3 years) due to decreases in mortality from heart disease, congenital malformations, Chronic lower respiratory diseases, cancer, and diabetes, which were offset somewhat by increases for Influenza and pneumonia, Alzheimer disease, suicide, Certain conditions originating in the perinatal period, and Nutritional deficiencies.

Life table partitioning analysis indicates that the difference in 2018 of 3.2 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 2018, a total of 240,583 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 on Injury Statistics and the Injury Control and Emergency Health Services section of the American Public Health Association (41,42). 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 2018—poisoning, motor-vehicle traffic, firearm, and fall—accounted for 78.5% of all injury deaths (Table 11). A total of 72,473 deaths occurred as the result of poisonings in 2018, accounting for 30.1% of all injury deaths (Table 11). The age-adjusted death rate for poisoning decreased significantly, by 4.3% from 23.2 deaths per 100,000 U.S. standard population in 2017 to 22.2 in 2018. Most poisoning deaths were either unintentional (86.1%) or suicides (8.6%). However, 5.1% of poisoning deaths were of undetermined intent. The age-adjusted death rate for unintentional poisoning decreased 4.0%, from 20.1 in 2017 to 19.3 in 2018.

Motor vehicle traffic-related injuries in 2018 resulted in 37,991 deaths, accounting for 15.8% of all injury deaths (Table 11). The age-adjusted death rate for these injuries decreased 2.6% from 11.5 in 2017 to 11.2 in 2018. In 2018, 39,740 persons died from firearm injuries in the United States (Table 11), accounting for 16.5% of all injury deaths that year.

The age-adjusted death rate from firearm injuries (all intents) did not change significantly between 2017 and 2018. The two major component causes of firearm injury deaths in 2018 were suicide (61.5%) and homicide (35.1%). The age-adjusted death rate for firearm suicide did not change significantly between 2017 and 2018. The age-adjusted rate for firearm homicide decreased 4.3% from 4.6 in 2017 to 4.4 in 2018. A total of 38,707 persons died as the result of falls in 2018, accounting for 16.1% of all injury deaths (Table 11).

The age-adjusted death rate for falls in 2018 was 9.8, the same as in 2017. The overwhelming majority of fall-related deaths (96.8%) were unintentional.

## State of residence

Mortality patterns varied considerably by state (Tables 12 and 15). The state with the highest age-adjusted death rate in 2018 was West Virginia (953.8 per 100,000 U.S. standard population), with a rate 31.8% above the national rate (723.6). The state with the lowest age-adjusted death rate was Hawaii (572.5), with a rate 20.9% below the national rate. The age-adjusted death rate for West Virginia was 66.6% higher than the rate for Hawaii.

Variations in mortality by state were associated with differences in socioeconomic status, racial and ethnic composition, as well as with differences in risk of specific causes of death (43).

## Infant mortality

In 2018, a total of 21,467 deaths occurred among children under age 1 year (Tables D, E, 14, and 15). This number represents 868 fewer infant deaths in 2018 than in 2017. The ratio of male to female infant mortality rates was 1.2, the same as in 2017. The infant mortality rate was 5.66 per 1,000 live births, the neonatal mortality rate (deaths of infants aged 0–27 days per 1,000 live births) was 3.77, and the postneonatal mortality rate (deaths of infants aged 28 days through 11 months per 1,000 live births) was 1.89 in 2018 (Figure 5; Tables D and 13; see Technical Notes for information on alternative data sources). The infant mortality rate decreased 2.2% in 2018 from 2017. Changes in the neonatal and postneonatal mortality rates from 2017 to 2018 were not significant.

**Table D. Number of infant, neonatal, and postneonatal deaths and mortality rates, by sex: United States, 2017–2018**

[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]

| Age and sex | 2018 | | 2017 | | Percent change[1] from 2017 to 2018 |
|---|---|---|---|---|---|
| | Number | Rate | Number | Rate | |
| **Infant** | | | | | |
| Total | 21,467 | 5.66 | 22,335 | 5.79 | –2.2 |
| Male | 12,068 | 6.23 | 12,468 | 6.32 | –1.4 |
| Female | 9,399 | 5.07 | 9,867 | 5.24 | –3.2 |
| **Neonatal** | | | | | |
| Total | 14,289 | 3.77 | 14,821 | 3.84 | –1.8 |
| Male | 8,008 | 4.13 | 8,259 | 4.19 | –1.4 |
| Female | 6,281 | 3.39 | 6,562 | 3.49 | –2.9 |
| **Postneonatal** | | | | | |
| Total | 7,178 | 1.89 | 7,514 | 1.95 | –3.1 |
| Male | 4,060 | 2.09 | 4,209 | 2.13 | –1.9 |
| Female | 3,118 | 1.68 | 3,305 | 1.76 | –4.5 |

[1]Based on a comparison of 2018 and 2017 mortality rates.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

The 10 leading causes of infant death in 2018 accounted for 67.6% of all infant deaths in the United States (Table E). 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 2018, the 10 leading causes of infant death remained the same as in 2017 (34). Among the 10 leading causes, rates decreased in 2018 from 2017 for unintentional injuries (9.9%) and for Newborn affected by complications of placenta, cord and membranes (12.8%). Changes in rates among the other leading causes of infant death were not statistically significant (Table E).

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 (44); 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, the misclassification of Hispanic origin should be considered when interpreting rate disparities between Hispanic and non-Hispanic populations (28).

In 2018, the infant mortality rate for Hispanic infants was 5.06 deaths per 1,000 live births. By comparison, for non-Hispanic white infants, the infant mortality rate was 4.55, and for non-Hispanic black infants, the rate was 11.10 (Table 13).

## Maternal mortality

Maternal mortality data are included in this report for the first time since 2007. In 2018, a total of 658 women died of maternal causes in the United States (Table 16). The maternal mortality rate in 2018 was 17.4 deaths per 100,000 live births. The maternal mortality rate for non-Hispanic black women (37.3 deaths per 100,000 live births) was 2.5 times the rate for non-Hispanic white women (14.9), 2.8 times the rate for Asian women (13.3), and 3.2 times the rate for Hispanic women (11.8). The maternal mortality rates for AIAN and NHOPI women do not meet standards of reliability because the death numbers are too low. Deaths from maternal causes were identified using a newly revised coding method. The 2018 coding method restricts application of the pregnancy checkbox to decedents aged 10–44 for coding cause of death to a maternal cause when the certificate has no mention of a maternal-related condition but has a positive checkbox entry (45). For women aged 45 and over, the checkbox is used in coding cause of death only if a positive checkbox entry is accompanied by a mention of a maternal-related condition as a cause of death. Maternal deaths include deaths of women while pregnant or within 42 days of being pregnant, from any cause related to or aggravated by the pregnancy but exclude deaths from external causes (i.e., accidents, homicides, and suicides); for more information, see "Maternal Mortality in the United States: Changes in Coding, Publication, and Data Release, 2018" (45) and Technical Notes.

**Table E. Number of infant deaths, percentage of total infant deaths, and infant mortality rates for 2018, and percent change in infant mortality rates from 2017 to 2018 for the 10 leading causes of infant death in 2018: United States**

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

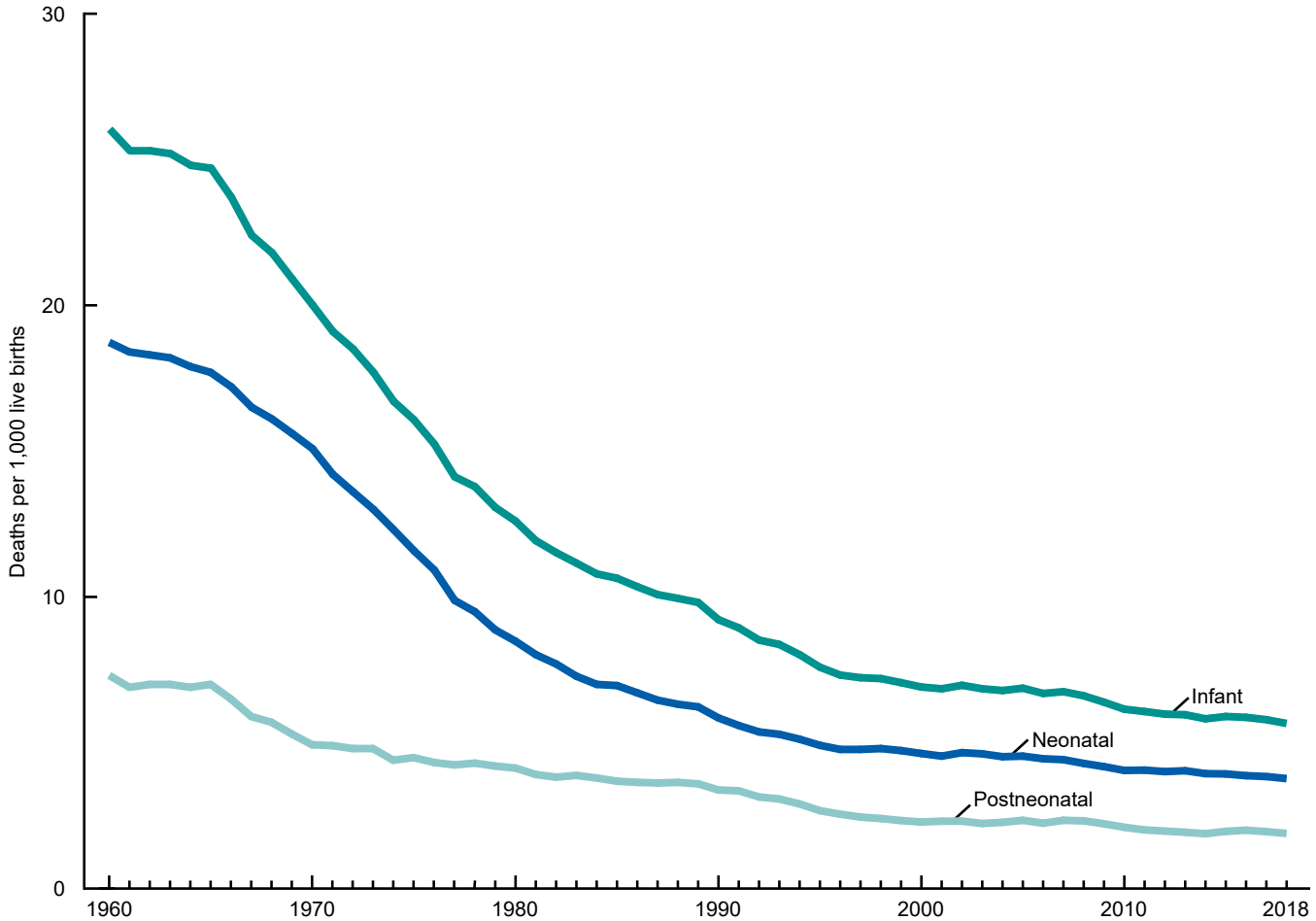
| Rank[1] | Cause of death (based on *International Classification of Diseases, 10th Revision*) | Number | Percent of total deaths | Rate | Percent change[2] from 2017 to 2018 |
|---|---|---|---|---|---|
| … | All causes | 21,467 | 100.0 | 566.2 | –2.3 |
| 1 | Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99) | 4,473 | 20.8 | 118.0 | –0.7 |
| 2 | Disorders related to short gestation and low birth weight, not elsewhere classified (P07) | 3,679 | 17.1 | 97.0 | –0.2 |
| 3 | Newborn affected by maternal complications of pregnancy (P01) | 1,358 | 6.3 | 35.8 | –3.5 |
| 4 | Sudden infant death syndrome (R95) | 1,334 | 6.2 | 35.2 | –0.6 |
| 5 | Accidents (unintentional injuries) (V01–X59) | 1,168 | 5.4 | 30.8 | –9.9 |
| 6 | Newborn affected by complications of placenta, cord and membranes (P02) | 724 | 3.4 | 19.1 | –12.8 |
| 7 | Bacterial sepsis of newborn (P36) | 579 | 2.7 | 15.3 | –0.6 |
| 8 | Diseases of the circulatory system (I00–I99) | 428 | 2.0 | 11.3 | –2.6 |
| 9 | Respiratory distress of newborn (P22) | 390 | 1.8 | 10.3 | –9.6 |
| 10 | Neonatal hemorrhage (P50–P52,P54) | 375 | 1.7 | 9.9 | 1.0 |
| … | All other causes (residual) | 6,959 | 32.4 | 183.5 | … |

… Category not applicable.
[1]Rank based on number of deaths; see Technical Notes in this report.
[2]Based on a comparison of the 2018 infant mortality rate with the 2017 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: National Center for Health Statistics, National Vital Statistics System, Mortality.

**Figure 5. Infant, neonatal, and postneonatal mortality rates: United States, 1960–2018**




NOTE: 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.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Additional mortality tables based on 2018 final data

Trend data on dementia-related causes, drug-induced causes, alcohol-induced causes, and firearm-related injuries by race and Hispanic origin are available as supplemental tables (Tables I–1 through I–4) from the NCHS website: https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-tables-508.pdf. Mortality data by specified Hispanic subgroup, marital status, educational attainment, and injury at work are available in supplemental Tables I–5 through I–9. Estimated population and standard errors by specified Hispanic subgroups, marital status, and educational attainment are available as supplemental tables (Tables I–17 through I–19). Tables I–20 through I–27 provide trend data by the bridged-race categories. See List of Internet Tables for the complete list of supplemental tables.

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## List of Detailed Tables

## List of Internet Tables

(Available from https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-tables-508.pdf)

## Table 1. Number of deaths, death rates, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 2010–2018

[Excludes deaths of nonresidents of the United States]

| Race and Hispanic origin and year | Number | | | Crude death rate[1] | | | Age-adjusted death rate[2] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| **All races and origins[3]** | | | | | | | | | |
| 2018 | 2,839,205 | 1,458,469 | 1,380,736 | 867.8 | 905.2 | 831.6 | 723.6 | 855.5 | 611.3 |
| 2017 | 2,813,503 | 1,439,111 | 1,374,392 | 863.8 | 897.2 | 831.4 | 731.9 | 864.5 | 619.7 |
| 2016 | 2,744,248 | 1,400,232 | 1,344,016 | 849.3 | 880.2 | 819.3 | 728.8 | 861.0 | 617.5 |
| 2015 | 2,712,630 | 1,373,404 | 1,339,226 | 844.0 | 868.0 | 820.7 | 733.1 | 863.2 | 624.2 |
| 2014 | 2,626,418 | 1,328,241 | 1,298,177 | 823.7 | 846.4 | 801.7 | 724.6 | 855.1 | 616.7 |
| 2013 | 2,596,993 | 1,306,034 | 1,290,959 | 821.5 | 839.1 | 804.4 | 731.9 | 863.6 | 623.5 |
| 2012 | 2,543,279 | 1,273,722 | 1,269,557 | 810.2 | 824.5 | 796.4 | 732.8 | 865.1 | 624.7 |
| 2011 | 2,515,458 | 1,254,978 | 1,260,480 | 807.3 | 818.7 | 796.3 | 741.3 | 875.3 | 632.4 |
| 2010 | 2,468,435 | 1,232,432 | 1,236,003 | 799.5 | 812.0 | 787.4 | 747.0 | 887.1 | 634.9 |
| **Non-Hispanic, single-race white[4]** | | | | | | | | | |
| 2018 | 2,182,552 | 1,108,848 | 1,073,704 | 1,104.8 | 1,138.2 | 1,072.3 | 748.7 | 878.0 | 636.5 |
| **Non-Hispanic, bridged-race white[5]** | | | | | | | | | |
| 2018 | 2,188,349 | 1,111,840 | 1,076,509 | 1,088.4 | 1,121.4 | 1,056.2 | 745.7 | 874.3 | 634.1 |
| 2017 | 2,179,857 | 1,102,838 | 1,077,019 | 1,083.2 | 1,111.4 | 1,055.8 | 755.0 | 885.1 | 642.8 |
| 2016 | 2,133,463 | 1,077,362 | 1,056,101 | 1,059.7 | 1,085.6 | 1,034.6 | 749.0 | 879.5 | 637.2 |
| 2015 | 2,123,631 | 1,063,705 | 1,059,926 | 1,055.3 | 1,072.5 | 1,038.5 | 753.2 | 881.3 | 644.1 |
| 2014 | 2,066,949 | 1,035,345 | 1,031,604 | 1,028.1 | 1,045.4 | 1,011.3 | 742.8 | 872.3 | 633.8 |
| 2013 | 2,052,660 | 1,021,135 | 1,031,525 | 1,021.6 | 1,032.1 | 1,011.5 | 747.1 | 876.8 | 638.4 |
| 2012 | 2,016,896 | 998,832 | 1,018,064 | 1,004.9 | 1,011.2 | 998.8 | 745.8 | 876.2 | 637.6 |
| 2011 | 2,006,319 | 989,835 | 1,016,484 | 1,001.0 | 1,004.1 | 998.1 | 754.3 | 887.2 | 644.6 |
| 2010 | 1,969,916 | 971,604 | 998,312 | 984.3 | 987.5 | 981.2 | 755.0 | 892.5 | 643.3 |
| **Non-Hispanic, single-race black[4]** | | | | | | | | | |
| 2018 | 341,408 | 177,958 | 163,450 | 834.7 | 909.8 | 765.9 | 892.6 | 1,102.8 | 733.7 |
| **Non-Hispanic, bridged-race black[5]** | | | | | | | | | |
| 2018 | 343,393 | 178,904 | 164,489 | 799.8 | 869.6 | 735.6 | 879.5 | 1,085.2 | 724.2 |
| 2017 | 335,667 | 174,403 | 161,264 | 787.5 | 854.2 | 726.1 | 881.0 | 1,083.3 | 728.0 |
| 2016 | 326,810 | 168,750 | 158,060 | 775.5 | 836.2 | 719.7 | 882.8 | 1,081.2 | 734.1 |
| 2015 | 315,254 | 161,850 | 153,404 | 754.6 | 809.4 | 704.3 | 876.1 | 1,070.1 | 731.0 |
| 2014 | 303,844 | 154,836 | 149,008 | 735.4 | 783.3 | 691.4 | 870.7 | 1,060.3 | 731.2 |
| 2013 | 299,227 | 152,661 | 146,566 | 733.4 | 782.5 | 688.4 | 885.2 | 1,083.3 | 740.6 |
| 2012 | 291,179 | 148,344 | 142,835 | 720.9 | 768.5 | 677.3 | 887.1 | 1,086.4 | 742.1 |
| 2011 | 286,797 | 145,052 | 141,745 | 718.0 | 760.4 | 679.2 | 901.6 | 1,098.3 | 759.8 |
| 2010 | 283,438 | 143,824 | 139,614 | 718.7 | 764.5 | 676.9 | 920.4 | 1,131.7 | 770.8 |
| **Non-Hispanic, single-race American Indian or Alaska Native[4]** | | | | | | | | | |
| 2018 | 17,790 | 9,678 | 8,112 | 735.9 | 813.5 | 660.8 | 790.8 | 918.7 | 673.1 |
| **Non-Hispanic, bridged-race American Indian or Alaska Native[5]** | | | | | | | | | |
| 2018 | 19,491 | 10,875 | 8,616 | 709.8 | 807.7 | 615.6 | 780.8 | 937.4 | 641.7 |
| 2017 | 19,198 | 10,502 | 8,696 | 703.4 | 784.4 | 625.5 | 800.2 | 943.9 | 674.0 |
| 2016 | 18,595 | 10,280 | 8,315 | 685.9 | 772.8 | 602.2 | 800.3 | 954.0 | 668.0 |
| 2015 | 18,039 | 9,869 | 8,170 | 670.7 | 747.4 | 596.7 | 805.7 | 950.2 | 679.5 |
| 2014 | 17,138 | 9,338 | 7,800 | 642.5 | 713.4 | 574.2 | 796.9 | 935.0 | 677.4 |
| 2013 | 16,219 | 8,840 | 7,379 | 613.7 | 681.4 | 548.3 | 787.5 | 930.6 | 666.4 |
| 2012 | 15,705 | 8,598 | 7,107 | 599.3 | 668.7 | 532.5 | 787.8 | 929.9 | 666.3 |
| 2011 | 15,181 | 8,175 | 7,006 | 584.2 | 640.9 | 529.5 | 798.1 | 933.8 | 684.7 |
| 2010 | 14,846 | 8,072 | 6,774 | 577.8 | 640.1 | 517.7 | 818.8 | 965.8 | 696.8 |
| **Non-Hispanic, single-race Asian[4]** | | | | | | | | | |
| 2018 | 68,768 | 35,089 | 33,679 | 367.2 | 393.4 | 343.3 | 381.2 | 454.1 | 324.1 |
| **Non-Hispanic, single-race Native Hawaiian or Other Pacific Islander[4]** | | | | | | | | | |
| 2018 | 3,277 | 1,786 | 1,491 | 558.9 | 605.4 | 511.8 | 675.7 | 758.1 | 597.3 |

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, 2010–2018—Con.**

[Excludes deaths of nonresidents of the United States]

| Race and Hispanic origin and year | Number | | | Crude death rate[1] | | | Age-adjusted death rate[2] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Non-Hispanic, bridged-race Asian or Pacific Islander | | | | | | | | | |
| 2018 | 75,266 | 38,760 | 36,506 | 366.3 | 394.4 | 340.5 | 392.2 | 467.6 | 332.4 |
| 2017 | 72,598 | 37,236 | 35,362 | 359.8 | 386.2 | 335.6 | 395.3 | 470.1 | 336.4 |
| 2016 | 68,235 | 34,892 | 33,343 | 350.3 | 374.9 | 327.8 | 394.4 | 466.6 | 337.4 |
| 2015 | 65,277 | 33,306 | 31,971 | 341.5 | 364.9 | 320.1 | 396.2 | 468.9 | 339.6 |
| 2014 | 60,424 | 31,039 | 29,385 | 327.7 | 352.7 | 305.0 | 390.5 | 464.2 | 333.3 |
| 2013 | 58,702 | 30,343 | 28,359 | 331.8 | 359.2 | 306.7 | 407.5 | 490.2 | 344.8 |
| 2012 | 55,298 | 28,214 | 27,084 | 322.0 | 344.1 | 301.7 | 409.6 | 486.3 | 351.4 |
| 2011 | 52,346 | 26,909 | 25,437 | 315.7 | 339.9 | 293.7 | 413.2 | 493.4 | 352.8 |
| 2010 | 50,018 | 25,938 | 24,080 | 310.0 | 336.7 | 285.6 | 425.6 | 513.0 | 360.6 |
| Hispanic[6] | | | | | | | | | |
| 2018 | 204,719 | 113,045 | 91,674 | 341.9 | 373.9 | 309.3 | 524.1 | 633.1 | 431.7 |
| 2017 | 197,249 | 108,579 | 88,670 | 334.6 | 364.6 | 304.0 | 524.7 | 631.8 | 434.2 |
| 2016 | 188,254 | 103,532 | 84,722 | 327.6 | 356.8 | 297.7 | 525.8 | 631.8 | 436.4 |
| 2015 | 179,457 | 98,170 | 81,287 | 317.1 | 343.2 | 290.4 | 525.3 | 628.9 | 438.3 |
| 2014 | 169,387 | 92,474 | 76,913 | 305.8 | 330.1 | 281.0 | 523.3 | 626.8 | 437.5 |
| 2013 | 163,241 | 88,880 | 74,361 | 301.9 | 323.7 | 279.4 | 535.4 | 639.8 | 448.6 |
| 2012 | 156,419 | 85,238 | 71,181 | 295.0 | 316.5 | 272.7 | 539.1 | 643.9 | 452.5 |
| 2011 | 149,635 | 81,887 | 67,748 | 287.5 | 309.7 | 264.6 | 540.7 | 647.3 | 452.8 |
| 2010 | 144,490 | 79,622 | 64,868 | 286.2 | 310.8 | 260.9 | 558.6 | 677.7 | 463.4 |

[1]Rates 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 in this report.
[2]Age-adjusted rates are per 100,000 U.S. standard population. For method of computation, see Technical Notes in this report.
[3]Includes races and origin not shown separately; see Technical Notes in this report.
[4]Only one race was reported on the death certificate; see Technical Notes in this report.
[5]Multiple-race data reported according to 1997 Office of Management and Budget (OMB) standards were bridged to single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes in this report.
[6]Includes persons of Hispanic origin of any race; see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 2. Number of deaths and death rates by age, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 2018

[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. Race and origin categories are consistent with 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Race, origin, and sex | All ages | Age group (years) | | | | | | | | | | | | Age-adjusted rate[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1[1] | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated | |
| | Number | | | | | | | | | | | | | |
| Total | 2,839,205 | 21,467 | 3,830 | 5,450 | 30,154 | 58,844 | 80,380 | 164,837 | 374,836 | 543,778 | 675,205 | 880,280 | 144 | ... |
| Male | 1,458,469 | 12,068 | 2,243 | 3,081 | 22,008 | 40,864 | 51,376 | 101,030 | 228,273 | 312,911 | 347,188 | 337,318 | 109 | ... |
| Female | 1,380,736 | 9,399 | 1,587 | 2,369 | 8,146 | 17,980 | 29,004 | 63,807 | 146,563 | 230,867 | 328,017 | 542,962 | 35 | ... |
| Single race[3] | 2,824,647 | 20,538 | 3,688 | 5,261 | 29,482 | 57,962 | 79,458 | 163,565 | 372,567 | 541,197 | 672,707 | 878,079 | 143 | ... |
| Male | 1,450,360 | 11,520 | 2,159 | 2,982 | 21,539 | 40,260 | 50,827 | 100,242 | 226,918 | 311,452 | 345,889 | 336,463 | 109 | ... |
| Female | 1,374,287 | 9,018 | 1,529 | 2,279 | 7,943 | 17,702 | 28,631 | 63,323 | 145,649 | 229,745 | 326,818 | 541,616 | 34 | ... |
| Two or more races[4] | 14,558 | 929 | 142 | 189 | 672 | 882 | 922 | 1,272 | 2,269 | 2,581 | 2,498 | 2,201 | 1 | ... |
| Male | 8,109 | 548 | 84 | 99 | 469 | 604 | 549 | 788 | 1,355 | 1,459 | 1,299 | 855 | – | ... |
| Female | 6,449 | 381 | 58 | 90 | 203 | 278 | 373 | 484 | 914 | 1,122 | 1,199 | 1,346 | 1 | ... |
| Non-Hispanic, single race[3] | 2,613,795 | 16,028 | 2,910 | 4,163 | 23,791 | 49,331 | 68,225 | 144,457 | 341,123 | 504,031 | 630,006 | 829,666 | 64 | ... |
| Male | 1,333,359 | 8,997 | 1,714 | 2,379 | 17,245 | 33,899 | 43,102 | 87,610 | 206,775 | 289,762 | 324,229 | 317,598 | 49 | ... |
| Female | 1,280,436 | 7,031 | 1,196 | 1,784 | 6,546 | 15,432 | 25,123 | 56,847 | 134,348 | 214,269 | 305,777 | 512,068 | 15 | ... |
| White | 2,182,552 | 8,893 | 1,767 | 2,571 | 15,692 | 34,729 | 48,784 | 107,174 | 264,392 | 413,115 | 542,277 | 743,111 | 47 | ... |
| Male | 1,108,848 | 4,991 | 1,033 | 1,499 | 11,084 | 23,760 | 31,062 | 65,593 | 161,818 | 239,182 | 281,466 | 287,326 | 34 | ... |
| Female | 1,073,704 | 3,902 | 734 | 1,072 | 4,608 | 10,969 | 17,722 | 41,581 | 102,574 | 173,933 | 260,811 | 455,785 | 13 | ... |
| Black | 341,408 | 6,127 | 938 | 1,272 | 6,823 | 12,113 | 15,983 | 30,882 | 64,967 | 74,478 | 66,907 | 60,905 | 13 | ... |
| Male | 177,958 | 3,458 | 555 | 716 | 5,260 | 8,475 | 9,889 | 18,127 | 37,943 | 41,369 | 32,058 | 20,097 | 11 | ... |
| Female | 163,450 | 2,669 | 383 | 556 | 1,563 | 3,638 | 6,094 | 12,755 | 27,024 | 33,109 | 34,849 | 40,808 | 2 | ... |
| American Indian or Alaska Native | 17,790 | 229 | 58 | 97 | 469 | 1,130 | 1,325 | 2,080 | 3,344 | 3,635 | 3,206 | 2,217 | – | ... |
| Male | 9,678 | 123 | 37 | 43 | 344 | 751 | 835 | 1,257 | 1,960 | 1,959 | 1,556 | 813 | – | ... |
| Female | 8,112 | 106 | 21 | 54 | 125 | 379 | 490 | 823 | 1,384 | 1,676 | 1,650 | 1,404 | – | ... |
| Asian | 68,768 | 700 | 137 | 207 | 728 | 1,219 | 1,933 | 3,908 | 7,763 | 12,061 | 17,012 | 23,096 | 4 | ... |
| Male | 35,089 | 380 | 82 | 114 | 497 | 823 | 1,185 | 2,390 | 4,673 | 6,858 | 8,860 | 9,223 | 4 | ... |
| Female | 33,679 | 320 | 55 | 93 | 231 | 396 | 748 | 1,518 | 3,090 | 5,203 | 8,152 | 13,873 | – | ... |
| Native Hawaiian or Other Pacific Islander | 3,277 | 79 | 10 | 16 | 79 | 140 | 200 | 413 | 657 | 742 | 604 | 337 | – | ... |
| Male | 1,786 | 45 | 7 | 7 | 60 | 90 | 131 | 243 | 381 | 394 | 289 | 139 | – | ... |
| Female | 1,491 | 34 | 3 | 9 | 19 | 50 | 69 | 170 | 276 | 348 | 315 | 198 | – | ... |
| Non-Hispanic, two or more races[4] | 12,704 | 733 | 112 | 153 | 557 | 753 | 803 | 1,090 | 2,012 | 2,308 | 2,235 | 1,948 | – | ... |
| Male | 7,020 | 434 | 64 | 83 | 381 | 515 | 470 | 665 | 1,187 | 1,309 | 1,160 | 752 | – | ... |
| Female | 5,684 | 299 | 48 | 70 | 176 | 238 | 333 | 425 | 825 | 999 | 1,075 | 1,196 | – | ... |

See footnotes at end of table.

## Table 2. Number of deaths and death rates by age, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 2018—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. Race and origin categories are consistent with 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Race, origin, and sex | All ages | Age group (years) | | | | | | | | | | | | Age-adjusted rate[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1[1] | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated | |
| | Number | | | | | | | | | | | | | |
| Hispanic, total[5] | 204,719 | 4,487 | 794 | 1,117 | 5,740 | 8,611 | 11,130 | 18,657 | 30,007 | 35,433 | 41,404 | 47,327 | 12 | ... |
| Male | 113,045 | 2,502 | 455 | 607 | 4,333 | 6,356 | 7,660 | 12,311 | 19,083 | 20,454 | 20,873 | 18,403 | 8 | ... |
| Female | 91,674 | 1,985 | 339 | 510 | 1,407 | 2,255 | 3,470 | 6,346 | 10,924 | 14,979 | 20,531 | 28,924 | 4 | ... |
| Hispanic, single race[3] | 202,898 | 4,295 | 764 | 1,082 | 5,626 | 8,484 | 11,012 | 18,483 | 29,754 | 35,162 | 41,146 | 47,079 | 11 | ... |
| Male | 111,977 | 2,391 | 435 | 592 | 4,246 | 6,268 | 7,582 | 12,192 | 18,918 | 20,305 | 20,738 | 18,302 | 8 | ... |
| Female | 90,921 | 1,904 | 329 | 490 | 1,380 | 2,216 | 3,430 | 6,291 | 10,836 | 14,857 | 20,408 | 28,777 | 3 | ... |
| White | 197,484 | 3,962 | 717 | 1,030 | 5,373 | 8,141 | 10,679 | 17,982 | 28,968 | 34,286 | 40,229 | 46,106 | 11 | ... |
| Male | 108,970 | 2,215 | 407 | 559 | 4,061 | 6,021 | 7,352 | 11,872 | 18,442 | 19,800 | 20,279 | 17,954 | 8 | ... |
| Female | 88,514 | 1,747 | 310 | 471 | 1,312 | 2,120 | 3,327 | 6,110 | 10,526 | 14,486 | 19,950 | 28,152 | 3 | ... |
| Black | 3,584 | 262 | 39 | 35 | 171 | 211 | 204 | 312 | 508 | 549 | 618 | 675 | – | ... |
| Male | 2,015 | 146 | 23 | 23 | 125 | 153 | 145 | 208 | 316 | 325 | 312 | 239 | – | ... |
| Female | 1,569 | 116 | 16 | 12 | 46 | 58 | 59 | 104 | 192 | 224 | 306 | 436 | – | ... |
| American Indian or Alaska Native | 981 | 31 | 3 | 5 | 48 | 88 | 81 | 103 | 169 | 181 | 146 | 126 | – | ... |
| Male | 561 | 17 | 3 | 3 | 36 | 57 | 51 | 57 | 97 | 102 | 88 | 50 | – | ... |
| Female | 420 | 14 | – | 2 | 12 | 31 | 30 | 46 | 72 | 79 | 58 | 76 | – | ... |
| Asian | 614 | 31 | 3 | 8 | 17 | 28 | 25 | 48 | 73 | 112 | 126 | 143 | – | ... |
| Male | 298 | 9 | 1 | 4 | 11 | 22 | 20 | 32 | 46 | 60 | 46 | 47 | – | ... |
| Female | 316 | 22 | 2 | 4 | 6 | 6 | 5 | 16 | 27 | 52 | 80 | 96 | – | ... |
| Native Hawaiian or Other Pacific Islander | 235 | 9 | 2 | 4 | 17 | 16 | 23 | 38 | 36 | 34 | 27 | 29 | – | ... |
| Male | 133 | 4 | 1 | 3 | 13 | 15 | 14 | 23 | 17 | 18 | 13 | 12 | – | ... |
| Female | 102 | 5 | 1 | 1 | 4 | 1 | 9 | 15 | 19 | 16 | 14 | 17 | – | ... |
| Hispanic, two or more races[4] | 1,821 | 192 | 30 | 35 | 114 | 127 | 118 | 174 | 253 | 271 | 258 | 248 | 1 | ... |
| Male | 1,068 | 111 | 20 | 15 | 87 | 88 | 78 | 119 | 165 | 149 | 135 | 101 | – | ... |
| Female | 753 | 81 | 10 | 20 | 27 | 39 | 40 | 55 | 88 | 122 | 123 | 147 | 1 | ... |
| Not stated or not classifiable origin[6] | 7,987 | 219 | 14 | 17 | 66 | 149 | 222 | 633 | 1,694 | 2,006 | 1,560 | 1,339 | 68 | ... |
| Male | 5,045 | 135 | 10 | 12 | 49 | 94 | 144 | 444 | 1,228 | 1,386 | 926 | 565 | 52 | ... |
| Female | 2,942 | 84 | 4 | 5 | 17 | 55 | 78 | 189 | 466 | 620 | 634 | 774 | 16 | ... |

See footnotes at end of table.

## Table 2. Number of deaths and death rates by age, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 2018—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. Race and origin categories are consistent with 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Race, origin, and sex | All ages | Age group (years) | | | | | | | | | | | | Age-adjusted rate[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1[1] | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated | |
| | Rate[7] | | | | | | | | | | | | | |
| Total | 867.8 | 557.8 | 24.0 | 13.3 | 70.2 | 128.8 | 194.7 | 395.9 | 886.7 | 1,783.3 | 4,386.1 | 13,450.7 | ... | 723.6 |
| Male | 905.2 | 613.1 | 27.5 | 14.7 | 100.1 | 176.1 | 249.5 | 491.8 | 1,119.0 | 2,196.5 | 5,155.0 | 14,504.0 | ... | 855.5 |
| Female | 831.6 | 500.0 | 20.4 | 11.8 | 38.8 | 80.0 | 140.2 | 302.5 | 670.0 | 1,421.0 | 3,788.0 | 12,870.0 | ... | 611.3 |
| Single race[3] | 887.6 | 568.7 | 24.6 | 13.5 | 71.5 | 130.4 | 196.7 | 399.1 | 892.4 | 1,792.5 | 4,406.4 | 13,514.0 | ... | 728.0 |
| Male | 925.6 | 623.5 | 28.1 | 15.0 | 102.1 | 178.1 | 252.0 | 495.4 | 1,126.1 | 2,207.7 | 5,178.4 | 14,573.9 | ... | 860.7 |
| Female | 850.8 | 511.3 | 20.9 | 12.0 | 39.4 | 81.0 | 141.5 | 305.2 | 674.4 | 1,428.3 | 3,806.0 | 12,929.9 | ... | 614.9 |
| Two or more races[4] | 162.7 | 392.5 | 14.8 | 8.4 | 38.8 | 70.7 | 105.2 | 195.5 | 432.4 | 861.1 | 1,952.3 | 4,687.5 | ... | 320.7 |
| Male | 183.1 | 453.4 | 17.2 | 8.7 | 53.4 | 98.8 | 131.3 | 255.7 | 546.6 | 1,053.1 | 2,339.4 | 5,022.9 | ... | 385.1 |
| Female | 142.7 | 328.9 | 12.3 | 8.2 | 23.8 | 43.7 | 81.3 | 141.4 | 330.2 | 696.1 | 1,655.6 | 4,496.7 | ... | 266.7 |
| Non-Hispanic, single race[3] | 1,004.6 | 604.4 | 26.4 | 14.5 | 74.9 | 139.8 | 213.0 | 423.7 | 923.1 | 1,829.1 | 4,484.7 | 13,816.8 | ... | 749.7 |
| Male | 1,046.7 | 662.8 | 30.3 | 16.2 | 106.2 | 190.5 | 271.8 | 522.7 | 1,160.6 | 2,245.6 | 5,253.2 | 14,917.1 | ... | 884.9 |
| Female | 964.2 | 543.1 | 22.2 | 12.7 | 42.2 | 88.2 | 155.4 | 327.9 | 702.0 | 1,462.4 | 3,882.4 | 13,212.4 | ... | 634.7 |
| White | 1,104.8 | 467.6 | 22.5 | 12.5 | 68.6 | 137.9 | 208.6 | 412.6 | 892.5 | 1,799.9 | 4,529.9 | 14,287.4 | ... | 748.7 |
| Male | 1,138.2 | 512.1 | 25.6 | 14.2 | 94.4 | 185.6 | 263.9 | 506.2 | 1,118.6 | 2,193.5 | 5,280.3 | 15,400.2 | ... | 878.0 |
| Female | 1,072.3 | 420.9 | 19.2 | 10.7 | 41.4 | 88.6 | 152.6 | 319.4 | 676.7 | 1,443.7 | 3,927.5 | 13,665.0 | ... | 636.5 |
| Black | 834.7 | 1,159.5 | 42.7 | 22.6 | 112.7 | 189.5 | 304.0 | 596.0 | 1,327.5 | 2,515.9 | 5,105.5 | 12,180.9 | ... | 892.6 |
| Male | 909.8 | 1,285.0 | 49.9 | 25.1 | 171.4 | 267.3 | 396.7 | 746.7 | 1,694.2 | 3,255.2 | 6,339.3 | 13,310.2 | ... | 1,102.8 |
| Female | 765.9 | 1,029.2 | 35.4 | 20.0 | 52.4 | 112.9 | 220.4 | 463.2 | 1,018.2 | 1,959.7 | 4,330.2 | 11,692.3 | ... | 733.7 |
| American Indian or Alaska Native | 735.9 | 726.4 | 44.4 | 27.8 | 129.3 | 304.9 | 445.4 | 708.0 | 1,134.4 | 1,985.5 | 4,111.4 | 8,552.6 | ... | 790.8 |
| Male | 813.5 | 763.3 | 55.5 | 24.3 | 186.4 | 399.4 | 566.7 | 880.6 | 1,415.2 | 2,306.3 | 4,515.9 | 8,534.5 | ... | 918.7 |
| Female | 660.8 | 687.8 | 32.8 | 31.4 | 70.1 | 207.6 | 326.3 | 544.9 | 885.6 | 1,707.8 | 3,791.2 | 8,563.1 | ... | 673.1 |
| Asian | 367.2 | 384.0 | 16.9 | 9.9 | 30.5 | 37.6 | 64.5 | 151.8 | 373.6 | 847.3 | 2,526.0 | 8,476.4 | ... | 381.2 |
| Male | 393.4 | 406.3 | 19.7 | 10.8 | 41.3 | 52.0 | 84.5 | 199.6 | 496.1 | 1,095.5 | 3,007.9 | 9,149.3 | ... | 454.1 |
| Female | 343.3 | 360.5 | 14.0 | 9.1 | 19.5 | 23.9 | 46.9 | 110.3 | 272.0 | 652.5 | 2,151.5 | 8,081.2 | ... | 324.1 |
| Native Hawaiian or Other Pacific Islander | 558.9 | 1,005.6 | * | * | 93.2 | 137.3 | 229.8 | 576.1 | 1,074.8 | 2,015.8 | 4,081.9 | 6,495.8 | ... | 675.7 |
| Male | 605.4 | 1,120.2 | * | * | 137.9 | 171.4 | 293.9 | 682.0 | 1,284.1 | 2,222.6 | 4,252.5 | 6,850.7 | ... | 758.1 |
| Female | 511.8 | 885.6 | * | * | * | 101.1 | 162.5 | 471.5 | 877.4 | 1,823.7 | 3,937.0 | 6,267.8 | ... | 597.3 |
| Non-Hispanic, two or more races[4] | 178.6 | 388.5 | 14.7 | 8.6 | 40.0 | 77.0 | 121.0 | 214.4 | 468.4 | 908.6 | 2,030.3 | 4,782.2 | ... | 338.1 |
| Male | 199.9 | 450.3 | 16.4 | 9.1 | 54.1 | 108.4 | 150.5 | 277.7 | 583.7 | 1,108.2 | 2,403.9 | 5,066.7 | ... | 403.0 |
| Female | 157.8 | 323.9 | 12.8 | 8.0 | 25.6 | 47.3 | 94.8 | 158.0 | 364.8 | 735.1 | 1,738.7 | 4,619.2 | ... | 283.0 |

See footnotes at end of table.

## Table 2. Number of deaths and death rates by age, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 2018—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. Race and origin categories are consistent with 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Race, origin, and sex | All ages | Age group (years) | | | | | | | | | | | | Age-adjusted rate[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1[1] | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated | |
| | | Rate[7] | | | | | | | | | | | | |
| Hispanic, total[5] | 341.9 | 445.3 | 19.1 | 10.6 | 58.5 | 91.3 | 129.6 | 265.6 | 613.6 | 1,320.8 | 3,348.8 | 9,483.8 | ... | 524.1 |
| Male | 373.9 | 486.1 | 21.4 | 11.3 | 86.2 | 128.7 | 173.4 | 347.7 | 801.9 | 1,670.5 | 4,054.5 | 10,124.4 | ... | 633.1 |
| Female | 309.3 | 402.7 | 16.6 | 9.9 | 29.4 | 50.2 | 83.2 | 182.1 | 435.1 | 1,027.2 | 2,845.4 | 9,116.8 | ... | 431.7 |
| Hispanic, single race[3] | 349.6 | 447.6 | 19.2 | 10.7 | 59.4 | 92.6 | 131.5 | 268.5 | 620.5 | 1,333.4 | 3,376.8 | 9,553.2 | ... | 528.9 |
| Male | 381.9 | 487.8 | 21.5 | 11.5 | 87.5 | 130.5 | 175.9 | 351.2 | 810.1 | 1,686.5 | 4,086.0 | 10,191.1 | ... | 638.7 |
| Female | 316.6 | 405.6 | 16.9 | 9.9 | 29.9 | 50.9 | 84.4 | 184.4 | 440.5 | 1,036.8 | 2,870.5 | 9,187.5 | ... | 435.7 |
| White | 375.5 | 463.2 | 20.3 | 11.4 | 62.7 | 98.6 | 140.6 | 285.7 | 659.4 | 1,407.4 | 3,539.9 | 9,943.9 | ... | 556.0 |
| Male | 409.9 | 506.9 | 22.5 | 12.1 | 92.5 | 138.8 | 187.6 | 373.2 | 861.4 | 1,780.7 | 4,284.2 | 10,600.5 | ... | 671.7 |
| Female | 340.3 | 417.7 | 17.9 | 10.6 | 31.4 | 54.1 | 90.5 | 196.2 | 467.3 | 1,093.9 | 3,008.6 | 9,566.0 | ... | 457.4 |
| Black | 123.5 | 458.0 | 16.4 | 6.2 | 35.1 | 43.8 | 50.7 | 105.3 | 246.4 | 505.5 | 1,314.6 | 3,954.3 | ... | 216.5 |
| Male | 141.3 | 500.4 | 19.0 | 8.1 | 50.1 | 63.2 | 75.7 | 150.0 | 330.0 | 676.1 | 1,627.3 | 4,139.2 | ... | 267.8 |
| Female | 106.3 | 413.9 | * | * | 19.4 | 24.2 | 28.0 | 65.9 | 173.9 | 370.0 | 1,099.2 | 3,859.8 | ... | 175.3 |
| American Indian or Alaska Native | 56.7 | 102.7 | * | * | 16.7 | 30.9 | 31.3 | 50.4 | 123.0 | 284.4 | 622.1 | 1,547.2 | ... | 101.6 |
| Male | 62.4 | * | * | * | 24.6 | 36.8 | 36.6 | 52.7 | 137.5 | 328.2 | 856.5 | 1,630.3 | ... | 120.9 |
| Female | 50.6 | * | * | * | * | 23.8 | 25.2 | 47.9 | 107.7 | 242.6 | 439.5 | 1,496.9 | ... | 84.8 |
| Asian | 102.0 | 245.7 | * | * | * | 28.8 | 29.4 | 73.8 | 165.9 | 504.4 | 1,397.2 | 4,580.4 | ... | 207.2 |
| Male | 99.3 | * | * | * | * | 45.0 | 47.1 | 100.3 | 220.9 | 609.2 | 1,243.6 | 4,376.2 | ... | 216.6 |
| Female | 104.7 | 356.9 | * | * | * | * | * | * | 116.5 | 420.8 | 1,504.0 | 4,687.5 | ... | 196.4 |
| Native Hawaiian or Other Pacific Islander | 110.3 | * | * | * | * | * | 69.3 | 164.0 | 252.6 | 532.8 | 1,058.8 | 3,584.7 | ... | 211.4 |
| Male | 120.7 | * | * | * | * | * | * | 193.9 | * | * | * | * | ... | 241.3 |
| Female | 99.1 | * | * | * | * | * | * | * | * | * | * | * | ... | 185.1 |
| Hispanic, two or more races[4] | 99.4 | 400.0 | 15.4 | 7.7 | 33.4 | 47.0 | 55.3 | 122.5 | 265.7 | 592.8 | 1,444.1 | 3,986.5 | ... | 232.9 |
| Male | 116.7 | 453.4 | 20.1 | * | 50.2 | 64.4 | 73.7 | 173.1 | 370.5 | 729.4 | 1,856.2 | 4,633.0 | ... | 294.9 |
| Female | 82.2 | 344.4 | * | 8.9 | 16.1 | 29.2 | 37.2 | 75.0 | 173.6 | 482.4 | 1,161.1 | 3,637.7 | ... | 184.5 |

… Category not applicable.
– Quantity zero.
* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
[1]Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes in this report.
[2]For method of computation, see Technical Notes in this report.
[3]Only one race was reported on the death certificate; see Technical Notes in this report.
[4]Two or more races were reported on the death certificate; see Technical Notes in this report.
[5]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[6]Includes origin not stated or not classifiable; see Technical Notes in this report.
[7]Rates 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 in this report.

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

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 3. Life expectancy at selected ages, by race and Hispanic origin and sex: United States, 2018

[Race and Hispanic-origin categories are consistent with the 1997 Office of Management and Budget standards]

| Exact age (years) | Total[1] | | | Non-Hispanic, single-race white[2,3] | | | Non-Hispanic, single-race black[2,3] | | | Hispanic[3,4] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| 0 | 78.7 | 76.2 | 81.2 | 78.6 | 76.2 | 81.1 | 74.7 | 71.3 | 78.0 | 81.8 | 79.1 | 84.3 |
| 1 | 78.2 | 75.7 | 80.7 | 78.0 | 75.6 | 80.4 | 74.5 | 71.2 | 77.7 | 81.2 | 78.5 | 83.7 |
| 5 | 74.3 | 71.8 | 76.7 | 74.1 | 71.7 | 76.5 | 70.7 | 67.3 | 73.8 | 77.3 | 74.6 | 79.8 |
| 10 | 69.3 | 66.8 | 71.8 | 69.1 | 66.7 | 71.5 | 65.7 | 62.4 | 68.9 | 72.3 | 69.6 | 74.8 |
| 15 | 64.3 | 61.9 | 66.8 | 64.1 | 61.8 | 66.6 | 60.8 | 57.4 | 64.0 | 67.4 | 64.6 | 69.9 |
| 20 | 59.5 | 57.1 | 61.9 | 59.3 | 57.0 | 61.6 | 56.0 | 52.8 | 59.1 | 62.5 | 59.8 | 64.9 |
| 25 | 54.8 | 52.4 | 57.0 | 54.5 | 52.3 | 56.8 | 51.4 | 48.3 | 54.3 | 57.7 | 55.1 | 60.1 |
| 30 | 50.1 | 47.8 | 52.2 | 49.9 | 47.7 | 52.0 | 46.9 | 43.9 | 49.5 | 53.0 | 50.5 | 55.2 |
| 35 | 45.4 | 43.3 | 47.5 | 45.2 | 43.2 | 47.3 | 42.3 | 39.5 | 44.8 | 48.2 | 45.8 | 50.3 |
| 40 | 40.8 | 38.7 | 42.7 | 40.6 | 38.7 | 42.6 | 37.8 | 35.1 | 40.2 | 43.5 | 41.2 | 45.5 |
| 45 | 36.2 | 34.2 | 38.1 | 36.1 | 34.2 | 37.9 | 33.5 | 30.9 | 35.7 | 38.8 | 36.5 | 40.7 |
| 50 | 31.7 | 29.9 | 33.5 | 31.6 | 29.8 | 33.3 | 29.2 | 26.7 | 31.4 | 34.2 | 32.0 | 36.0 |
| 55 | 27.4 | 25.7 | 29.0 | 27.3 | 25.7 | 28.9 | 25.2 | 22.9 | 27.2 | 29.8 | 27.7 | 31.4 |
| 60 | 23.3 | 21.8 | 24.8 | 23.3 | 21.7 | 24.7 | 21.4 | 19.3 | 23.2 | 25.5 | 23.6 | 27.0 |
| 65 | 19.5 | 18.1 | 20.7 | 19.4 | 18.1 | 20.6 | 18.0 | 16.1 | 19.5 | 21.4 | 19.7 | 22.7 |
| 70 | 15.8 | 14.6 | 16.8 | 15.7 | 14.5 | 16.6 | 14.9 | 13.3 | 16.0 | 17.5 | 16.0 | 18.6 |
| 75 | 12.3 | 11.3 | 13.1 | 12.2 | 11.3 | 13.0 | 11.9 | 10.5 | 12.7 | 13.9 | 12.6 | 14.7 |
| 80 | 9.2 | 8.4 | 9.8 | 9.1 | 8.4 | 9.7 | 9.2 | 8.1 | 9.8 | 10.5 | 9.4 | 11.1 |
| 85 | 6.6 | 6.0 | 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 | 3.1 | 3.7 | 3.3 | 3.7 | 3.6 | 3.1 | 3.7 |
| 100 | 2.2 | 2.0 | 2.2 | 2.1 | 1.9 | 2.2 | 2.7 | 2.5 | 2.7 | 2.5 | 2.2 | 2.5 |

[1]Includes races and origins not shown separately; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Based on death rates adjusted for misclassification; see Technical Notes in this report.
[4]Includes persons of Hispanic origin of any race; see Technical Notes.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 4. Life expectancy at birth, by race and Hispanic origin and sex: United States, 2010–2018

[Life table data are based on revised life table methodology; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget (OMB) standards; see Technical Notes in this report]

| Race and Hispanic origin and year | Both sexes | Male | Female |
|---|---|---|---|
| All races and origins[1] | | | |
| 2018 | 78.7 | 76.2 | 81.2 |
| 2017 | 78.6 | 76.1 | 81.1 |
| 2016 | 78.7 | 76.2 | 81.1 |
| 2015 | 78.7 | 76.3 | 81.1 |
| 2014 | 78.9 | 76.5 | 81.3 |
| 2013 | 78.8 | 76.4 | 81.2 |
| 2012 | 78.8 | 76.4 | 81.2 |
| 2011 | 78.7 | 76.3 | 81.1 |
| 2010 | 78.7 | 76.2 | 81.0 |
| Non-Hispanic, single-race white[2] | | | |
| 2018 | 78.6 | 76.2 | 81.1 |
| Non-Hispanic, bridged-race white[3] | | | |
| 2018 | 78.7 | 76.2 | 81.1 |
| 2017 | 78.5 | 76.1 | 81.0 |
| 2016 | 78.6 | 76.2 | 81.0 |
| 2015 | 78.7 | 76.3 | 81.0 |
| 2014 | 78.8 | 76.5 | 81.2 |
| 2013 | 78.8 | 76.5 | 81.2 |
| 2012 | 78.9 | 76.5 | 81.2 |
| 2011 | 78.7 | 76.4 | 81.1 |
| 2010 | 78.8 | 76.4 | 81.1 |
| Non-Hispanic, single-race black[2] | | | |
| 2018 | 74.7 | 71.3 | 78.0 |
| Non-Hispanic, bridged-race black[3] | | | |
| 2018 | 74.9 | 71.5 | 78.1 |
| 2017 | 74.9 | 71.5 | 78.1 |
| 2016 | 74.9 | 71.6 | 78.0 |
| 2015 | 75.1 | 71.9 | 78.1 |
| 2014 | 75.3 | 72.2 | 78.2 |
| 2013 | 75.1 | 71.9 | 78.1 |
| 2012 | 75.1 | 71.9 | 78.1 |
| 2011 | 75.0 | 71.8 | 77.8 |
| 2010 | 74.7 | 71.5 | 77.7 |
| Hispanic[4–6] | | | |
| 2018 | 81.8 | 79.1 | 84.3 |
| 2017 | 81.8 | 79.1 | 84.3 |
| 2016 | 81.8 | 79.1 | 84.3 |
| 2015 | 82.0 | 79.3 | 84.3 |
| 2014 | 82.1 | 79.4 | 84.5 |
| 2013 | 81.9 | 79.2 | 84.2 |
| 2012 | 81.9 | 79.3 | 84.3 |
| 2011 | 81.8 | 79.2 | 84.2 |
| 2010 | 81.7 | 78.8 | 84.3 |

[1]Includes races and origins not shown separately; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Race categories are consistent with 1977 OMB standards.
[4]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[5]Based on death rates adjusted for misclassification; see Technical Notes in this report.
[6]Life expectancies by Hispanic origin were revised using updated adjustment factors to correct for race and Hispanic-origin misclassification; see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018

[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 *International Classification of Diseases, 10th Revision*) 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 | | | | | | | | | | | | | |
| 2018 | 867.8 | 557.8 | 24.0 | 13.3 | 70.2 | 128.8 | 194.7 | 395.9 | 886.7 | 1,783.3 | 4,386.1 | 13,450.7 | 723.6 |
| 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) | | | | | | | | | | | | | |
| 2018 | 200.3 | 7.5 | 0.7 | 0.4 | 2.1 | 7.8 | 25.5 | 77.4 | 191.7 | 392.4 | 1,008.3 | 3,844.8 | 163.6 |
| 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 |

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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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) | | | | | | | | | | | | | |
| 2018 | 183.2 | 1.3 | 2.0 | 2.1 | 3.2 | 8.1 | 25.8 | 89.6 | 269.6 | 554.4 | 1,031.5 | 1,577.7 | 149.1 |
| 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) | | | | | | | | | | | | | |
| 2018 | 51.1 | 30.4 | 7.7 | 3.5 | 28.0 | 53.9 | 54.9 | 55.4 | 56.0 | 52.3 | 111.3 | 368.6 | 48.0 |
| 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 |

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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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) | | | | | | | | | | | | | |
| 2018 | 48.7 | * | 0.3 | 0.3 | 0.4 | 0.7 | 1.6 | 9.1 | 44.5 | 128.6 | 335.7 | 682.4 | 39.7 |
| 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) | | | | | | | | | | | | | |
| 2018 | 45.2 | 2.5 | 0.3 | 0.2 | 0.3 | 1.2 | 4.1 | 12.3 | 30.3 | 76.8 | 256.0 | 984.3 | 37.1 |
| 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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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) | | | | | | | | | | | | | |
| 2018 | 37.3 | * | * | * | * | * | * | 0.3 | 2.9 | 24.7 | 213.9 | 1,225.3 | 30.5 |
| 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) | | | | | | | | | | | | | |
| 2018 | 26.0 | * | * | 0.1 | 0.6 | 1.8 | 5.5 | 15.4 | 35.3 | 72.1 | 137.5 | 260.4 | 21.4 |
| 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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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) | | | | | | | | | | | | | |
| 2018 | 18.1 | 4.6 | 0.8 | 0.3 | 0.5 | 1.0 | 2.3 | 5.6 | 13.9 | 31.7 | 94.2 | 377.6 | 14.9 |
| 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) | | | | | | | | | | | | | |
| 2018 | 15.7 | 2.0 | * | * | 0.1 | 0.6 | 1.8 | 5.4 | 13.6 | 35.6 | 94.3 | 257.9 | 12.9 |
| 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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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] | | | | | | | | | | | | | |
| 2018 | 14.8 | … | … | 1.5 | 14.5 | 17.6 | 18.2 | 20.0 | 20.2 | 16.3 | 18.7 | 19.1 | 14.2 |
| 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 |
| Dementia-related causes[6] | | | | | | | | | | | | | |
| 2018 | 81.6 | * | * | * | * | 0.1 | 0.1 | 0.8 | 7.8 | 57.9 | 447.0 | 2,700.3 | 66.6 |
| 2017 | 80.4 | * | * | 0.0 | * | * | 0.1 | 0.7 | 7.5 | 56.9 | 450.9 | 2,707.3 | 66.7 |
| 2016 | 77.2 | * | * | 0.1 | * | 0.1 | 0.1 | 0.8 | 7.3 | 54.7 | 441.6 | 2,626.4 | 64.9 |
| 2015 | 76.5 | * | * | 0.1 | * | * | 0.1 | 0.8 | 6.8 | 53.0 | 447.2 | 2,637.4 | 65.2 |
| 2014 | 75.2 | * | 0.1 | 0.1 | * | * | 0.1 | 0.8 | 6.9 | 52.7 | 450.6 | 2,611.3 | 64.9 |
| 2013 | 74.1 | * | * | * | * | * | 0.1 | 0.9 | 7.4 | 52.2 | 449.7 | 2,601.8 | 64.8 |
| 2012 | 71.2 | * | 0.2 | * | * | * | 0.1 | 0.9 | 6.8 | 50.3 | 445.2 | 2,532.7 | 63.3 |
| 2011 | 68.3 | * | 0.1 | 0.1 | * | * | 0.1 | 0.8 | 6.5 | 50.4 | 436.6 | 2,458.6 | 61.8 |
| 2010 | 63.6 | * | * | * | * | * | 0.1 | 0.9 | 6.3 | 48.3 | 412.1 | 2,352.4 | 58.8 |
| 2009 | 57.9 | * | 0.1 | 0.1 | * | 0.1 | 0.2 | 0.8 | 5.7 | 45.2 | 383.3 | 2,151.3 | 54.2 |
| 2008 | 58.9 | * | 0.2 | 0.1 | * | * | 0.1 | 0.9 | 6.0 | 46.4 | 396.7 | 2,213.2 | 55.9 |
| 2007 | 51.8 | * | 0.2 | 0.1 | * | * | 0.1 | 0.8 | 5.5 | 42.3 | 350.0 | 1,976.0 | 49.8 |
| 2006 | 50.8 | * | 0.1 | 0.1 | * | * | 0.1 | 0.8 | 5.5 | 42.4 | 346.2 | 1,967.0 | 49.5 |
| 2005 | 43.8 | * | 0.2 | * | * | * | 0.1 | 0.6 | 4.5 | 36.3 | 302.1 | 1,735.4 | 43.4 |
| 2004 | 39.0 | * | 0.2 | 0.1 | * | * | 0.1 | 0.6 | 3.9 | 33.1 | 275.4 | 1,556.9 | 39.1 |
| 2003 | 38.1 | * | 0.2 | 0.1 | * | * | 0.1 | 0.6 | 4.0 | 34.1 | 269.5 | 1,523.1 | 38.4 |
| 2002 | 35.5 | * | 0.2 | 0.1 | * | * | 0.1 | 0.4 | 3.6 | 31.9 | 254.9 | 1,428.9 | 36.1 |
| 2001 | 32.5 | * | 0.2 | 0.0 | * | 0.1 | 0.1 | 0.5 | 3.8 | 30.5 | 234.6 | 1,299.3 | 33.1 |
| 2000 | 29.7 | * | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 3.6 | 29.4 | 218.5 | 1,180.9 | 30.5 |
| 1999 | 26.7 | * | 0.2 | 0.1 | * | * | 0.1 | 0.4 | 3.4 | 27.0 | 197.9 | 1,062.5 | 27.5 |

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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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 | |
| Drug-induced causes[6] | | | | | | | | | | | | | |
| 2018 | 21.7 | 0.8 | 0.2 | 0.1 | 11.0 | 36.8 | 40.0 | 37.3 | 30.4 | 11.4 | 4.8 | 5.1 | 21.8 |
| 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 |
| Alcohol-induced causes[6] | | | | | | | | | | | | | |
| 2018 | 11.4 | * | * | * | 0.3 | 3.7 | 10.0 | 21.6 | 31.5 | 22.2 | 12.4 | 6.1 | 9.9 |
| 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 |

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 2018, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2018—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 *International Classification of Diseases, 10th Revision*) 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 | |
| Injury by firearms[6] | | | | | | | | | | | | | |
| 2018 | 12.1 | * | 0.6 | 1.1 | 17.2 | 17.7 | 14.6 | 12.8 | 12.7 | 12.0 | 15.4 | 14.7 | 11.9 |
| 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 |

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

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 6. Number of deaths from selected causes, by age: United States, 2018

[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 *International Classification of Diseases, 10th Revision*) | All ages | Age group (years) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1 | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated |
| All causes | 2,839,205 | 21,467 | 3,830 | 5,450 | 30,154 | 58,844 | 80,380 | 164,837 | 374,836 | 543,778 | 675,205 | 880,280 | 144 |
| Enterocolitis due to *Clostridium difficile* (A04.7) | 5,249 | 2 | – | 4 | 10 | 17 | 45 | 156 | 520 | 1,040 | 1,607 | 1,848 | – |
| Septicemia (A40–A41) | 40,718 | 151 | 54 | 60 | 101 | 399 | 829 | 2,380 | 5,956 | 9,143 | 10,687 | 10,956 | 2 |
| Viral hepatitis (B15–B19) | 4,842 | – | – | – | 3 | 47 | 193 | 703 | 2,128 | 1,232 | 387 | 148 | 1 |
| Human immunodeficiency virus (HIV) disease (B20–B24) | 5,425 | – | – | 1 | 62 | 482 | 753 | 1,490 | 1,653 | 737 | 214 | 33 | – |
| Malignant neoplasms (C00–C97) | 599,274 | 51 | 326 | 843 | 1,371 | 3,684 | 10,640 | 37,301 | 113,947 | 169,056 | 158,794 | 103,252 | 9 |
| Malignant neoplasms of lip, oral cavity and pharynx (C00–C14) | 10,158 | 2 | – | 1 | 14 | 62 | 182 | 916 | 2,695 | 2,997 | 2,010 | 1,279 | – |
| Malignant neoplasm of esophagus (C15) | 15,419 | – | – | – | 2 | 50 | 201 | 1,078 | 3,763 | 5,069 | 3,593 | 1,663 | – |
| Malignant neoplasm of stomach (C16) | 11,043 | – | – | – | 12 | 127 | 439 | 1,035 | 2,182 | 2,811 | 2,633 | 1,804 | – |
| Malignant neoplasms of colon, rectum and anus (C18–C21) | 53,094 | – | – | 3 | 32 | 372 | 1,451 | 4,971 | 10,256 | 12,988 | 12,513 | 10,508 | – |
| Malignant neoplasms of liver and intrahepatic bile ducts (C22) | 27,686 | 4 | 12 | 11 | 35 | 104 | 344 | 1,621 | 7,541 | 9,164 | 6,005 | 2,844 | 1 |
| Malignant neoplasm of pancreas (C25) | 44,915 | – | – | 2 | 9 | 57 | 432 | 2,460 | 8,737 | 13,982 | 12,409 | 6,826 | 1 |
| Malignant neoplasms of trachea, bronchus and lung (C33–C34) | 142,161 | – | 2 | 4 | 18 | 119 | 787 | 6,272 | 28,972 | 46,015 | 41,238 | 18,733 | 1 |
| Malignant melanoma of skin (C43) | 8,199 | – | – | 1 | 13 | 118 | 316 | 677 | 1,502 | 2,014 | 2,008 | 1,550 | – |
| Malignant neoplasm of breast (C50) | 42,950 | – | – | – | 13 | 397 | 1,812 | 4,671 | 8,945 | 10,527 | 9,088 | 7,496 | 1 |
| Malignant neoplasm of cervix uteri (C53) | 4,138 | – | – | – | 2 | 225 | 522 | 873 | 979 | 788 | 487 | 262 | – |
| Malignant neoplasm of ovary (C56) | 13,748 | – | 1 | 2 | 24 | 84 | 290 | 1,221 | 2,983 | 4,015 | 3,367 | 1,761 | – |
| Malignant neoplasm of prostate (C61) | 31,489 | – | 1 | – | – | – | 24 | 412 | 2,916 | 7,420 | 10,461 | 10,254 | 1 |
| Malignant neoplasms of kidney and renal pelvis (C64–C65) | 14,134 | 2 | 12 | 27 | 25 | 65 | 229 | 950 | 2,726 | 3,993 | 3,691 | 2,414 | – |
| Malignant neoplasm of bladder (C67) | 16,641 | – | 1 | – | – | 14 | 63 | 440 | 1,824 | 3,802 | 5,289 | 5,208 | – |
| Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72) | 17,127 | 14 | 69 | 326 | 229 | 444 | 849 | 1,754 | 4,007 | 4,796 | 3,339 | 1,299 | 1 |
| Non-Hodgkin lymphoma (C82–C85) | 20,287 | 1 | 5 | 23 | 74 | 160 | 318 | 842 | 2,726 | 4,952 | 6,444 | 4,742 | – |
| Multiple myeloma and immunoproliferative neoplasms (C88,C90) | 12,809 | – | – | – | – | 10 | 71 | 521 | 1,883 | 3,578 | 4,169 | 2,577 | – |
| Leukemia (C91–C95) | 23,359 | 15 | 106 | 176 | 323 | 371 | 524 | 1,039 | 2,779 | 5,679 | 7,123 | 5,223 | 1 |
| In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48) | 15,640 | 41 | 39 | 49 | 81 | 123 | 213 | 537 | 1,468 | 3,174 | 4,749 | 5,166 | – |
| Anemias (D50–D64) | 5,262 | 10 | 17 | 23 | 64 | 159 | 173 | 278 | 479 | 832 | 1,176 | 2,051 | – |
| Diabetes mellitus (E10–E14) | 84,946 | 2 | 3 | 33 | 246 | 837 | 2,282 | 6,414 | 14,941 | 21,971 | 21,171 | 17,040 | 6 |
| Nutritional deficiencies (E40–E64) | 9,619 | 8 | 4 | 3 | 17 | 36 | 73 | 178 | 530 | 1,188 | 2,298 | 5,284 | – |
| Obesity (E66) | 7,916 | – | – | 6 | 75 | 379 | 914 | 1,484 | 2,128 | 1,821 | 882 | 226 | 1 |
| Parkinson disease (G20–G21) | 33,829 | – | – | 1 | 3 | 4 | 13 | 77 | 743 | 4,935 | 14,008 | 14,045 | – |
| Alzheimer disease (G30) | 122,019 | – | – | – | – | 2 | 6 | 107 | 1,245 | 7,543 | 32,927 | 80,188 | 1 |

See footnotes at end of table.

## Table 6. Number of deaths from selected causes, by age: United States, 2018—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 *International Classification of Diseases, 10th Revision*) | All ages | Age group (years) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1 | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated |
| Major cardiovascular diseases (I00–I78) | 863,834 | 405 | 161 | 265 | 1,118 | 4,439 | 13,194 | 39,963 | 100,934 | 154,091 | 209,425 | 339,794 | 45 |
| Diseases of heart (I00–I09,I11,I13,I20–I51) | 655,381 | 288 | 115 | 169 | 905 | 3,561 | 10,532 | 32,220 | 81,042 | 119,664 | 155,219 | 251,626 | 40 |
| Essential hypertension and hypertensive renal disease (I10,I12,I15) | 35,835 | 1 | – | – | 13 | 120 | 476 | 1,557 | 4,110 | 6,164 | 8,375 | 15,016 | 3 |
| Cerebrovascular diseases (I60–I69) | 147,810 | 98 | 43 | 88 | 148 | 567 | 1,704 | 5,128 | 12,789 | 23,414 | 39,415 | 64,415 | 1 |
| Atherosclerosis (I70) | 4,931 | 8 | – | 1 | – | 4 | 17 | 78 | 349 | 653 | 1,162 | 2,659 | – |
| Aortic aneurysm and dissection (I71) | 9,923 | – | – | 2 | 30 | 124 | 343 | 627 | 1,438 | 2,169 | 2,633 | 2,556 | 1 |
| Influenza and pneumonia (J09–J18) | 59,120 | 176 | 122 | 122 | 200 | 457 | 956 | 2,339 | 5,858 | 9,676 | 14,497 | 24,715 | 2 |
| Chronic lower respiratory diseases (J40–J47) | 159,486 | 15 | 50 | 132 | 165 | 300 | 648 | 3,807 | 18,804 | 39,221 | 51,677 | 44,662 | 5 |
| Pneumonitis due to solids and liquids (J69) | 19,239 | 4 | 7 | 12 | 45 | 86 | 204 | 542 | 1,555 | 3,007 | 4,999 | 8,778 | – |
| Chronic liver disease and cirrhosis (K70,K73–K74) | 42,838 | 5 | 1 | 2 | 32 | 1,008 | 3,108 | 8,157 | 13,945 | 9,907 | 5,005 | 1,667 | 1 |
| Alcoholic liver disease (K70) | 23,172 | – | – | – | 21 | 832 | 2,404 | 5,617 | 8,526 | 4,382 | 1,182 | 207 | 1 |
| Cholelithiasis and other disorders of gallbladder (K80–K82) | 3,778 | 1 | – | 2 | 8 | 17 | 49 | 117 | 333 | 653 | 1,008 | 1,589 | 1 |
| Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27) | 51,386 | 78 | 11 | 17 | 52 | 260 | 753 | 2,240 | 5,740 | 10,841 | 14,514 | 16,877 | 3 |
| Pregnancy, childbirth and the puerperium (O00–O99) | 973 | … | … | 1 | 151 | 421 | 387 | 10 | 3 | – | – | – | – |
| Certain conditions originating in the perinatal period (P00–P96) | 10,718 | 10,571 | 62 | 34 | 9 | 16 | 6 | 4 | 10 | 3 | – | 1 | 2 |
| Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99) | 9,729 | 4,473 | 384 | 373 | 354 | 455 | 428 | 744 | 1,178 | 653 | 372 | 313 | 2 |
| Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) | 32,537 | 2,656 | 270 | 124 | 499 | 1,142 | 1,279 | 1,828 | 3,252 | 4,004 | 5,227 | 12,233 | 23 |
| Accidents (unintentional injuries) (V01–X59,Y85–Y86) | 167,127 | 1,168 | 1,226 | 1,426 | 12,044 | 24,614 | 22,667 | 23,056 | 23,693 | 15,957 | 17,134 | 24,122 | 20 |
| 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) | 39,404 | 81 | 362 | 765 | 6,434 | 7,062 | 5,219 | 5,522 | 5,846 | 3,996 | 2,779 | 1,336 | 2 |
| Falls (W00–W19) | 37,455 | 4 | 16 | 17 | 152 | 345 | 502 | 1,131 | 2,766 | 5,110 | 9,709 | 17,703 | – |
| Accidental discharge of firearms (W32–W34) | 458 | – | 30 | 24 | 129 | 79 | 46 | 45 | 51 | 34 | 19 | 1 | – |
| Accidental drowning and submersion (W65–W74) | 3,710 | 39 | 443 | 216 | 431 | 482 | 414 | 456 | 453 | 413 | 248 | 111 | 4 |
| Accidental hanging, strangulation and suffocation (W75–W84) | 6,701 | 977 | 112 | 73 | 91 | 185 | 211 | 401 | 858 | 1,026 | 1,231 | 1,536 | – |
| Accidental exposure to smoke, fire and flames (X00–X09) | 2,972 | 17 | 121 | 150 | 75 | 161 | 221 | 325 | 557 | 631 | 459 | 255 | – |
| Accidental poisoning and exposure to noxious substances (X40–X49) | 62,399 | 8 | 22 | 36 | 4,245 | 15,353 | 14,978 | 13,620 | 10,854 | 2,620 | 460 | 189 | 14 |
| Intentional self-harm (suicide) (*U03,X60–X84,Y87.0)[1] | 48,344 | … | … | 605 | 6,211 | 8,020 | 7,521 | 8,345 | 8,540 | 4,974 | 2,880 | 1,248 | – |
| Intentional self-harm (suicide) by poisoning (X60–X69) | 6,237 | … | … | 20 | 454 | 753 | 990 | 1,396 | 1,491 | 746 | 253 | 134 | – |
| Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70) | 13,840 | … | … | 369 | 2,237 | 3,117 | 2,688 | 2,481 | 1,934 | 649 | 246 | 119 | – |
| Intentional self-harm (suicide) by discharge of firearms (X72–X74) | 24,432 | … | … | 203 | 2,995 | 3,429 | 3,222 | 3,787 | 4,421 | 3,237 | 2,215 | 923 | – |

See footnotes at end of table.

## Table 6. Number of deaths from selected causes, by age: United States, 2018—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 *International Classification of Diseases, 10th Revision*) | All ages | Age group (years) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1 | 1–4 | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | 85 and over | Age not stated |
| Assault (homicide) (*U01–*U02,X85–Y09,Y87.1)[1] | 18,830 | 269 | 353 | 289 | 4,607 | 5,234 | 3,304 | 2,125 | 1,501 | 712 | 300 | 134 | 2 |
| Assault (homicide) by discharge of firearms (*U01.4,X93–X95)[1] | 13,958 | 6 | 54 | 191 | 4,107 | 4,348 | 2,569 | 1,382 | 802 | 347 | 114 | 37 | 1 |
| Legal intervention (Y35,Y89.0) | 618 | – | – | 1 | 100 | 179 | 164 | 76 | 70 | 23 | 5 | – | – |
| Complications of medical and surgical care (Y40–Y84,Y88) | 4,604 | 18 | 22 | 31 | 44 | 84 | 176 | 363 | 766 | 1,259 | 1,115 | 726 | – |
| Dementia-related causes[2] | 266,957 | 10 | 18 | 18 | 13 | 26 | 54 | 340 | 3,301 | 17,645 | 68,806 | 176,721 | 5 |
| Drug-induced deaths[2] | 71,147 | 32 | 35 | 54 | 4,745 | 16,836 | 16,499 | 15,512 | 12,867 | 3,480 | 741 | 332 | 14 |
| Drug overdose deaths[2] | 67,367 | 32 | 35 | 53 | 4,633 | 16,200 | 15,794 | 14,688 | 11,946 | 3,122 | 603 | 247 | 14 |
| Alcohol-induced deaths[2] | 37,329 | – | – | 1 | 128 | 1,675 | 4,147 | 8,992 | 13,302 | 6,767 | 1,914 | 401 | 2 |
| Injury by firearms[2] | 39,740 | 7 | 91 | 437 | 7,411 | 8,100 | 6,027 | 5,323 | 5,353 | 3,662 | 2,365 | 963 | 1 |

– Quantity zero.
… Category not applicable.
[1]Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes in this report.
[2]Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 7. Death rates for selected causes, by age: United States, 2018

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

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | 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 | 867.8 | 557.8 | 24.0 | 13.3 | 70.2 | 128.8 | 194.7 | 395.9 | 886.7 | 1,783.3 | 4,386.1 | 13,450.7 |
| Enterocolitis due to *Clostridium difficile* (A04.7) | 1.6 | * | * | * | * | * | 0.1 | 0.4 | 1.2 | 3.4 | 10.4 | 28.2 |
| Septicemia (A40–A41) | 12.4 | 3.9 | 0.3 | 0.1 | 0.2 | 0.9 | 2.0 | 5.7 | 14.1 | 30.0 | 69.4 | 167.4 |
| Viral hepatitis (B15–B19) | 1.5 | * | * | * | * | 0.1 | 0.5 | 1.7 | 5.0 | 4.0 | 2.5 | 2.3 |
| Human immunodeficiency virus (HIV) disease (B20–B24) | 1.7 | * | * | * | 0.1 | 1.1 | 1.8 | 3.6 | 3.9 | 2.4 | 1.4 | 0.5 |
| Malignant neoplasms (C00–C97) | 183.2 | 1.3 | 2.0 | 2.1 | 3.2 | 8.1 | 25.8 | 89.6 | 269.6 | 554.4 | 1,031.5 | 1,577.7 |
| Malignant neoplasms of lip, oral cavity and pharynx (C00–C14) | 3.1 | * | * | * | * | 0.1 | 0.4 | 2.2 | 6.4 | 9.8 | 13.1 | 19.5 |
| Malignant neoplasm of esophagus (C15) | 4.7 | * | * | * | * | 0.1 | 0.5 | 2.6 | 8.9 | 16.6 | 23.3 | 25.4 |
| Malignant neoplasm of stomach (C16) | 3.4 | * | * | * | * | 0.3 | 1.1 | 2.5 | 5.2 | 9.2 | 17.1 | 27.6 |
| Malignant neoplasms of colon, rectum and anus (C18–C21) | 16.2 | * | * | * | 0.1 | 0.8 | 3.5 | 11.9 | 24.3 | 42.6 | 81.3 | 160.6 |
| Malignant neoplasms of liver and intrahepatic bile ducts (C22) | 8.5 | * | * | * | 0.1 | 0.2 | 0.8 | 3.9 | 17.8 | 30.1 | 39.0 | 43.5 |
| Malignant neoplasm of pancreas (C25) | 13.7 | * | * | * | * | 0.1 | 1.0 | 5.9 | 20.7 | 45.9 | 80.6 | 104.3 |
| Malignant neoplasms of trachea, bronchus and lung (C33–C34) | 43.5 | * | * | * | * | 0.3 | 1.9 | 15.1 | 68.5 | 150.9 | 267.9 | 286.2 |
| Malignant melanoma of skin (C43) | 2.5 | * | * | * | * | 0.3 | 0.8 | 1.6 | 3.6 | 6.6 | 13.0 | 23.7 |
| Malignant neoplasm of breast (C50) | 13.1 | * | * | * | * | 0.9 | 4.4 | 11.2 | 21.2 | 34.5 | 59.0 | 114.5 |
| Malignant neoplasm of cervix uteri (C53) | 1.3 | * | * | * | * | 0.5 | 1.3 | 2.1 | 2.3 | 2.6 | 3.2 | 4.0 |
| Malignant neoplasm of ovary (C56) | 4.2 | * | * | * | 0.1 | 0.2 | 0.7 | 2.9 | 7.1 | 13.2 | 21.9 | 26.9 |
| Malignant neoplasm of prostate (C61) | 9.6 | * | * | * | * | * | 0.1 | 1.0 | 6.9 | 24.3 | 68.0 | 156.7 |
| Malignant neoplasms of kidney and renal pelvis (C64–C65) | 4.3 | * | * | 0.1 | 0.1 | 0.1 | 0.6 | 2.3 | 6.4 | 13.1 | 24.0 | 36.9 |
| Malignant neoplasm of bladder (C67) | 5.1 | * | * | * | * | * | 0.2 | 1.1 | 4.3 | 12.5 | 34.4 | 79.6 |
| Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72) | 5.2 | * | 0.4 | 0.8 | 0.5 | 1.0 | 2.1 | 4.2 | 9.5 | 15.7 | 21.7 | 19.8 |
| Non-Hodgkin lymphoma (C82–C85) | 6.2 | * | * | 0.1 | 0.2 | 0.4 | 0.8 | 2.0 | 6.4 | 16.2 | 41.9 | 72.5 |
| Multiple myeloma and immunoproliferative neoplasms (C88,C90) | 3.9 | * | * | * | * | * | 0.2 | 1.3 | 4.5 | 11.7 | 27.1 | 39.4 |
| Leukemia (C91–C95) | 7.1 | * | 0.7 | 0.4 | 0.8 | 0.8 | 1.3 | 2.5 | 6.6 | 18.6 | 46.3 | 79.8 |
| In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48) | 4.8 | 1.1 | 0.2 | 0.1 | 0.2 | 0.3 | 0.5 | 1.3 | 3.5 | 10.4 | 30.8 | 78.9 |
| Anemias (D50–D64) | 1.6 | * | * | 0.1 | 0.1 | 0.3 | 0.4 | 0.7 | 1.1 | 2.7 | 7.6 | 31.3 |
| Diabetes mellitus (E10–E14) | 26.0 | * | * | 0.1 | 0.6 | 1.8 | 5.5 | 15.4 | 35.3 | 72.1 | 137.5 | 260.4 |
| Nutritional deficiencies (E40–E64) | 2.9 | * | * | * | * | 0.1 | 0.2 | 0.4 | 1.3 | 3.9 | 14.9 | 80.7 |
| Obesity (E66) | 2.4 | * | * | * | 0.2 | 0.8 | 2.2 | 3.6 | 5.0 | 6.0 | 5.7 | 3.5 |
| Parkinson disease (G20–G21) | 10.3 | * | * | * | * | * | * | 0.2 | 1.8 | 16.2 | 91.0 | 214.6 |
| Alzheimer disease (G30) | 37.3 | * | * | * | * | * | * | 0.3 | 2.9 | 24.7 | 213.9 | 1,225.3 |

See footnotes at end of table.

**Table 7. Death rates for selected causes, by age: United States, 2018—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 *International Classification of Diseases, 10th Revision*) | 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) | 264.0 | 10.5 | 1.0 | 0.6 | 2.6 | 9.7 | 32.0 | 96.0 | 238.8 | 505.3 | 1,360.4 | 5,192.1 |
| Diseases of heart (I00–I09,I11,I13,I20–I51) | 200.3 | 7.5 | 0.7 | 0.4 | 2.1 | 7.8 | 25.5 | 77.4 | 191.7 | 392.4 | 1,008.3 | 3,844.8 |
| Essential hypertension and hypertensive renal disease (I10,I12,I15) | 11.0 | * | * | * | * | 0.3 | 1.2 | 3.7 | 9.7 | 20.2 | 54.4 | 229.4 |
| Cerebrovascular diseases (I60–I69) | 45.2 | 2.5 | 0.3 | 0.2 | 0.3 | 1.2 | 4.1 | 12.3 | 30.3 | 76.8 | 256.0 | 984.3 |
| Atherosclerosis (I70) | 1.5 | * | * | * | * | * | * | 0.2 | 0.8 | 2.1 | 7.5 | 40.6 |
| Aortic aneurysm and dissection (I71) | 3.0 | * | * | * | 0.1 | 0.3 | 0.8 | 1.5 | 3.4 | 7.1 | 17.1 | 39.1 |
| Influenza and pneumonia (J09–J18) | 18.1 | 4.6 | 0.8 | 0.3 | 0.5 | 1.0 | 2.3 | 5.6 | 13.9 | 31.7 | 94.2 | 377.6 |
| Chronic lower respiratory diseases (J40–J47) | 48.7 | * | 0.3 | 0.3 | 0.4 | 0.7 | 1.6 | 9.1 | 44.5 | 128.6 | 335.7 | 682.4 |
| Pneumonitis due to solids and liquids (J69) | 5.9 | * | * | * | 0.1 | 0.2 | 0.5 | 1.3 | 3.7 | 9.9 | 32.5 | 134.1 |
| Chronic liver disease and cirrhosis (K70,K73–K74) | 13.1 | * | * | * | 0.1 | 2.2 | 7.5 | 19.6 | 33.0 | 32.5 | 32.5 | 25.5 |
| Alcoholic liver disease (K70) | 7.1 | * | * | * | 0.0 | 1.8 | 5.8 | 13.5 | 20.2 | 14.4 | 7.7 | 3.2 |
| Cholelithiasis and other disorders of gallbladder (K80–K82) | 1.2 | * | * | * | * | * | 0.1 | 0.3 | 0.8 | 2.1 | 6.5 | 24.3 |
| Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27) | 15.7 | 2.0 | * | * | 0.1 | 0.6 | 1.8 | 5.4 | 13.6 | 35.6 | 94.3 | 257.9 |
| Pregnancy, childbirth and the puerperium (O00–O99) | 0.3 | … | … | * | 0.4 | 0.9 | 0.9 | * | * | * | * | * |
| Certain conditions originating in the perinatal period (P00–P96) | 3.3 | 274.7 | 0.4 | 0.1 | * | * | * | * | * | * | * | * |
| Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99) | 3.0 | 116.2 | 2.4 | 0.9 | 0.8 | 1.0 | 1.0 | 1.8 | 2.8 | 2.1 | 2.4 | 4.8 |
| Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) | 9.9 | 69.0 | 1.7 | 0.3 | 1.2 | 2.5 | 3.1 | 4.4 | 7.7 | 13.1 | 34.0 | 186.9 |
| Accidents (unintentional injuries) (V01–X59,Y85–Y86) | 51.1 | 30.4 | 7.7 | 3.5 | 28.0 | 53.9 | 54.9 | 55.4 | 56.0 | 52.3 | 111.3 | 368.6 |
| 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 | 2.1 | 2.3 | 1.9 | 15.0 | 15.5 | 12.6 | 13.3 | 13.8 | 13.1 | 18.1 | 20.4 |
| Falls (W00–W19) | 11.4 | * | * | * | 0.4 | 0.8 | 1.2 | 2.7 | 6.5 | 16.8 | 63.1 | 270.5 |
| Accidental discharge of firearms (W32–W34) | 0.1 | * | 0.2 | 0.1 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | * | * |
| Accidental drowning and submersion (W65–W74) | 1.1 | 1.0 | 2.8 | 0.5 | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 1.4 | 1.6 | 1.7 |
| Accidental hanging, strangulation and suffocation (W75–W84) | 2.0 | 25.4 | 0.7 | 0.2 | 0.2 | 0.4 | 0.5 | 1.0 | 2.0 | 3.4 | 8.0 | 23.5 |
| Accidental exposure to smoke, fire and flames (X00–X09) | 0.9 | * | 0.8 | 0.4 | 0.2 | 0.4 | 0.5 | 0.8 | 1.3 | 2.1 | 3.0 | 3.9 |
| Accidental poisoning and exposure to noxious substances (X40–X49) | 19.1 | * | 0.1 | 0.1 | 9.9 | 33.6 | 36.3 | 32.7 | 25.7 | 8.6 | 3.0 | 2.9 |

See footnotes at end of table.

## Table 7. Death rates for selected causes, by age: United States, 2018—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 *International Classification of Diseases, 10th Revision*) | 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] | 14.8 | … | … | 1.5 | 14.5 | 17.6 | 18.2 | 20.0 | 20.2 | 16.3 | 18.7 | 19.1 |
| Intentional self-harm (suicide) by poisoning (X60–X69) | 1.9 | … | … | 0.0 | 1.1 | 1.6 | 2.4 | 3.4 | 3.5 | 2.4 | 1.6 | 2.0 |
| Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70) | 4.2 | … | … | 0.9 | 5.2 | 6.8 | 6.5 | 6.0 | 4.6 | 2.1 | 1.6 | 1.8 |
| Intentional self-harm (suicide) by discharge of firearms (X72–X74) | 7.5 | … | … | 0.5 | 7.0 | 7.5 | 7.8 | 9.1 | 10.5 | 10.6 | 14.4 | 14.1 |
| Assault (homicide) (*U01–*U02,X85–Y09,Y87.1)[3] | 5.8 | 7.0 | 2.2 | 0.7 | 10.7 | 11.5 | 8.0 | 5.1 | 3.6 | 2.3 | 1.9 | 2.0 |
| Assault (homicide) by discharge of firearms (*U01.4,X93–X95)[3] | 4.3 | * | 0.3 | 0.5 | 9.6 | 9.5 | 6.2 | 3.3 | 1.9 | 1.1 | 0.7 | 0.6 |
| Legal intervention (Y35,Y89.0) | 0.2 | * | * | * | 0.2 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 | * | * |
| Complications of medical and surgical care (Y40–Y84,Y88) | 1.4 | * | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.9 | 1.8 | 4.1 | 7.2 | 11.1 |
| Dementia-related causes[4] | 81.6 | * | * | * | * | 0.1 | 0.1 | 0.8 | 7.8 | 57.9 | 447.0 | 2,700.3 |
| Drug-induced deaths[4] | 21.7 | 0.8 | 0.2 | 0.1 | 11.0 | 36.8 | 40.0 | 37.3 | 30.4 | 11.4 | 4.8 | 5.1 |
| Drug overdose deaths[4] | 20.6 | 0.8 | 0.2 | 0.1 | 10.8 | 35.5 | 38.3 | 35.3 | 28.3 | 10.2 | 3.9 | 3.8 |
| Alcohol-induced deaths[4] | 11.4 | * | * | * | 0.3 | 3.7 | 10.0 | 21.6 | 31.5 | 22.2 | 12.4 | 6.1 |
| Injury by firearms[4] | 12.1 | * | 0.6 | 1.1 | 17.2 | 17.7 | 14.6 | 12.8 | 12.7 | 12.0 | 15.4 | 14.7 |

* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
… Category not applicable.
[1]Figures for age not stated included in "All ages" but not distributed among age groups.
[2]Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes in this report.
[3]Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes in this report.
[4]Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2018

[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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | 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 | 2,839,205 | 1,458,469 | 1,380,736 | 2,182,552 | 1,108,848 | 1,073,704 | 341,408 | 177,958 | 163,450 | 17,790 | 9,678 | 8,112 | 68,768 | 35,089 | 33,679 | 3,277 | 1,786 | 1,491 | 204,719 | 113,045 | 91,674 |
| Enterocolitis due to *Clostridium difficile* (A04.7) | 5,249 | 2,083 | 3,166 | 4,193 | 1,641 | 2,552 | 525 | 223 | 302 | 32 | 8 | 24 | 89 | 37 | 52 | 3 | 2 | 1 | 375 | 156 | 219 |
| Septicemia (A40–A41) | 40,718 | 19,820 | 20,898 | 29,764 | 14,571 | 15,193 | 6,634 | 3,064 | 3,570 | 243 | 113 | 130 | 762 | 383 | 379 | 42 | 16 | 26 | 3,029 | 1,541 | 1,488 |
| Viral hepatitis (B15–B19) | 4,842 | 3,138 | 1,704 | 3,072 | 1,979 | 1,093 | 728 | 485 | 243 | 65 | 30 | 35 | 201 | 128 | 73 | 11 | 8 | 3 | 696 | 460 | 236 |
| Human immunodeficiency virus (HIV) disease (B20–B24) | 5,425 | 4,029 | 1,396 | 1,775 | 1,461 | 314 | 2,742 | 1,841 | 901 | 38 | 28 | 10 | 57 | 48 | 9 | 6 | 5 | 1 | 728 | 585 | 143 |
| Malignant neoplasms (C00–C97) | 599,274 | 315,553 | 283,721 | 462,856 | 246,008 | 216,848 | 69,687 | 35,071 | 34,616 | 2,982 | 1,534 | 1,448 | 17,233 | 8,673 | 8,560 | 717 | 337 | 380 | 42,066 | 21,892 | 20,174 |
| Malignant neoplasms of lip, oral cavity and pharynx (C00–C14) | 10,158 | 7,221 | 2,937 | 7,996 | 5,635 | 2,361 | 1,107 | 817 | 290 | 41 | 32 | 9 | 379 | 272 | 107 | 12 | 9 | 3 | 551 | 403 | 148 |
| Malignant neoplasm of esophagus (C15) | 15,419 | 12,297 | 3,122 | 12,921 | 10,441 | 2,480 | 1,221 | 841 | 380 | 71 | 52 | 19 | 303 | 225 | 78 | 7 | 5 | 2 | 799 | 666 | 133 |
| Malignant neoplasm of stomach (C16) | 11,043 | 6,628 | 4,415 | 6,145 | 3,823 | 2,322 | 1,955 | 1,165 | 790 | 87 | 44 | 43 | 796 | 433 | 363 | 35 | 17 | 18 | 1,938 | 1,089 | 849 |
| Malignant neoplasms of colon, rectum and anus (C18–C21) | 53,094 | 28,296 | 24,798 | 39,389 | 20,840 | 18,549 | 7,001 | 3,682 | 3,319 | 314 | 168 | 146 | 1,685 | 900 | 785 | 54 | 29 | 25 | 4,318 | 2,483 | 1,835 |
| Malignant neoplasms of liver and intrahepatic bile ducts (C22) | 27,686 | 18,594 | 9,092 | 18,147 | 12,231 | 5,916 | 3,685 | 2,496 | 1,189 | 247 | 157 | 90 | 1,562 | 1,030 | 532 | 48 | 33 | 15 | 3,766 | 2,471 | 1,295 |
| Malignant neoplasm of pancreas (C25) | 44,915 | 23,178 | 21,737 | 34,240 | 17,988 | 16,252 | 5,489 | 2,637 | 2,852 | 194 | 99 | 95 | 1,386 | 643 | 743 | 40 | 19 | 21 | 3,343 | 1,671 | 1,672 |
| Malignant neoplasms of trachea, bronchus and lung (C33–C34) | 142,161 | 76,284 | 65,877 | 116,432 | 61,756 | 54,676 | 14,974 | 8,422 | 6,552 | 717 | 359 | 358 | 3,471 | 1,933 | 1,538 | 133 | 76 | 57 | 5,552 | 3,224 | 2,328 |
| Malignant melanoma of skin (C43) | 8,199 | 5,295 | 2,904 | 7,708 | 5,022 | 2,686 | 124 | 61 | 63 | 5 | 1 | 4 | 59 | 27 | 32 | 2 | 2 | – | 278 | 167 | 111 |
| Malignant neoplasm of breast (C50) | 42,950 | 484 | 42,466 | 31,507 | 363 | 31,144 | 6,501 | 83 | 6,418 | 185 | 3 | 182 | 1,292 | 5 | 1,287 | 71 | 2 | 69 | 3,098 | 26 | 3,072 |
| Malignant neoplasm of cervix uteri (C53) | 4,138 | … | 4,138 | 2,555 | … | 2,555 | 751 | … | 751 | 32 | … | 32 | 150 | … | 150 | 16 | … | 16 | 586 | … | 586 |
| Malignant neoplasm of ovary (C56) | 13,748 | … | 13,748 | 10,663 | … | 10,663 | 1,365 | … | 1,365 | 58 | … | 58 | 460 | … | 460 | 15 | … | 15 | 1,098 | … | 1,098 |
| Malignant neoplasm of prostate (C61) | 31,489 | 31,489 | … | 23,176 | 23,176 | … | 5,197 | 5,197 | … | 132 | 132 | … | 635 | 635 | … | 33 | 33 | … | 2,115 | 2,115 | … |

See footnotes at end of table.

## Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | Hispanic[3] | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Malignant neoplasms of kidney and renal pelvis (C64–C65) | 14,134 | 9,188 | 4,946 | 11,051 | 7,212 | 3,839 | 1,311 | 830 | 481 | 131 | 87 | 44 | 280 | 183 | 97 | 15 | 8 | 7 | 1,268 | 810 | 458 |
| Malignant neoplasm of bladder (C67) | 16,641 | 11,978 | 4,663 | 14,129 | 10,358 | 3,771 | 1,283 | 769 | 514 | 47 | 25 | 22 | 281 | 195 | 86 | 13 | 11 | 2 | 801 | 549 | 252 |
| Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72) | 17,127 | 9,731 | 7,396 | 14,055 | 8,103 | 5,952 | 1,118 | 570 | 548 | 56 | 28 | 28 | 466 | 281 | 185 | 12 | 6 | 6 | 1,309 | 678 | 631 |
| Non-Hodgkin lymphoma (C82–C85) | 20,287 | 11,678 | 8,609 | 16,217 | 9,411 | 6,806 | 1,535 | 858 | 677 | 87 | 50 | 37 | 647 | 355 | 292 | 25 | 12 | 13 | 1,665 | 935 | 730 |
| Multiple myeloma and immunoproliferative neoplasms (C88,C90) | 12,809 | 7,045 | 5,764 | 9,164 | 5,202 | 3,962 | 2,214 | 1,099 | 1,115 | 82 | 42 | 40 | 292 | 143 | 149 | 18 | 10 | 8 | 974 | 505 | 469 |
| Leukemia (C91–C95) | 23,359 | 13,651 | 9,708 | 18,700 | 11,092 | 7,608 | 2,031 | 1,091 | 940 | 88 | 55 | 33 | 620 | 349 | 271 | 30 | 19 | 11 | 1,757 | 972 | 785 |
| In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48) | 15,640 | 8,377 | 7,263 | 12,775 | 6,953 | 5,822 | 1,412 | 687 | 725 | 54 | 32 | 22 | 421 | 204 | 217 | 7 | 3 | 4 | 897 | 458 | 439 |
| Anemias (D50–D64) | 5,262 | 2,281 | 2,981 | 3,682 | 1,571 | 2,111 | 1,104 | 487 | 617 | 24 | 5 | 19 | 115 | 57 | 58 | 7 | 4 | 3 | 303 | 142 | 161 |
| Diabetes mellitus (E10–E14) | 84,946 | 47,551 | 37,395 | 55,597 | 32,093 | 23,504 | 15,211 | 7,775 | 7,436 | 1,005 | 548 | 457 | 2,802 | 1,480 | 1,322 | 239 | 137 | 102 | 9,386 | 5,115 | 4,271 |
| Nutritional deficiencies (E40–E64) | 9,619 | 3,620 | 5,999 | 7,598 | 2,775 | 4,823 | 1,130 | 464 | 666 | 52 | 21 | 31 | 203 | 96 | 107 | 9 | 4 | 5 | 574 | 237 | 337 |
| Obesity (E66) | 7,916 | 4,162 | 3,754 | 5,640 | 3,032 | 2,608 | 1,414 | 618 | 796 | 79 | 54 | 25 | 38 | 21 | 17 | 20 | 11 | 9 | 649 | 386 | 263 |
| Parkinson disease (G20–G21) | 33,829 | 20,523 | 13,306 | 29,018 | 17,703 | 11,315 | 1,666 | 1,004 | 662 | 106 | 61 | 45 | 906 | 496 | 410 | 13 | 7 | 6 | 1,988 | 1,163 | 825 |
| Alzheimer disease (G30) | 122,019 | 37,957 | 84,062 | 101,534 | 31,697 | 69,837 | 8,884 | 2,526 | 6,358 | 323 | 106 | 217 | 2,710 | 818 | 1,892 | 61 | 20 | 41 | 8,021 | 2,619 | 5,402 |
| Major cardiovascular diseases (I00–I78) | 863,834 | 446,031 | 417,803 | 665,251 | 341,524 | 323,727 | 109,247 | 56,303 | 52,944 | 4,146 | 2,248 | 1,898 | 21,935 | 11,386 | 10,549 | 1,051 | 593 | 458 | 56,217 | 30,395 | 25,822 |
| Diseases of heart (I00–I09, I11,I13,I20–I51) | 655,381 | 354,404 | 300,977 | 510,960 | 275,398 | 235,562 | 80,483 | 42,831 | 37,652 | 3,210 | 1,825 | 1,385 | 14,677 | 8,097 | 6,580 | 769 | 463 | 306 | 40,537 | 22,848 | 17,689 |
| Essential hypertension and hypertensive renal disease (I10,I12,I15) | 35,835 | 16,141 | 19,694 | 24,617 | 10,748 | 13,869 | 6,335 | 3,061 | 3,274 | 188 | 99 | 89 | 1,466 | 623 | 843 | 46 | 21 | 25 | 2,928 | 1,452 | 1,476 |
| Cerebrovascular diseases (I60–I69) | 147,810 | 62,844 | 84,966 | 110,309 | 45,640 | 64,669 | 19,413 | 8,832 | 10,581 | 641 | 276 | 365 | 5,201 | 2,350 | 2,851 | 203 | 96 | 107 | 11,246 | 5,260 | 5,986 |
| Atherosclerosis (I70) | 4,931 | 2,124 | 2,807 | 4,029 | 1,699 | 2,330 | 438 | 218 | 220 | 22 | 9 | 13 | 115 | 51 | 64 | 7 | 1 | 6 | 283 | 126 | 157 |
| Aortic aneurysm and dissection (I71) | 9,923 | 5,771 | 4,152 | 7,819 | 4,497 | 3,322 | 1,114 | 631 | 483 | 32 | 19 | 13 | 302 | 186 | 116 | 16 | 8 | 8 | 546 | 373 | 173 |

See footnotes at end of table.

## Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Influenza and pneumonia (J09–J18) | 59,120 | 28,683 | 30,437 | 45,612 | 21,937 | 23,675 | 6,074 | 2,974 | 3,100 | 415 | 217 | 198 | 2,257 | 1,129 | 1,128 | 71 | 33 | 38 | 4,254 | 2,167 | 2,087 |
| Chronic lower respiratory diseases (J40–J47) | 159,486 | 75,250 | 84,236 | 138,178 | 64,410 | 73,768 | 11,640 | 5,802 | 5,838 | 758 | 353 | 405 | 1,935 | 1,143 | 792 | 98 | 49 | 49 | 5,801 | 2,924 | 2,877 |
| Pneumonitis due to solids and liquids (J69) | 19,239 | 10,859 | 8,380 | 15,495 | 8,801 | 6,694 | 1,925 | 1,041 | 884 | 102 | 61 | 41 | 507 | 285 | 222 | 20 | 10 | 10 | 1,083 | 586 | 497 |
| Chronic liver disease and cirrhosis (K70,K73–K74) | 42,838 | 27,227 | 15,611 | 30,752 | 19,276 | 11,476 | 3,261 | 2,057 | 1,204 | 1,100 | 594 | 506 | 650 | 403 | 247 | 43 | 26 | 17 | 6,628 | 4,618 | 2,010 |
| Alcoholic liver disease (K70) | 23,172 | 16,099 | 7,073 | 16,438 | 11,158 | 5,280 | 1,711 | 1,131 | 580 | 817 | 456 | 361 | 291 | 226 | 65 | 26 | 18 | 8 | 3,626 | 2,935 | 691 |
| Cholelithiasis and other disorders of gallbladder (K80–K82) | 3,778 | 1,838 | 1,940 | 2,879 | 1,387 | 1,492 | 337 | 154 | 183 | 36 | 23 | 13 | 129 | 68 | 61 | 6 | 3 | 3 | 371 | 193 | 178 |
| Nephritis, nephrotic syndrome and nephrosis (N00–N07, N17–N19,N25–N27) | 51,386 | 26,715 | 24,671 | 35,275 | 18,591 | 16,684 | 9,722 | 4,803 | 4,919 | 326 | 145 | 181 | 1,452 | 749 | 703 | 71 | 32 | 39 | 4,274 | 2,255 | 2,019 |
| Pregnancy, childbirth and the puerperium (O00–O99) | 973 | … | 973 | 451 | … | 451 | 297 | … | 297 | 16 | … | 16 | 39 | … | 39 | 7 | … | 7 | 149 | … | 149 |
| Certain conditions originating in the perinatal period (P00–P96) | 10,718 | 6,086 | 4,632 | 4,082 | 2,315 | 1,767 | 3,342 | 1,905 | 1,437 | 71 | 36 | 35 | 390 | 208 | 182 | 37 | 22 | 15 | 2,268 | 1,277 | 991 |
| Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99) | 9,729 | 5,099 | 4,630 | 5,941 | 3,082 | 2,859 | 1,560 | 813 | 747 | 100 | 56 | 44 | 278 | 145 | 133 | 16 | 10 | 6 | 1,606 | 864 | 742 |
| Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) | 32,537 | 15,297 | 17,240 | 24,504 | 10,940 | 13,564 | 4,554 | 2,378 | 2,176 | 244 | 135 | 109 | 553 | 260 | 293 | 49 | 29 | 20 | 2,226 | 1,296 | 930 |

See footnotes at end of table.

## Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | Hispanic[3] | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Accidents (unintentional injuries) . . . . . (V01–X59, Y85–Y86) | 167,127 | 107,884 | 59,243 | 122,557 | 76,316 | 46,241 | 20,182 | 14,097 | 6,085 | 1,992 | 1,324 | 668 | 2,963 | 1,857 | 1,106 | 211 | 150 | 61 | 17,239 | 12,778 | 4,461 |
| 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) | 39,404 | 27,953 | 11,451 | 25,095 | 17,584 | 7,511 | 6,140 | 4,475 | 1,665 | 686 | 475 | 211 | 837 | 505 | 332 | 76 | 53 | 23 | 6,123 | 4,559 | 1,564 |
| Falls . . . . . (W00–W19) | 37,455 | 18,840 | 18,615 | 32,148 | 15,699 | 16,449 | 1,699 | 1,016 | 683 | 206 | 112 | 94 | 996 | 571 | 425 | 33 | 20 | 13 | 2,178 | 1,300 | 878 |
| Accidental discharge of firearms . . . . . (W32–W34) | 458 | 413 | 45 | 284 | 257 | 27 | 101 | 90 | 11 | 9 | 7 | 2 | 6 | 5 | 1 | – | – | – | 49 | 45 | 4 |
| Accidental drowning and submersion . . (W65–W74) | 3,710 | 2,803 | 907 | 2,223 | 1,626 | 597 | 631 | 509 | 122 | 64 | 50 | 14 | 182 | 123 | 59 | 13 | 10 | 3 | 528 | 429 | 99 |
| Accidental hanging, strangulation and suffocation . . . (W75–W84) | 6,701 | 3,873 | 2,828 | 4,874 | 2,811 | 2,063 | 1,013 | 565 | 448 | 53 | 33 | 20 | 160 | 92 | 68 | 9 | 8 | 1 | 508 | 313 | 195 |
| Accidental exposure to smoke, fire and flames. . . . . (X00–X09) | 2,972 | 1,768 | 1,204 | 2,069 | 1,222 | 847 | 599 | 350 | 249 | 38 | 29 | 9 | 29 | 18 | 11 | 1 | 1 | – | 205 | 130 | 75 |
| Accidental poisoning and exposure to noxious substances . . . . (X40–X49) | 62,399 | 43,157 | 19,242 | 45,315 | 30,499 | 14,816 | 8,372 | 6,001 | 2,371 | 730 | 470 | 260 | 524 | 398 | 126 | 66 | 48 | 18 | 6,374 | 5,022 | 1,352 |
| Intentional self-harm (suicide). . . . . (*U03, X60–X84,Y87.0)[4] | 48,344 | 37,761 | 10,583 | 38,415 | 29,997 | 8,418 | 3,022 | 2,406 | 616 | 545 | 409 | 136 | 1,315 | 921 | 394 | 73 | 61 | 12 | 4,313 | 3,469 | 844 |
| Intentional self-harm (suicide) by poisoning . . . . . (X60–X69) | 6,237 | 3,137 | 3,100 | 5,274 | 2,631 | 2,643 | 291 | 145 | 146 | 45 | 22 | 23 | 174 | 90 | 84 | 8 | 7 | 1 | 365 | 193 | 172 |
| Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70) | 13,840 | 10,677 | 3,163 | 9,922 | 7,698 | 2,224 | 839 | 649 | 190 | 302 | 225 | 77 | 612 | 411 | 201 | 44 | 36 | 8 | 1,873 | 1,478 | 395 |
| Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74) | 24,432 | 21,101 | 3,331 | 20,585 | 17,720 | 2,865 | 1,492 | 1,316 | 176 | 174 | 145 | 29 | 310 | 260 | 50 | 16 | 15 | 1 | 1,601 | 1,431 | 170 |

See footnotes at end of table.

## Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | 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)[4] | 18,830 | 14,825 | 4,005 | 5,460 | 3,639 | 1,821 | 9,469 | 8,071 | 1,398 | 275 | 218 | 57 | 263 | 171 | 92 | 42 | 35 | 7 | 3,045 | 2,491 | 554 |
| Assault (homicide) by discharge of firearms . . . . . (*U01.4,X93–X95)[4] | 13,958 | 11,641 | 2,317 | 3,303 | 2,354 | 949 | 7,937 | 6,998 | 939 | 153 | 123 | 30 | 162 | 118 | 44 | 32 | 27 | 5 | 2,191 | 1,880 | 311 |
| Legal intervention . . . . (Y35,Y89.0) | 618 | 593 | 25 | 301 | 289 | 12 | 136 | 130 | 6 | 14 | 14 | – | 11 | 11 | – | 2 | 2 | – | 141 | 134 | 7 |
| Complications of medical and surgical care . . . . . (Y40–Y84,Y88) | 4,604 | 2,457 | 2,147 | 3,423 | 1,868 | 1,555 | 667 | 310 | 357 | 33 | 18 | 15 | 109 | 67 | 42 | 4 | 1 | 3 | 338 | 183 | 155 |
| Dementia-related causes[5] . . . | 266,957 | 87,759 | 179,198 | 223,473 | 73,273 | 150,200 | 21,037 | 6,743 | 14,294 | 764 | 270 | 494 | 5,529 | 1,799 | 3,730 | 126 | 50 | 76 | 14,937 | 5,181 | 9,756 |
| Drug-induced deaths[5] . . . . . | 71,147 | 47,338 | 23,809 | 52,322 | 33,679 | 18,643 | 9,632 | 6,883 | 2,749 | 680 | 407 | 273 | 634 | 441 | 193 | 76 | 56 | 20 | 6,663 | 5,087 | 1,576 |
| Drug overdose deaths[5]. . . . | 67,367 | 44,941 | 22,426 | 49,637 | 32,062 | 17,575 | 9,027 | 6,442 | 2,585 | 624 | 381 | 243 | 610 | 425 | 185 | 71 | 52 | 19 | 6,332 | 4,845 | 1,487 |
| Alcohol-induced deaths[5] . . . . | 37,329 | 26,820 | 10,509 | 26,987 | 19,001 | 7,986 | 3,143 | 2,234 | 909 | 1,312 | 793 | 519 | 456 | 356 | 100 | 34 | 23 | 11 | 4,969 | 4,109 | 860 |
| Injury by firearms[5]. . . . . | 39,740 | 33,955 | 5,785 | 24,643 | 20,745 | 3,898 | 9,713 | 8,567 | 1,146 | 361 | 298 | 63 | 492 | 396 | 96 | 54 | 48 | 6 | 4,018 | 3,521 | 497 |

… Category not applicable.
– Quantity zero.
[1]Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[4]Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes in this report.
[5]Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2018

[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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | 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 | 867.8 | 905.2 | 831.6 | 1,104.8 | 1,138.2 | 1,072.3 | 834.7 | 909.8 | 765.9 | 735.9 | 813.5 | 660.8 | 367.2 | 393.4 | 343.3 | 558.9 | 605.4 | 511.8 | 341.9 | 373.9 | 309.3 |
| Enterocolitis due to *Clostridium difficile* (A04.7) | 1.6 | 1.3 | 1.9 | 2.1 | 1.7 | 2.5 | 1.3 | 1.1 | 1.4 | 1.3 | * | 2.0 | 0.5 | 0.4 | 0.5 | * | * | * | 0.6 | 0.5 | 0.7 |
| Septicemia (A40–A41) | 12.4 | 12.3 | 12.6 | 15.1 | 15.0 | 15.2 | 16.2 | 15.7 | 16.7 | 10.1 | 9.5 | 10.6 | 4.1 | 4.3 | 3.9 | 7.2 | * | 8.9 | 5.1 | 5.1 | 5.0 |
| Viral hepatitis (B15–B19) | 1.5 | 1.9 | 1.0 | 1.6 | 2.0 | 1.1 | 1.8 | 2.5 | 1.1 | 2.7 | 2.5 | 2.9 | 1.1 | 1.4 | 0.7 | * | * | * | 1.2 | 1.5 | 0.8 |
| Human immunodeficiency virus (HIV) disease (B20–B24) | 1.7 | 2.5 | 0.8 | 0.9 | 1.5 | 0.3 | 6.7 | 9.4 | 4.2 | 1.6 | 2.4 | * | 0.3 | 0.5 | * | * | * | * | 1.2 | 1.9 | 0.5 |
| Malignant neoplasms (C00–C97) | 183.2 | 195.8 | 170.9 | 234.3 | 252.5 | 216.6 | 170.4 | 179.3 | 162.2 | 123.4 | 128.9 | 117.9 | 92.0 | 97.2 | 87.3 | 122.3 | 114.2 | 130.4 | 70.3 | 72.4 | 68.1 |
| Malignant neoplasms of lip, oral cavity and pharynx (C00–C14) | 3.1 | 4.5 | 1.8 | 4.0 | 5.8 | 2.4 | 2.7 | 4.2 | 1.4 | 1.7 | 2.7 | * | 2.0 | 3.0 | 1.1 | * | * | * | 0.9 | 1.3 | 0.5 |
| Malignant neoplasm of esophagus (C15) | 4.7 | 7.6 | 1.9 | 6.5 | 10.7 | 2.5 | 3.0 | 4.3 | 1.8 | 2.9 | 4.4 | * | 1.6 | 2.5 | 0.8 | * | * | * | 1.3 | 2.2 | 0.4 |
| Malignant neoplasm of stomach (C16) | 3.4 | 4.1 | 2.7 | 3.1 | 3.9 | 2.3 | 4.8 | 6.0 | 3.7 | 3.6 | 3.7 | 3.5 | 4.3 | 4.9 | 3.7 | 6.0 | * | * | 3.2 | 3.6 | 2.9 |
| Malignant neoplasms of colon, rectum and anus (C18–C21) | 16.2 | 17.6 | 14.9 | 19.9 | 21.4 | 18.5 | 17.1 | 18.8 | 15.6 | 13.0 | 14.1 | 11.9 | 9.0 | 10.1 | 8.0 | 9.2 | 9.8 | 8.6 | 7.2 | 8.2 | 6.2 |
| Malignant neoplasms of liver and intrahepatic bile ducts (C22) | 8.5 | 11.5 | 5.5 | 9.2 | 12.6 | 5.9 | 9.0 | 12.8 | 5.6 | 10.2 | 13.2 | 7.3 | 8.3 | 11.5 | 5.4 | 8.2 | 11.2 | * | 6.3 | 8.2 | 4.4 |
| Malignant neoplasm of pancreas (C25) | 13.7 | 14.4 | 13.1 | 17.3 | 18.5 | 16.2 | 13.4 | 13.5 | 13.4 | 8.0 | 8.3 | 7.7 | 7.4 | 7.2 | 7.6 | 6.8 | * | 7.2 | 5.6 | 5.5 | 5.6 |
| Malignant neoplasms of trachea, bronchus and lung (C33–C34) | 43.5 | 47.3 | 39.7 | 58.9 | 63.4 | 54.6 | 36.6 | 43.1 | 30.7 | 29.7 | 30.2 | 29.2 | 18.5 | 21.7 | 15.7 | 22.7 | 25.8 | 19.6 | 9.3 | 10.7 | 7.9 |
| Malignant melanoma of skin (C43) | 2.5 | 3.3 | 1.7 | 3.9 | 5.2 | 2.7 | 0.3 | 0.3 | 0.3 | * | * | * | 0.3 | 0.3 | 0.3 | * | * | * | 0.5 | 0.6 | 0.4 |
| Malignant neoplasm of breast (C50) | 13.1 | 0.3 | 25.6 | 15.9 | 0.4 | 31.1 | 15.9 | 0.4 | 30.1 | 7.7 | * | 14.8 | 6.9 | * | 13.1 | 12.1 | * | 23.7 | 5.2 | 0.1 | 10.4 |
| Malignant neoplasm of cervix uteri (C53) | 1.3 | … | 2.5 | 1.3 | … | 2.6 | 1.8 | … | 3.5 | 1.3 | … | 2.6 | 0.8 | … | 1.5 | * | … | * | 1.0 | … | 2.0 |
| Malignant neoplasm of ovary (C56) | 4.2 | … | 8.3 | 5.4 | … | 10.6 | 3.3 | … | 6.4 | 2.4 | … | 4.7 | 2.5 | … | 4.7 | * | … | * | 1.8 | … | 3.7 |
| Malignant neoplasm of prostate (C61) | 9.6 | 19.5 | … | 11.7 | 23.8 | … | 12.7 | 26.6 | … | 5.5 | 11.1 | … | 3.4 | 7.1 | … | 5.6 | 11.2 | … | 3.5 | 7.0 | … |

See footnotes at end of table.

## Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Malignant neoplasms of kidney and renal pelvis (C64–C65) | 4.3 | 5.7 | 3.0 | 5.6 | 7.4 | 3.8 | 3.2 | 4.2 | 2.3 | 5.4 | 7.3 | 3.6 | 1.5 | 2.1 | 1.0 | * | * | * | 2.1 | 2.7 | 1.5 |
| Malignant neoplasm of bladder (C67) | 5.1 | 7.4 | 2.8 | 7.2 | 10.6 | 3.8 | 3.1 | 3.9 | 2.4 | 1.9 | 2.1 | 1.8 | 1.5 | 2.2 | 0.9 | * | * | * | 1.3 | 1.8 | 0.9 |
| Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72) | 5.2 | 6.0 | 4.5 | 7.1 | 8.3 | 5.9 | 2.7 | 2.9 | 2.6 | 2.3 | 2.4 | 2.3 | 2.5 | 3.2 | 1.9 | * | * | * | 2.2 | 2.2 | 2.1 |
| Non-Hodgkin lymphoma (C82–C85) | 6.2 | 7.2 | 5.2 | 8.2 | 9.7 | 6.8 | 3.8 | 4.4 | 3.2 | 3.6 | 4.2 | 3.0 | 3.5 | 4.0 | 3.0 | 4.3 | * | * | 2.8 | 3.1 | 2.5 |
| Multiple myeloma and immunoproliferative neoplasms (C88,C90) | 3.9 | 4.4 | 3.5 | 4.6 | 5.3 | 4.0 | 5.4 | 5.6 | 5.2 | 3.4 | 3.5 | 3.3 | 1.6 | 1.6 | 1.5 | * | * | * | 1.6 | 1.7 | 1.6 |
| Leukemia (C91–C95) | 7.1 | 8.5 | 5.8 | 9.5 | 11.4 | 7.6 | 5.0 | 5.6 | 4.4 | 3.6 | 4.6 | 2.7 | 3.3 | 3.9 | 2.8 | 5.1 | * | * | 2.9 | 3.2 | 2.6 |
| In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48) | 4.8 | 5.2 | 4.4 | 6.5 | 7.1 | 5.8 | 3.5 | 3.5 | 3.4 | 2.2 | 2.7 | 1.8 | 2.2 | 2.3 | 2.2 | * | * | * | 1.5 | 1.5 | 1.5 |
| Anemias (D50–D64) | 1.6 | 1.4 | 1.8 | 1.9 | 1.6 | 2.1 | 2.7 | 2.5 | 2.9 | 1.0 | * | * | 0.6 | 0.6 | 0.6 | * | * | * | 0.5 | 0.5 | 0.5 |
| Diabetes mellitus (E10–E14) | 26.0 | 29.5 | 22.5 | 28.1 | 32.9 | 23.5 | 37.2 | 39.7 | 34.8 | 41.6 | 46.1 | 37.2 | 15.0 | 16.6 | 13.5 | 40.8 | 46.4 | 35.0 | 15.7 | 16.9 | 14.4 |
| Nutritional deficiencies (E40–E64) | 2.9 | 2.2 | 3.6 | 3.8 | 2.8 | 4.8 | 2.8 | 2.4 | 3.1 | 2.2 | 1.8 | 2.5 | 1.1 | 1.1 | 1.1 | * | * | * | 1.0 | 0.8 | 1.1 |
| Obesity (E66) | 2.4 | 2.6 | 2.3 | 2.9 | 3.1 | 2.6 | 3.5 | 3.2 | 3.7 | 3.3 | 4.5 | 2.0 | 0.2 | 0.2 | * | 3.4 | * | * | 1.1 | 1.3 | 0.9 |
| Parkinson disease (G20–G21) | 10.3 | 12.7 | 8.0 | 14.7 | 18.2 | 11.3 | 4.1 | 5.1 | 3.1 | 4.4 | 5.1 | 3.7 | 4.8 | 5.6 | 4.2 | * | * | * | 3.3 | 3.8 | 2.8 |
| Alzheimer disease (G30) | 37.3 | 23.6 | 50.6 | 51.4 | 32.5 | 69.7 | 21.7 | 12.9 | 29.8 | 13.4 | 8.9 | 17.7 | 14.5 | 9.2 | 19.3 | 10.4 | 6.8 | 14.1 | 13.4 | 8.7 | 18.2 |
| Major cardiovascular diseases (I00–I78) | 264.0 | 276.8 | 251.6 | 336.8 | 350.6 | 323.3 | 267.1 | 287.8 | 248.1 | 171.5 | 189.0 | 154.6 | 117.1 | 127.7 | 107.5 | 179.2 | 201.0 | 157.2 | 93.9 | 100.5 | 87.1 |
| Diseases of heart (I00–I09, I11,I13,I20–I51) | 200.3 | 220.0 | 181.3 | 258.7 | 282.7 | 235.3 | 196.8 | 219.0 | 176.4 | 132.8 | 153.4 | 112.8 | 78.4 | 90.8 | 67.1 | 131.2 | 157.0 | 105.0 | 67.7 | 75.6 | 59.7 |
| Essential hypertension and hypertensive renal disease (I10,I12,I15) | 11.0 | 10.0 | 11.9 | 12.5 | 11.0 | 13.9 | 15.5 | 15.6 | 15.3 | 7.8 | 8.3 | 7.2 | 7.8 | 7.0 | 8.6 | 7.8 | 7.1 | 8.6 | 4.9 | 4.8 | 5.0 |
| Cerebrovascular diseases (I60–I69) | 45.2 | 39.0 | 51.2 | 55.8 | 46.8 | 64.6 | 47.5 | 45.2 | 49.6 | 26.5 | 23.2 | 29.7 | 27.8 | 26.3 | 29.1 | 34.6 | 32.5 | 36.7 | 18.8 | 17.4 | 20.2 |
| Atherosclerosis (I70) | 1.5 | 1.3 | 1.7 | 2.0 | 1.7 | 2.3 | 1.1 | 1.1 | 1.0 | 0.9 | * | * | 0.6 | 0.6 | 0.7 | * | * | * | 0.5 | 0.4 | 0.5 |
| Aortic aneurysm and dissection (I71) | 3.0 | 3.6 | 2.5 | 4.0 | 4.6 | 3.3 | 2.7 | 3.2 | 2.3 | 1.3 | * | * | 1.6 | 2.1 | 1.2 | * | * | * | 0.9 | 1.2 | 0.6 |

See footnotes at end of table.

## Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Influenza and pneumonia . . . . . (J09–J18) | 18.1 | 17.8 | 18.3 | 23.1 | 22.5 | 23.6 | 14.9 | 15.2 | 14.5 | 17.2 | 18.2 | 16.1 | 12.1 | 12.7 | 11.5 | 12.1 | 11.2 | 13.0 | 7.1 | 7.2 | 7.0 |
| Chronic lower respiratory diseases . . . . . (J40–J47) | 48.7 | 46.7 | 50.7 | 69.9 | 66.1 | 73.7 | 28.5 | 29.7 | 27.4 | 31.4 | 29.7 | 33.0 | 10.3 | 12.8 | 8.1 | 16.7 | 16.6 | 16.8 | 9.7 | 9.7 | 9.7 |
| Pneumonitis due to solids and liquids . . . . . (J69) | 5.9 | 6.7 | 5.0 | 7.8 | 9.0 | 6.7 | 4.7 | 5.3 | 4.1 | 4.2 | 5.1 | 3.3 | 2.7 | 3.2 | 2.3 | 3.4 | * | * | 1.8 | 1.9 | 1.7 |
| Chronic liver disease and cirrhosis. . . . (K70,K73–K74) | 13.1 | 16.9 | 9.4 | 15.6 | 19.8 | 11.5 | 8.0 | 10.5 | 5.6 | 45.5 | 49.9 | 41.2 | 3.5 | 4.5 | 2.5 | 7.3 | 8.8 | * | 11.1 | 15.3 | 6.8 |
| Alcoholic liver disease . . . . . (K70) | 7.1 | 10.0 | 4.3 | 8.3 | 11.5 | 5.3 | 4.2 | 5.8 | 2.7 | 33.8 | 38.3 | 29.4 | 1.6 | 2.5 | 0.7 | 4.4 | * | * | 6.1 | 9.7 | 2.3 |
| Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82) | 1.2 | 1.1 | 1.2 | 1.5 | 1.4 | 1.5 | 0.8 | 0.8 | 0.9 | 1.5 | 1.9 | * | 0.7 | 0.8 | 0.6 | * | * | * | 0.6 | 0.6 | 0.6 |
| Nephritis, nephrotic syndrome and nephrosis . . . (N00–N07, N17–N19,N25–N27) | 15.7 | 16.6 | 14.9 | 17.9 | 19.1 | 16.7 | 23.8 | 24.6 | 23.0 | 13.5 | 12.2 | 14.7 | 7.8 | 8.4 | 7.2 | 12.1 | 10.8 | 13.4 | 7.1 | 7.5 | 6.8 |
| Pregnancy, childbirth and the puerperium . . . . (O00–O99) | 0.3 | … | 0.6 | 0.2 | … | 0.5 | 0.7 | … | 1.4 | * | … | * | 0.2 | … | 0.4 | * | … | * | 0.2 | … | 0.5 |
| Certain conditions originating in the perinatal period. . . . . (P00–P96) | 3.3 | 3.8 | 2.8 | 2.1 | 2.4 | 1.8 | 8.2 | 9.7 | 6.7 | 2.9 | 3.0 | 2.9 | 2.1 | 2.3 | 1.9 | 6.3 | 7.5 | * | 3.8 | 4.2 | 3.3 |
| Congenital malformations, deformations and chromosomal abnormalities . . . (Q00–Q99) | 3.0 | 3.2 | 2.8 | 3.0 | 3.2 | 2.9 | 3.8 | 4.2 | 3.5 | 4.1 | 4.7 | 3.6 | 1.5 | 1.6 | 1.4 | * | * | * | 2.7 | 2.9 | 2.5 |
| Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99) | 9.9 | 9.5 | 10.4 | 12.4 | 11.2 | 13.5 | 11.1 | 12.2 | 10.2 | 10.1 | 11.3 | 8.9 | 3.0 | 2.9 | 3.0 | 8.4 | 9.8 | 6.9 | 3.7 | 4.3 | 3.1 |

See footnotes at end of table.

## Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Accidents (unintentional injuries) . . . . . (V01–X59, Y85–Y86) | 51.1 | 67.0 | 35.7 | 62.0 | 78.3 | 46.2 | 49.3 | 72.1 | 28.5 | 82.4 | 111.3 | 54.4 | 15.8 | 20.8 | 11.3 | 36.0 | 50.8 | 20.9 | 28.8 | 42.3 | 15.1 |
| 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 | 17.3 | 6.9 | 12.7 | 18.0 | 7.5 | 15.0 | 22.9 | 7.8 | 28.4 | 39.9 | 17.2 | 4.5 | 5.7 | 3.4 | 13.0 | 18.0 | 7.9 | 10.2 | 15.1 | 5.3 |
| Falls . . . . . (W00–W19) | 11.4 | 11.7 | 11.2 | 16.3 | 16.1 | 16.4 | 4.2 | 5.2 | 3.2 | 8.5 | 9.4 | 7.7 | 5.3 | 6.4 | 4.3 | 5.6 | 6.8 | * | 3.6 | 4.3 | 3.0 |
| Accidental discharge of firearms . . . . . (W32–W34) | 0.1 | 0.3 | 0.0 | 0.1 | 0.3 | 0.0 | 0.2 | 0.5 | * | * | * | * | * | * | * | * | * | * | 0.1 | 0.1 | * |
| Accidental drowning and submersion . . (W65–W74) | 1.1 | 1.7 | 0.5 | 1.1 | 1.7 | 0.6 | 1.5 | 2.6 | 0.6 | 2.6 | 4.2 | * | 1.0 | 1.4 | 0.6 | * | * | * | 0.9 | 1.4 | 0.3 |
| Accidental hanging, strangulation and suffocation . . . (W75–W84) | 2.0 | 2.4 | 1.7 | 2.5 | 2.9 | 2.1 | 2.5 | 2.9 | 2.1 | 2.2 | 2.8 | 1.6 | 0.9 | 1.0 | 0.7 | * | * | * | 0.8 | 1.0 | 0.7 |
| Accidental exposure to smoke, fire and flames. . . . . (X00–X09) | 0.9 | 1.1 | 0.7 | 1.0 | 1.3 | 0.8 | 1.5 | 1.8 | 1.2 | 1.6 | 2.4 | * | 0.2 | * | * | * | * | * | 0.3 | 0.4 | 0.3 |
| Accidental poisoning and exposure to noxious substances . . . . (X40–X49) | 19.1 | 26.8 | 11.6 | 22.9 | 31.3 | 14.8 | 20.5 | 30.7 | 11.1 | 30.2 | 39.5 | 21.2 | 2.8 | 4.5 | 1.3 | 11.3 | 16.3 | * | 10.6 | 16.6 | 4.6 |
| Intentional self-harm (suicide). . . . . (*U03, X60–X84,Y87.0)[4] | 14.8 | 23.4 | 6.4 | 19.4 | 30.8 | 8.4 | 7.4 | 12.3 | 2.9 | 22.5 | 34.4 | 11.1 | 7.0 | 10.3 | 4.0 | 12.4 | 20.7 | * | 7.2 | 11.5 | 2.8 |
| Intentional self-harm (suicide) by poisoning . . . . . (X60–X69) | 1.9 | 1.9 | 1.9 | 2.7 | 2.7 | 2.6 | 0.7 | 0.7 | 0.7 | 1.9 | 1.8 | 1.9 | 0.9 | 1.0 | 0.9 | * | * | * | 0.6 | 0.6 | 0.6 |
| Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70) | 4.2 | 6.6 | 1.9 | 5.0 | 7.9 | 2.2 | 2.1 | 3.3 | 0.9 | 12.5 | 18.9 | 6.3 | 3.3 | 4.6 | 2.0 | 7.5 | 12.2 | * | 3.1 | 4.9 | 1.3 |
| Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74) | 7.5 | 13.1 | 2.0 | 10.4 | 18.2 | 2.9 | 3.6 | 6.7 | 0.8 | 7.2 | 12.2 | 2.4 | 1.7 | 2.9 | 0.5 | * | * | * | 2.7 | 4.7 | 0.6 |

See footnotes at end of table.

## Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for some race or Hispanic-origin categories should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | 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)[4] | 5.8 | 9.2 | 2.4 | 2.8 | 3.7 | 1.8 | 23.2 | 41.3 | 6.6 | 11.4 | 18.3 | 4.6 | 1.4 | 1.9 | 0.9 | 7.2 | 11.9 | * | 5.1 | 8.2 | 1.9 |
| Assault (homicide) by discharge of firearms . . . . . (*U01.4, X93–X95)[4] | 4.3 | 7.2 | 1.4 | 1.7 | 2.4 | 0.9 | 19.4 | 35.8 | 4.4 | 6.3 | 10.3 | 2.4 | 0.9 | 1.3 | 0.4 | 5.5 | 9.2 | * | 3.7 | 6.2 | 1.0 |
| Legal intervention . . . . (Y35,Y89.0) | 0.2 | 0.4 | 0.0 | 0.2 | 0.3 | * | 0.3 | 0.7 | * | * | * | * | * | * | * | * | * | * | 0.2 | 0.4 | * |
| Complications of medical and surgical care . . . . . (Y40–Y84,Y88) | 1.4 | 1.5 | 1.3 | 1.7 | 1.9 | 1.6 | 1.6 | 1.6 | 1.7 | 1.4 | * | * | 0.6 | 0.8 | 0.4 | * | * | * | 0.6 | 0.6 | 0.5 |
| Dementia-related causes[5] . . . | 81.6 | 54.5 | 107.9 | 113.1 | 75.2 | 150.0 | 51.4 | 34.5 | 67.0 | 31.6 | 22.7 | 40.2 | 29.5 | 20.2 | 38.0 | 21.5 | 16.9 | 26.1 | 24.9 | 17.1 | 32.9 |
| Drug-induced deaths[5] . . . . . | 21.7 | 29.4 | 14.3 | 26.5 | 34.6 | 18.6 | 23.5 | 35.2 | 12.9 | 28.1 | 34.2 | 22.2 | 3.4 | 4.9 | 2.0 | 13.0 | 19.0 | 6.9 | 11.1 | 16.8 | 5.3 |
| Drug overdose deaths[5]. . . . | 20.6 | 27.9 | 13.5 | 25.1 | 32.9 | 17.6 | 22.1 | 32.9 | 12.1 | 25.8 | 32.0 | 19.8 | 3.3 | 4.8 | 1.9 | 12.1 | 17.6 | * | 10.6 | 16.0 | 5.0 |
| Alcohol-induced deaths[5] . . . . | 11.4 | 16.6 | 6.3 | 13.7 | 19.5 | 8.0 | 7.7 | 11.4 | 4.3 | 54.3 | 66.7 | 42.3 | 2.4 | 4.0 | 1.0 | 5.8 | 7.8 | * | 8.3 | 13.6 | 2.9 |
| Injury by firearms[5]. . . . . | 12.1 | 21.1 | 3.5 | 12.5 | 21.3 | 3.9 | 23.7 | 43.8 | 5.4 | 14.9 | 25.0 | 5.1 | 2.6 | 4.4 | 1.0 | 9.2 | 16.3 | * | 6.7 | 11.6 | 1.7 |

* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
0.0 Quantity more than zero but less than 0.05.
… Category not applicable.
[1]Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[4]Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes in this report.
[5]Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2018

[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 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | 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 | 723.6 | 855.5 | 611.3 | 748.7 | 878.0 | 636.5 | 892.6 | 1,102.8 | 733.7 | 790.8 | 918.7 | 673.1 | 381.2 | 454.1 | 324.1 | 675.7 | 758.1 | 597.3 | 524.1 | 633.1 | 431.7 |
| Enterocolitis due to *Clostridium difficile* (A04.7) | 1.3 | 1.2 | 1.4 | 1.4 | 1.3 | 1.4 | 1.4 | 1.5 | 1.4 | 1.4 | * | 1.9 | 0.5 | 0.5 | 0.5 | * | * | * | 1.0 | 1.0 | 1.0 |
| Septicemia (A40–A41) | 10.2 | 11.5 | 9.3 | 10.0 | 11.2 | 9.1 | 17.4 | 19.8 | 15.9 | 10.8 | 11.0 | 10.7 | 4.3 | 5.1 | 3.7 | 8.9 | * | 10.1 | 8.0 | 9.1 | 7.1 |
| Viral hepatitis (B15–B19) | 1.2 | 1.6 | 0.8 | 1.1 | 1.4 | 0.7 | 1.6 | 2.4 | 1.0 | 2.5 | 2.5 | 2.6 | 1.0 | 1.5 | 0.7 | * | * | * | 1.5 | 2.1 | 1.0 |
| Human immunodeficiency virus (HIV) disease (B20–B24) | 1.5 | 2.3 | 0.8 | 0.7 | 1.2 | 0.3 | 6.5 | 9.3 | 4.0 | 1.7 | 2.5 | * | 0.3 | 0.5 | * | * | * | * | 1.4 | 2.3 | 0.6 |
| Malignant neoplasms (C00–C97) | 149.1 | 176.8 | 128.6 | 155.0 | 183.0 | 133.8 | 175.9 | 217.1 | 150.4 | 127.4 | 144.9 | 113.7 | 91.8 | 107.7 | 80.2 | 142.6 | 145.6 | 142.8 | 107.4 | 128.4 | 92.5 |
| Malignant neoplasms of lip, oral cavity and pharynx (C00–C14) | 2.5 | 3.9 | 1.3 | 2.7 | 4.1 | 1.4 | 2.6 | 4.5 | 1.2 | 1.7 | 2.8 | * | 2.0 | 3.2 | 1.0 | * | * | * | 1.4 | 2.2 | 0.7 |
| Malignant neoplasm of esophagus (C15) | 3.8 | 6.6 | 1.4 | 4.3 | 7.5 | 1.5 | 2.9 | 4.7 | 1.6 | 2.9 | 4.5 | * | 1.6 | 2.6 | 0.7 | * | * | * | 2.0 | 3.6 | 0.6 |
| Malignant neoplasm of stomach (C16) | 2.8 | 3.7 | 2.1 | 2.1 | 2.9 | 1.4 | 5.0 | 7.3 | 3.5 | 3.8 | 4.3 | 3.5 | 4.3 | 5.5 | 3.4 | 7.0 | * | * | 4.7 | 5.9 | 3.8 |
| Malignant neoplasms of colon, rectum and anus (C18–C21) | 13.4 | 15.9 | 11.2 | 13.5 | 15.9 | 11.4 | 17.7 | 22.3 | 14.6 | 13.9 | 15.9 | 12.2 | 8.9 | 10.8 | 7.3 | 9.8 | 10.6 | 8.9 | 10.9 | 14.0 | 8.4 |
| Malignant neoplasms of liver and intrahepatic bile ducts (C22) | 6.7 | 9.7 | 4.1 | 5.9 | 8.6 | 3.6 | 8.6 | 13.3 | 5.0 | 9.9 | 13.5 | 6.8 | 8.2 | 12.3 | 5.0 | 9.5 | 13.1 | * | 9.4 | 13.2 | 6.2 |
| Malignant neoplasm of pancreas (C25) | 11.0 | 12.7 | 9.6 | 11.3 | 13.1 | 9.7 | 13.8 | 15.7 | 12.4 | 8.2 | 8.8 | 7.6 | 7.4 | 8.0 | 7.0 | 8.3 | * | 8.6 | 8.8 | 9.6 | 8.0 |
| Malignant neoplasms of trachea, bronchus and lung (C33–C34) | 34.8 | 41.8 | 29.3 | 38.2 | 44.6 | 33.1 | 37.4 | 50.9 | 28.2 | 30.2 | 33.0 | 27.8 | 18.7 | 24.2 | 14.5 | 27.8 | 33.9 | 22.7 | 15.1 | 20.2 | 11.3 |
| Malignant melanoma of skin (C43) | 2.1 | 3.0 | 1.4 | 2.7 | 3.9 | 1.8 | 0.3 | 0.4 | 0.3 | * | * | * | 0.3 | 0.3 | 0.3 | * | * | * | 0.7 | 0.9 | 0.5 |
| Malignant neoplasm of breast (C50) | 10.9 | 0.3 | 19.7 | 10.9 | 0.3 | 19.9 | 16.3 | 0.5 | 28.0 | 7.9 | * | 14.2 | 6.6 | * | 11.8 | 14.1 | * | 26.0 | 7.4 | 0.2 | 13.4 |
| Malignant neoplasm of cervix uteri (C53) | 1.1 | … | 2.2 | 1.0 | … | 2.0 | 1.8 | … | 3.3 | 1.3 | … | 2.4 | 0.8 | … | 1.4 | * | … | * | 1.2 | … | 2.4 |
| Malignant neoplasm of ovary (C56) | 3.4 | … | 6.3 | 3.6 | … | 6.7 | 3.4 | … | 5.8 | 2.5 | … | 4.5 | 2.3 | … | 4.2 | * | … | * | 2.6 | … | 4.8 |
| Malignant neoplasm of prostate (C61) | 7.8 | 18.8 | … | 7.5 | 17.8 | … | 14.2 | 37.7 | … | 6.3 | 14.9 | … | 3.6 | 8.8 | … | 7.9 | 17.5 | … | 6.2 | 15.1 | … |

See footnotes at end of table.

## Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Malignant neoplasms of kidney and renal pelvis (C64–C65) | 3.5 | 5.1 | 2.2 | 3.7 | 5.3 | 2.3 | 3.3 | 5.1 | 2.1 | 5.5 | 8.4 | 3.2 | 1.5 | 2.2 | 0.9 | * | * | * | 3.2 | 4.6 | 2.1 |
| Malignant neoplasm of bladder (C67) | 4.2 | 7.1 | 2.0 | 4.6 | 7.9 | 2.2 | 3.4 | 5.4 | 2.3 | 2.2 | 2.7 | 1.9 | 1.6 | 2.6 | 0.8 | * | * | * | 2.3 | 3.8 | 1.2 |
| Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72) | 4.4 | 5.4 | 3.5 | 5.1 | 6.3 | 4.1 | 2.8 | 3.2 | 2.4 | 2.4 | 2.5 | 2.3 | 2.4 | 3.3 | 1.8 | * | * | * | 3.0 | 3.2 | 2.7 |
| Non-Hodgkin lymphoma (C82–C85) | 5.1 | 6.8 | 3.8 | 5.4 | 7.2 | 4.0 | 3.9 | 5.2 | 3.0 | 3.9 | 5.1 | 2.9 | 3.5 | 4.5 | 2.7 | 4.9 | * | * | 4.5 | 5.7 | 3.5 |
| Multiple myeloma and immunoproliferative neoplasms (C88,C90) | 3.2 | 4.0 | 2.6 | 3.0 | 3.9 | 2.4 | 5.8 | 7.2 | 4.9 | 3.6 | 4.2 | 3.2 | 1.6 | 1.9 | 1.4 | * | * | * | 2.6 | 3.2 | 2.3 |
| Leukemia (C91–C95) | 6.0 | 8.0 | 4.4 | 6.4 | 8.6 | 4.7 | 5.3 | 6.9 | 4.3 | 3.8 | 5.2 | 2.6 | 3.4 | 4.4 | 2.6 | 6.0 | * | * | 4.3 | 5.3 | 3.5 |
| In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48) | 4.0 | 5.0 | 3.2 | 4.3 | 5.4 | 3.4 | 3.8 | 4.6 | 3.3 | 2.5 | 3.5 | 1.8 | 2.4 | 2.7 | 2.1 | * | * | * | 2.4 | 2.9 | 2.1 |
| Anemias (D50–D64) | 1.3 | 1.4 | 1.3 | 1.2 | 1.2 | 1.2 | 2.9 | 2.9 | 2.8 | 1.1 | * | * | 0.6 | 0.8 | 0.6 | * | * | * | 0.8 | 0.8 | 0.8 |
| Diabetes mellitus (E10–E14) | 21.4 | 26.9 | 16.8 | 18.9 | 24.3 | 14.3 | 39.3 | 47.6 | 33.1 | 43.7 | 50.6 | 37.3 | 15.4 | 19.0 | 12.7 | 48.1 | 56.5 | 40.1 | 24.6 | 29.8 | 20.4 |
| Nutritional deficiencies (E40–E64) | 2.4 | 2.2 | 2.5 | 2.4 | 2.2 | 2.6 | 3.3 | 3.6 | 3.1 | 2.8 | 2.8 | 2.9 | 1.2 | 1.4 | 1.1 | * | * | * | 1.7 | 1.8 | 1.7 |
| Obesity (E66) | 2.1 | 2.3 | 1.9 | 2.2 | 2.5 | 1.9 | 3.5 | 3.3 | 3.6 | 3.2 | 4.6 | 1.9 | 0.2 | 0.2 | * | 3.2 | * | * | 1.3 | 1.5 | 1.1 |
| Parkinson disease (G20–G21) | 8.7 | 12.9 | 5.7 | 9.5 | 14.1 | 6.3 | 5.0 | 8.2 | 3.2 | 5.8 | 7.9 | 4.3 | 5.3 | 7.1 | 4.1 | * | * | * | 6.3 | 9.2 | 4.4 |
| Alzheimer disease (G30) | 30.5 | 24.5 | 34.2 | 32.3 | 25.8 | 36.4 | 27.6 | 22.6 | 29.9 | 18.2 | 14.3 | 20.5 | 15.8 | 12.2 | 18.0 | 17.0 | 11.9 | 20.5 | 25.5 | 21.5 | 27.9 |
| Major cardiovascular diseases (I00–I78) | 215.8 | 261.9 | 177.5 | 218.4 | 264.6 | 179.3 | 290.1 | 359.9 | 237.9 | 188.8 | 222.9 | 158.5 | 122.8 | 149.7 | 101.6 | 225.3 | 258.5 | 192.7 | 156.7 | 191.6 | 128.1 |
| Diseases of heart (I00–I09, I11,I13,I20–I51) | 163.6 | 207.5 | 127.9 | 168.1 | 213.1 | 130.7 | 212.0 | 270.6 | 168.6 | 144.6 | 178.6 | 115.0 | 82.0 | 106.0 | 63.5 | 161.4 | 196.2 | 128.0 | 112.3 | 143.0 | 87.6 |
| Essential hypertension and hypertensive renal disease (I10,I12,I15) | 8.9 | 9.4 | 8.3 | 8.0 | 8.3 | 7.5 | 17.0 | 20.0 | 14.7 | 8.6 | 10.0 | 7.4 | 8.3 | 8.4 | 8.1 | 10.3 | 9.2 | 10.9 | 8.3 | 9.4 | 7.4 |
| Cerebrovascular diseases (I60–I69) | 37.1 | 37.6 | 36.1 | 36.0 | 35.7 | 35.6 | 53.0 | 59.0 | 48.0 | 30.7 | 29.7 | 31.1 | 29.2 | 31.4 | 27.4 | 46.6 | 47.3 | 45.7 | 32.0 | 34.2 | 29.9 |
| Atherosclerosis (I70) | 1.2 | 1.3 | 1.1 | 1.3 | 1.3 | 1.2 | 1.2 | 1.6 | 1.0 | 1.0 | * | * | 0.6 | 0.7 | 0.6 | * | * | * | 0.9 | 0.9 | 0.8 |
| Aortic aneurysm and dissection (I71) | 2.5 | 3.3 | 1.8 | 2.7 | 3.5 | 1.9 | 2.9 | 3.6 | 2.2 | 1.5 | * | * | 1.7 | 2.3 | 1.1 | * | * | * | 1.4 | 2.0 | 0.8 |

See footnotes at end of table.

## Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Influenza and pneumonia (J09–J18) | 14.9 | 17.3 | 13.1 | 15.1 | 17.3 | 13.5 | 16.4 | 20.1 | 14.1 | 19.3 | 22.2 | 16.5 | 12.9 | 15.7 | 10.8 | 14.9 | 13.7 | 15.7 | 11.7 | 13.8 | 10.1 |
| Chronic lower respiratory diseases (J40–J47) | 39.7 | 43.7 | 36.8 | 45.2 | 48.4 | 42.8 | 30.8 | 38.8 | 25.8 | 34.9 | 36.7 | 33.7 | 11.1 | 16.1 | 7.7 | 21.9 | 23.2 | 20.8 | 17.0 | 20.6 | 14.5 |
| Pneumonitis due to solids and liquids (J69) | 4.8 | 6.6 | 3.6 | 5.1 | 6.9 | 3.7 | 5.3 | 7.4 | 4.0 | 4.8 | 6.5 | 3.6 | 2.9 | 4.1 | 2.1 | 5.0 | * | * | 3.2 | 4.1 | 2.5 |
| Chronic liver disease and cirrhosis (K70,K73–K74) | 11.1 | 14.7 | 7.7 | 11.5 | 14.9 | 8.3 | 7.4 | 10.3 | 5.1 | 45.2 | 50.6 | 40.2 | 3.4 | 4.6 | 2.4 | 7.9 | 9.9 | * | 14.5 | 20.8 | 8.8 |
| Alcoholic liver disease (K70) | 6.1 | 8.7 | 3.7 | 6.5 | 8.8 | 4.3 | 3.8 | 5.6 | 2.5 | 33.6 | 38.9 | 28.9 | 1.4 | 2.4 | 0.6 | 4.6 | * | * | 7.3 | 12.4 | 2.7 |
| Cholelithiasis and other disorders of gallbladder (K80–K82) | 0.9 | 1.1 | 0.8 | 0.9 | 1.1 | 0.8 | 0.9 | 1.0 | 0.8 | 1.7 | 2.4 | * | 0.7 | 0.9 | 0.6 | * | * | * | 1.1 | 1.3 | 0.9 |
| Nephritis, nephrotic syndrome and nephrosis (N00–N07, N17–N19,N25–N27) | 12.9 | 15.8 | 10.8 | 11.6 | 14.5 | 9.6 | 26.0 | 31.9 | 22.1 | 14.9 | 14.4 | 15.1 | 8.1 | 10.0 | 6.8 | 14.2 | 13.9 | 14.8 | 11.6 | 13.9 | 9.8 |
| Pregnancy, childbirth and the puerperium (O00–O99) | 0.3 | … | 0.7 | 0.3 | … | 0.6 | 0.8 | … | 1.5 | * | … | * | 0.2 | … | 0.4 | * | … | * | 0.2 | … | 0.5 |
| Certain conditions originating in the perinatal period (P00–P96) | 3.8 | 4.3 | 3.4 | 2.9 | 3.3 | 2.6 | 8.7 | 9.8 | 7.6 | 3.1 | 3.1 | 3.2 | 2.9 | 3.1 | 2.8 | 6.5 | 7.6 | * | 3.1 | 3.4 | 2.8 |
| Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99) | 3.1 | 3.3 | 2.9 | 3.2 | 3.4 | 3.1 | 3.9 | 4.2 | 3.8 | 4.3 | 4.8 | 3.8 | 1.8 | 1.9 | 1.8 | * | * | * | 2.4 | 2.6 | 2.2 |
| Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) | 8.7 | 9.3 | 7.9 | 8.9 | 9.4 | 8.3 | 11.9 | 14.0 | 10.1 | 10.9 | 12.4 | 9.3 | 3.1 | 3.3 | 2.9 | 9.4 | 10.8 | 8.0 | 4.8 | 5.7 | 3.9 |

See footnotes at end of table.

## Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Accidents (unintentional injuries) . . . . . (V01–X59, Y85–Y86) | 48.0 | 65.9 | 31.0 | 54.3 | 72.6 | 36.5 | 49.2 | 74.1 | 27.8 | 85.3 | 115.3 | 56.5 | 16.0 | 22.2 | 10.9 | 37.6 | 53.1 | 22.3 | 32.7 | 48.4 | 17.3 |
| 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) | 11.7 | 16.9 | 6.6 | 11.9 | 16.9 | 6.9 | 14.7 | 22.6 | 7.6 | 28.5 | 39.7 | 17.6 | 4.4 | 5.6 | 3.3 | 12.4 | 16.9 | 7.7 | 10.6 | 15.8 | 5.5 |
| Falls . . . . . (W00–W19) | 9.4 | 11.5 | 7.8 | 10.5 | 12.5 | 8.9 | 4.6 | 6.8 | 3.1 | 9.9 | 11.8 | 8.2 | 5.7 | 7.8 | 4.1 | 7.4 | 9.4 | * | 5.9 | 7.8 | 4.4 |
| Accidental discharge of firearms . . . . . (W32–W34) | 0.1 | 0.2 | 0.0 | 0.2 | 0.3 | 0.0 | 0.2 | 0.4 | * | * | * | * | * | * | * | * | * | * | 0.1 | 0.2 | * |
| Accidental drowning and submersion . . (W65–W74) | 1.1 | 1.7 | 0.5 | 1.1 | 1.6 | 0.6 | 1.5 | 2.6 | 0.6 | 2.7 | 4.2 | * | 1.0 | 1.4 | 0.6 | * | * | * | 0.9 | 1.4 | 0.3 |
| Accidental hanging, strangulation and suffocation . . . (W75–W84) | 1.8 | 2.4 | 1.4 | 1.9 | 2.4 | 1.5 | 2.6 | 3.3 | 2.1 | 2.3 | 2.9 | 1.8 | 0.9 | 1.3 | 0.7 | * | * | * | 1.1 | 1.4 | 0.8 |
| Accidental exposure to smoke, fire and flames. . . . . (X00–X09) | 0.8 | 1.0 | 0.6 | 0.8 | 1.0 | 0.7 | 1.5 | 2.0 | 1.2 | 1.5 | 2.3 | * | 0.2 | * | * | * | * | * | 0.4 | 0.6 | 0.3 |
| Accidental poisoning and exposure to noxious substances . . . . (X40–X49) | 19.3 | 26.8 | 11.7 | 23.9 | 32.2 | 15.4 | 19.8 | 30.2 | 10.7 | 31.4 | 41.1 | 22.2 | 2.6 | 4.2 | 1.2 | 11.4 | 16.1 | * | 11.1 | 17.2 | 4.8 |
| Intentional self-harm (suicide). . . . . (*U03, X60–X84,Y87.0)[4] | 14.2 | 22.8 | 6.2 | 18.1 | 28.6 | 8.0 | 7.3 | 12.2 | 2.9 | 22.3 | 33.6 | 11.1 | 6.7 | 10.0 | 3.8 | 11.9 | 19.8 | * | 7.4 | 12.1 | 2.8 |
| Intentional self-harm (suicide) by poisoning . . . . . (X60–X69) | 1.8 | 1.9 | 1.7 | 2.4 | 2.4 | 2.4 | 0.7 | 0.7 | 0.7 | 1.8 | 1.8 | 1.9 | 0.9 | 1.0 | 0.8 | * | * | * | 0.6 | 0.7 | 0.6 |
| Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70) | 4.3 | 6.7 | 1.9 | 5.2 | 8.0 | 2.4 | 2.0 | 3.2 | 0.9 | 12.2 | 18.2 | 6.3 | 3.1 | 4.5 | 2.0 | 7.0 | 11.3 | * | 3.1 | 5.0 | 1.3 |
| Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74) | 7.0 | 12.6 | 1.9 | 9.3 | 16.3 | 2.7 | 3.6 | 6.7 | 0.8 | 7.2 | 12.1 | 2.5 | 1.6 | 2.8 | 0.5 | * | * | * | 2.8 | 5.1 | 0.6 |

See footnotes at end of table.

## Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2018—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 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | | | Non-Hispanic, single race | | | | | | | | | | | | | | | Hispanic[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | White[2] | | | Black[2] | | | American Indian or Alaska Native[2] | | | Asian[2] | | | Native Hawaiian or Other Pacific Islander[2] | | | | | |
| | Both sexes | Male | Female | 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)[4] | 5.9 | 9.3 | 2.5 | 2.8 | 3.8 | 1.8 | 22.6 | 39.4 | 6.6 | 11.5 | 18.2 | 4.9 | 1.4 | 1.8 | 0.9 | 6.9 | 11.2 | * | 4.9 | 7.9 | 1.8 |
| Assault (homicide) by discharge of firearms . . . . . (*U01.4, X93–X95)[4] | 4.4 | 7.4 | 1.5 | 1.8 | 2.5 | 1.0 | 18.9 | 34.0 | 4.4 | 6.4 | 10.3 | 2.6 | 0.8 | 1.3 | 0.4 | 5.1 | 8.5 | * | 3.5 | 5.8 | 1.0 |
| Legal intervention . . . . (Y35,Y89.0) | 0.2 | 0.4 | 0.0 | 0.2 | 0.3 | * | 0.3 | 0.7 | * | * | * | * | * | * | * | * | * | * | 0.2 | 0.4 | * |
| Complications of medical and surgical care . . . . . (Y40–Y84,Y88) | 1.2 | 1.4 | 1.0 | 1.2 | 1.5 | 1.0 | 1.7 | 1.8 | 1.6 | 1.3 | * | * | 0.6 | 0.8 | 0.4 | * | * | * | 0.8 | 0.9 | 0.7 |
| Dementia-related causes[5] . . . | 66.6 | 56.4 | 72.5 | 70.9 | 59.4 | 77.8 | 64.8 | 59.1 | 67.0 | 42.7 | 36.2 | 46.5 | 32.3 | 26.8 | 35.6 | 35.5 | 31.2 | 38.3 | 47.4 | 42.1 | 50.3 |
| Drug-induced deaths[5] . . . . . | 21.8 | 29.3 | 14.3 | 27.2 | 35.3 | 19.0 | 22.7 | 34.6 | 12.3 | 29.2 | 35.5 | 23.1 | 3.1 | 4.6 | 1.8 | 13.1 | 19.0 | 7.1 | 11.6 | 17.5 | 5.6 |
| Drug overdose deaths[5] . . . . | 20.7 | 27.9 | 13.6 | 25.9 | 33.8 | 18.0 | 21.3 | 32.4 | 11.6 | 26.8 | 33.1 | 20.7 | 3.0 | 4.4 | 1.8 | 12.3 | 17.7 | * | 11.0 | 16.6 | 5.2 |
| Alcohol-induced deaths[5] . . . . | 9.9 | 14.7 | 5.6 | 10.7 | 15.3 | 6.5 | 7.1 | 11.2 | 3.9 | 54.5 | 68.2 | 42.1 | 2.2 | 3.8 | 0.9 | 5.9 | 8.4 | * | 9.9 | 17.1 | 3.3 |
| Injury by firearms[5] . . . . . | 11.9 | 20.7 | 3.4 | 11.4 | 19.5 | 3.7 | 23.2 | 42.0 | 5.4 | 15.0 | 24.8 | 5.4 | 2.5 | 4.2 | 1.0 | 8.8 | 15.6 | * | 6.6 | 11.6 | 1.7 |

* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
… Category not applicable.
[1]Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[4]Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes in this report.
[5]Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes in this report.

SOURCE: National Center for Health Statistics, 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, 2018

[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 in this report. Populations used for computing death rates are postcensal estimates based on the 2010 census estimated as of July 1, 2018; see Technical Notes in this report. 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 in this report]

| Mechanism and intent of death (based on ICD–10) | Number | Rate | Age-adjusted rate[1] |
|---|---|---|---|
| All injury (*U01–*U03,V01–Y36,Y85–Y87,Y89) | 240,583 | 73.5 | 70.1 |
| Unintentional (V01–X59,Y85–Y86) | 167,127 | 51.1 | 48.0 |
| Suicide (*U03,X60–X84,Y87.0) | 48,344 | 14.8 | 14.2 |
| Homicide (*U01–*U02,X85–Y09,Y87.1) | 18,830 | 5.8 | 5.9 |
| Undetermined (Y10–Y34,Y87.2,Y89.9) | 5,653 | 1.7 | 1.7 |
| Legal intervention/war (Y35–Y36,Y89[.0,.1]) | 629 | 0.2 | 0.2 |
| Poisoning (*U01[.6–.7],X40–X49,X60–X69,X85–X90,Y10–Y19,Y35.2) | 72,473 | 22.2 | 22.2 |
| Unintentional (X40–X49) | 62,399 | 19.1 | 19.3 |
| Suicide (X60–X69) | 6,237 | 1.9 | 1.8 |
| Homicide (*U01[.6–.7],X85–X90) | 124 | 0.0 | 0.0 |
| Undetermined (Y10–Y19) | 3,712 | 1.1 | 1.1 |
| Legal intervention/war (Y35.2) | 1 | * | * |
| 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] | 37,991 | 11.6 | 11.2 |
| Occupant (V30–V79[.4–.9],V83–V86[.0–.3])[2] | 8,963 | 2.7 | 2.7 |
| Motorcyclist (V20–V28[.3–.9],V29[.4–.9])[2] | 4,614 | 1.4 | 1.4 |
| Pedal cyclist (V12–V14[.3–.9],V19[.4–.6])[2] | 682 | 0.2 | 0.2 |
| Pedestrian (V02–V04[.1,.9],V09.2)[2] | 6,704 | 2.0 | 2.0 |
| Other (V80[.3–.5],V81.1,V82.1)[2] | 9 | * | * |
| Unspecified (V87[.0–.8],V89.2)[2] | 17,019 | 5.2 | 5.0 |
| Firearm (*U01.4,W32–W34,X72–X74,X93–X95,Y22–Y24,Y35.0) | 39,740 | 12.1 | 11.9 |
| Unintentional (W32–W34) | 458 | 0.1 | 0.1 |
| Suicide (X72–X74) | 24,432 | 7.5 | 7.0 |
| Homicide (*U01.4,X93–X95) | 13,958 | 4.3 | 4.4 |
| Undetermined (Y22–Y24) | 353 | 0.1 | 0.1 |
| Legal intervention/war (Y35.0) | 539 | 0.2 | 0.2 |
| Fall (W00–W19,X80,Y01,Y30) | 38,707 | 11.8 | 9.8 |
| Unintentional (W00–W19) | 37,455 | 11.4 | 9.4 |
| Suicide (X80) | 1,149 | 0.4 | 0.4 |
| Homicide (Y01) | 7 | * | * |
| Undetermined (Y30) | 96 | 0.0 | 0.0 |

0.0 Quantity more than zero but less than 0.05.
* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
[1]For method of computation, see Technical Notes in this report.
[2]Intent of death is unintentional.

SOURCE: National Center for Health Statistics, 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, 2018

[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 in this report]

| Area | All causes | | | Malignant neoplasms (C00–C97) | | | Diseases of heart (I00–I09,I11,I13,I20–I51) | | | Cerebrovascular diseases (I60–I69) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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] | 2,839,205 | 867.8 | 723.6 | 599,274 | 183.2 | 149.1 | 655,381 | 200.3 | 163.6 | 147,810 | 45.2 | 37.1 |
| Alabama | 54,352 | 1,112.0 | 918.1 | 10,632 | 217.5 | 170.4 | 13,473 | 275.6 | 224.7 | 3,088 | 63.2 | 51.5 |
| Alaska | 4,453 | 603.8 | 700.3 | 957 | 129.8 | 141.5 | 815 | 110.5 | 129.7 | 216 | 29.3 | 40.0 |
| Arizona | 59,282 | 826.6 | 669.2 | 12,113 | 168.9 | 131.9 | 12,455 | 173.7 | 136.4 | 2,836 | 39.5 | 31.0 |
| Arkansas | 32,336 | 1,072.9 | 876.6 | 6,491 | 215.4 | 168.8 | 8,171 | 271.1 | 217.4 | 1,551 | 51.5 | 41.5 |
| California | 268,818 | 679.6 | 609.0 | 59,962 | 151.6 | 135.0 | 62,547 | 158.1 | 139.7 | 16,457 | 41.6 | 37.0 |
| Colorado | 38,526 | 676.4 | 651.4 | 7,812 | 137.2 | 127.6 | 7,370 | 129.4 | 124.3 | 1,996 | 35.0 | 34.7 |
| Connecticut | 31,230 | 874.1 | 644.2 | 6,472 | 181.2 | 134.1 | 7,205 | 201.7 | 142.1 | 1,388 | 38.9 | 27.2 |
| Delaware | 9,433 | 975.3 | 757.2 | 2,101 | 217.2 | 159.4 | 2,030 | 209.9 | 159.1 | 605 | 62.6 | 46.4 |
| District of Columbia | 5,008 | 712.9 | 718.8 | 1,070 | 152.3 | 155.6 | 1,295 | 184.4 | 187.0 | 252 | 35.9 | 35.4 |
| Florida | 205,426 | 964.5 | 657.9 | 45,281 | 212.6 | 141.7 | 47,027 | 220.8 | 143.1 | 13,255 | 62.2 | 39.6 |
| Georgia | 85,202 | 809.9 | 790.2 | 17,397 | 165.4 | 152.4 | 18,986 | 180.5 | 175.8 | 4,553 | 43.3 | 43.4 |
| Hawaii | 11,415 | 803.6 | 572.5 | 2,405 | 169.3 | 123.5 | 2,570 | 180.9 | 125.6 | 786 | 55.3 | 37.4 |
| Idaho | 14,261 | 813.0 | 726.6 | 3,049 | 173.8 | 149.5 | 3,122 | 178.0 | 157.9 | 718 | 40.9 | 36.4 |
| Illinois | 110,022 | 863.5 | 716.9 | 23,885 | 187.5 | 153.5 | 25,755 | 202.1 | 163.9 | 5,855 | 46.0 | 37.3 |
| Indiana | 65,693 | 981.7 | 832.7 | 13,479 | 201.4 | 165.7 | 14,532 | 217.2 | 180.7 | 3,151 | 47.1 | 39.3 |
| Iowa | 30,367 | 962.2 | 723.9 | 6,427 | 203.6 | 155.3 | 7,185 | 227.7 | 165.1 | 1,440 | 45.6 | 33.0 |
| Kansas | 27,537 | 945.8 | 771.3 | 5,607 | 192.6 | 156.4 | 5,823 | 200.0 | 158.9 | 1,296 | 44.5 | 35.9 |
| Kentucky | 48,707 | 1,090.0 | 920.0 | 10,135 | 226.8 | 181.6 | 10,697 | 239.4 | 198.3 | 2,204 | 49.3 | 41.5 |
| Louisiana | 46,048 | 988.2 | 870.9 | 9,382 | 201.3 | 169.0 | 11,340 | 243.3 | 212.2 | 2,485 | 53.3 | 46.7 |
| Maine | 14,715 | 1,099.4 | 753.9 | 3,275 | 244.7 | 162.1 | 2,965 | 221.5 | 147.0 | 690 | 51.6 | 33.7 |
| Maryland | 50,568 | 836.8 | 714.1 | 10,927 | 180.8 | 149.9 | 11,683 | 193.3 | 161.9 | 2,883 | 47.7 | 40.3 |
| Massachusetts | 59,152 | 857.0 | 670.6 | 12,635 | 183.1 | 142.8 | 12,036 | 174.4 | 131.5 | 2,466 | 35.7 | 27.1 |
| Michigan | 98,903 | 989.4 | 782.3 | 21,018 | 210.3 | 161.1 | 25,354 | 253.6 | 195.0 | 5,183 | 51.9 | 40.0 |
| Minnesota | 44,745 | 797.4 | 648.0 | 9,910 | 176.6 | 143.1 | 8,408 | 149.8 | 119.0 | 2,270 | 40.5 | 32.2 |
| Mississippi | 32,301 | 1,081.6 | 934.8 | 6,510 | 218.0 | 179.7 | 7,758 | 259.8 | 222.1 | 1,805 | 60.4 | 51.8 |
| Missouri | 63,117 | 1,030.2 | 823.2 | 13,040 | 212.8 | 165.3 | 14,893 | 243.1 | 188.4 | 3,039 | 49.6 | 38.5 |
| Montana | 9,992 | 940.6 | 720.2 | 2,038 | 191.8 | 140.7 | 2,347 | 220.9 | 163.2 | 418 | 39.3 | 30.1 |
| Nebraska | 16,904 | 876.2 | 717.4 | 3,516 | 182.2 | 150.5 | 3,539 | 183.4 | 145.7 | 758 | 39.3 | 31.5 |
| Nevada | 24,715 | 814.5 | 741.1 | 5,195 | 171.2 | 146.5 | 6,393 | 210.7 | 190.7 | 1,190 | 39.2 | 36.6 |
| New Hampshire | 12,774 | 941.7 | 712.7 | 2,711 | 199.9 | 143.7 | 2,786 | 205.4 | 151.0 | 499 | 36.8 | 27.2 |
| New Jersey | 75,765 | 850.5 | 672.5 | 16,011 | 179.7 | 141.3 | 19,047 | 213.8 | 163.0 | 3,444 | 38.7 | 29.8 |
| New Mexico | 19,007 | 907.1 | 748.7 | 3,672 | 175.2 | 136.4 | 3,935 | 187.8 | 148.2 | 838 | 40.0 | 31.8 |
| New York | 157,183 | 804.3 | 626.7 | 34,491 | 176.5 | 138.2 | 44,499 | 227.7 | 171.9 | 6,244 | 32.0 | 24.4 |
| North Carolina | 93,885 | 904.2 | 770.1 | 19,671 | 189.4 | 154.2 | 19,222 | 185.1 | 155.5 | 5,062 | 48.7 | 41.3 |
| North Dakota | 6,445 | 847.9 | 690.3 | 1,320 | 173.7 | 145.2 | 1,361 | 179.1 | 140.0 | 329 | 43.3 | 34.1 |
| Ohio | 124,264 | 1,063.0 | 838.4 | 25,164 | 215.3 | 165.2 | 29,220 | 250.0 | 191.1 | 6,525 | 55.8 | 42.6 |
| Oklahoma | 40,933 | 1,038.1 | 893.2 | 8,424 | 213.6 | 178.1 | 10,634 | 269.7 | 228.5 | 1,861 | 47.2 | 40.1 |
| Oregon | 36,187 | 863.5 | 689.8 | 8,159 | 194.7 | 150.6 | 6,820 | 162.7 | 128.4 | 2,024 | 48.3 | 38.0 |
| Pennsylvania | 134,702 | 1,051.8 | 759.7 | 28,023 | 218.8 | 156.6 | 32,768 | 255.9 | 176.1 | 6,599 | 51.5 | 35.3 |
| Rhode Island | 10,083 | 953.6 | 696.7 | 2,176 | 205.8 | 151.6 | 2,411 | 228.0 | 158.9 | 424 | 40.1 | 28.2 |
| South Carolina | 50,640 | 996.0 | 821.6 | 10,365 | 203.9 | 157.3 | 10,464 | 205.8 | 167.0 | 2,819 | 55.4 | 45.5 |
| South Dakota | 7,971 | 903.5 | 715.9 | 1,632 | 185.0 | 145.2 | 1,796 | 203.6 | 156.3 | 389 | 44.1 | 33.6 |
| Tennessee | 71,078 | 1,049.9 | 889.7 | 14,141 | 208.9 | 168.0 | 16,417 | 242.5 | 202.4 | 3,499 | 51.7 | 43.6 |
| Texas | 202,211 | 704.5 | 731.8 | 40,866 | 142.4 | 142.9 | 46,763 | 162.9 | 170.0 | 10,810 | 37.7 | 40.3 |
| Utah | 18,354 | 580.6 | 691.8 | 3,264 | 103.3 | 120.0 | 3,749 | 118.6 | 146.4 | 919 | 29.1 | 36.3 |
| Vermont | 6,027 | 962.3 | 706.5 | 1,388 | 221.6 | 156.0 | 1,338 | 213.6 | 150.5 | 263 | 42.0 | 29.5 |
| Virginia | 69,359 | 814.3 | 709.5 | 15,148 | 177.8 | 149.3 | 14,600 | 171.4 | 147.9 | 3,778 | 44.4 | 38.9 |
| Washington | 56,877 | 754.8 | 666.6 | 12,791 | 169.7 | 145.3 | 11,655 | 154.7 | 135.4 | 2,891 | 38.4 | 34.1 |
| West Virginia | 23,478 | 1,300.1 | 953.8 | 4,682 | 259.3 | 179.5 | 5,007 | 277.3 | 196.4 | 990 | 54.8 | 38.6 |
| Wisconsin | 53,684 | 923.4 | 723.3 | 11,457 | 197.1 | 151.5 | 12,061 | 207.5 | 157.8 | 2,549 | 43.8 | 33.4 |
| Wyoming | 5,070 | 877.6 | 749.6 | 997 | 172.6 | 140.6 | 1,054 | 182.4 | 152.7 | 220 | 38.1 | 32.2 |
| Puerto Rico | 28,958 | 906.3 | 619.3 | 5,035 | 157.6 | 105.2 | 5,288 | 165.5 | 106.2 | 1,159 | 36.3 | 23.2 |
| U.S. Virgin Islands | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Guam | 1,035 | 616.9 | 869.3 | 191 | 113.8 | 142.4 | 319 | 190.1 | 293.9 | 84 | 50.1 | 79.7 |
| American Samoa | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Northern Marianas | 221 | 425.0 | 820.5 | 41 | 78.9 | 158.4 | 58 | 111.6 | 201.0 | 16 | * | * |

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, 2018—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 in this report]

| Area | Motor vehicle accidents[3] | | | Drug overdose (X40–X44, X60–X64,X85,Y10–Y14) | | | 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] | 39,404 | 12.0 | 11.7 | 67,367 | 20.6 | 20.7 | 48,344 | 14.8 | 14.2 | 18,830 | 5.8 | 5.9 |
| Alabama | 1,064 | 21.8 | 21.4 | 775 | 15.9 | 16.6 | 823 | 16.8 | 16.5 | 568 | 11.6 | 12.2 |
| Alaska | 95 | 12.9 | 12.6 | 110 | 14.9 | 14.6 | 184 | 25.0 | 24.6 | 56 | 7.6 | 7.5 |
| Arizona | 1,041 | 14.5 | 14.0 | 1,670 | 23.3 | 23.8 | 1,438 | 20.1 | 19.2 | 420 | 5.9 | 6.1 |
| Arkansas | 551 | 18.3 | 17.9 | 444 | 14.7 | 15.7 | 554 | 18.4 | 18.3 | 264 | 8.8 | 9.1 |
| California | 4,150 | 10.5 | 10.1 | 5,348 | 13.5 | 12.8 | 4,491 | 11.4 | 10.9 | 1,890 | 4.8 | 4.8 |
| Colorado | 671 | 11.8 | 11.5 | 995 | 17.5 | 16.8 | 1,282 | 22.5 | 21.9 | 263 | 4.6 | 4.7 |
| Connecticut | 302 | 8.5 | 8.2 | 1,069 | 29.9 | 30.7 | 419 | 11.7 | 10.6 | 92 | 2.6 | 2.8 |
| Delaware | 120 | 12.4 | 11.9 | 401 | 41.5 | 43.8 | 113 | 11.7 | 11.4 | 57 | 5.9 | 6.8 |
| District of Columbia | 42 | 6.0 | 5.8 | 254 | 36.2 | 35.4 | 54 | 7.7 | 7.5 | 144 | 20.5 | 19.4 |
| Florida | 3,243 | 15.2 | 14.6 | 4,698 | 22.1 | 22.8 | 3,567 | 16.7 | 15.2 | 1,315 | 6.2 | 6.6 |
| Georgia | 1,529 | 14.5 | 14.2 | 1,404 | 13.3 | 13.2 | 1,569 | 14.9 | 14.6 | 794 | 7.5 | 7.7 |
| Hawaii | 115 | 8.1 | 7.9 | 213 | 15.0 | 14.3 | 176 | 12.4 | 11.9 | 40 | 2.8 | 3.1 |
| Idaho | 250 | 14.3 | 14.3 | 250 | 14.3 | 14.6 | 417 | 23.8 | 23.9 | 41 | 2.3 | 2.3 |
| Illinois | 1,195 | 9.4 | 9.1 | 2,722 | 21.4 | 21.3 | 1,488 | 11.7 | 11.3 | 994 | 7.8 | 8.0 |
| Indiana | 870 | 13.0 | 12.8 | 1,629 | 24.3 | 25.6 | 1,079 | 16.1 | 16.0 | 473 | 7.1 | 7.4 |
| Iowa | 361 | 11.4 | 10.9 | 287 | 9.1 | 9.6 | 490 | 15.5 | 15.5 | 81 | 2.6 | 2.7 |
| Kansas | 409 | 14.0 | 13.9 | 345 | 11.8 | 12.4 | 556 | 19.1 | 19.3 | 160 | 5.5 | 5.9 |
| Kentucky | 774 | 17.3 | 16.9 | 1,315 | 29.4 | 30.9 | 800 | 17.9 | 17.5 | 258 | 5.8 | 6.1 |
| Louisiana | 812 | 17.4 | 17.2 | 1,140 | 24.5 | 25.4 | 720 | 15.5 | 15.1 | 598 | 12.8 | 13.3 |
| Maine | 157 | 11.7 | 11.0 | 345 | 25.8 | 27.9 | 270 | 20.2 | 18.5 | 19 | * | * |
| Maryland | 516 | 8.5 | 8.4 | 2,324 | 38.5 | 37.2 | 650 | 10.8 | 10.2 | 541 | 9.0 | 9.3 |
| Massachusetts | 400 | 5.8 | 5.4 | 2,241 | 32.5 | 32.8 | 740 | 10.7 | 9.9 | 158 | 2.3 | 2.3 |
| Michigan | 1,028 | 10.3 | 9.8 | 2,591 | 25.9 | 26.6 | 1,548 | 15.5 | 15.0 | 613 | 6.1 | 6.5 |
| Minnesota | 489 | 8.7 | 8.3 | 636 | 11.3 | 11.5 | 739 | 13.2 | 13.1 | 122 | 2.2 | 2.3 |
| Mississippi | 706 | 23.6 | 23.3 | 310 | 10.4 | 10.8 | 421 | 14.1 | 13.8 | 382 | 12.8 | 13.4 |
| Missouri | 956 | 15.6 | 15.2 | 1,610 | 26.3 | 27.5 | 1,230 | 20.1 | 19.5 | 658 | 10.7 | 11.4 |
| Montana | 178 | 16.8 | 16.8 | 125 | 11.8 | 12.2 | 265 | 24.9 | 24.9 | 42 | 4.0 | 4.2 |
| Nebraska | 252 | 13.1 | 13.1 | 138 | 7.2 | 7.4 | 271 | 14.0 | 13.4 | 35 | 1.8 | 1.9 |
| Nevada | 367 | 12.1 | 11.7 | 688 | 22.7 | 21.2 | 657 | 21.7 | 20.8 | 225 | 7.4 | 7.7 |
| New Hampshire | 151 | 11.1 | 10.2 | 452 | 33.3 | 35.8 | 279 | 20.6 | 19.4 | 21 | 1.5 | 1.8 |
| New Jersey | 599 | 6.7 | 6.4 | 2,900 | 32.6 | 33.1 | 778 | 8.7 | 8.3 | 311 | 3.5 | 3.7 |
| New Mexico | 395 | 18.9 | 19.0 | 537 | 25.6 | 26.7 | 536 | 25.6 | 25.0 | 215 | 10.3 | 10.8 |
| New York | 1,065 | 5.4 | 5.0 | 3,697 | 18.9 | 18.4 | 1,723 | 8.8 | 8.3 | 611 | 3.1 | 3.2 |
| North Carolina | 1,584 | 15.3 | 14.7 | 2,259 | 21.8 | 22.4 | 1,494 | 14.4 | 13.7 | 647 | 6.2 | 6.4 |
| North Dakota | 106 | 13.9 | 13.2 | 70 | 9.2 | 10.2 | 147 | 19.3 | 19.2 | 20 | 2.6 | 2.5 |
| Ohio | 1,220 | 10.4 | 10.1 | 3,980 | 34.0 | 35.9 | 1,838 | 15.7 | 15.3 | 760 | 6.5 | 6.8 |
| Oklahoma | 707 | 17.9 | 17.6 | 716 | 18.2 | 18.4 | 790 | 20.0 | 20.0 | 265 | 6.7 | 7.0 |
| Oregon | 496 | 11.8 | 11.1 | 547 | 13.1 | 12.6 | 844 | 20.1 | 19.0 | 102 | 2.4 | 2.5 |
| Pennsylvania | 1,294 | 10.1 | 9.4 | 4,415 | 34.5 | 36.1 | 2,014 | 15.7 | 14.9 | 781 | 6.1 | 6.4 |
| Rhode Island | 69 | 6.5 | 6.4 | 317 | 30.0 | 30.1 | 106 | 10.0 | 9.5 | 16 | * | * |
| South Carolina | 1,033 | 20.3 | 20.0 | 1,125 | 22.1 | 22.6 | 811 | 16.0 | 15.4 | 481 | 9.5 | 10.2 |
| South Dakota | 156 | 17.7 | 17.3 | 57 | 6.5 | 6.9 | 167 | 18.9 | 19.3 | 32 | 3.6 | 3.9 |
| Tennessee | 1,113 | 16.4 | 15.9 | 1,823 | 26.9 | 27.5 | 1,161 | 17.1 | 16.6 | 604 | 8.9 | 9.2 |
| Texas | 3,788 | 13.2 | 13.2 | 3,005 | 10.5 | 10.4 | 3,930 | 13.7 | 13.7 | 1,557 | 5.4 | 5.4 |
| Utah | 258 | 8.2 | 8.5 | 624 | 19.7 | 21.2 | 665 | 21.0 | 22.2 | 67 | 2.1 | 2.2 |
| Vermont | 75 | 12.0 | 11.4 | 153 | 24.4 | 26.6 | 125 | 20.0 | 18.8 | 14 | * | * |
| Virginia | 914 | 10.7 | 10.3 | 1,448 | 17.0 | 17.1 | 1,243 | 14.6 | 14.0 | 425 | 5.0 | 5.1 |
| Washington | 672 | 8.9 | 8.6 | 1,164 | 15.4 | 14.8 | 1,252 | 16.6 | 15.9 | 275 | 3.6 | 3.7 |
| West Virginia | 333 | 18.4 | 17.4 | 856 | 47.4 | 51.5 | 395 | 21.9 | 21.2 | 97 | 5.4 | 5.8 |
| Wisconsin | 637 | 11.0 | 10.2 | 1,079 | 18.6 | 19.2 | 888 | 15.3 | 14.8 | 204 | 3.5 | 3.9 |
| Wyoming | 96 | 16.6 | 16.5 | 66 | 11.4 | 11.1 | 147 | 25.4 | 25.2 | 22 | 3.8 | 4.1 |
| Puerto Rico | 339 | 10.6 | 9.8 | 58 | 1.8 | 1.8 | 239 | 7.5 | 6.9 | 623 | 19.5 | 21.3 |
| U.S. Virgin Islands | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Guam | 24 | 14.3 | 15.9 | – | * | * | 45 | 26.8 | 28.9 | 6 | * | * |
| American Samoa | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Northern Marianas | 3 | * | * | – | * | * | 8 | * | * | – | * | * |

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, 2018—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 in this report]

--- Data not available.
* Rate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
– Quantity zero.
[1]Death 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 in this report.
[2]Excludes data for Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas.
[3]ICD–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 in this report.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

**Table 13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 2010–2018**

[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 and year | Infant mortality rate | | | Neonatal mortality rate | | | Postneonatal mortality rate | | |
|---|---|---|---|---|---|---|---|---|---|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| All races and origins[1] | | | | | | | | | |
| 2018 | 5.66 | 6.23 | 5.07 | 3.77 | 4.13 | 3.39 | 1.89 | 2.09 | 1.68 |
| 2017 | 5.79 | 6.32 | 5.24 | 3.84 | 4.19 | 3.49 | 1.95 | 2.13 | 1.76 |
| 2016 | 5.87 | 6.38 | 5.34 | 3.87 | 4.19 | 3.54 | 2.00 | 2.19 | 1.80 |
| 2015 | 5.90 | 6.39 | 5.38 | 3.93 | 4.22 | 3.64 | 1.96 | 2.17 | 1.74 |
| 2014 | 5.82 | 6.31 | 5.30 | 3.94 | 4.25 | 3.62 | 1.88 | 2.07 | 1.68 |
| 2013 | 5.96 | 6.52 | 5.38 | 4.04 | 4.37 | 3.68 | 1.93 | 2.15 | 1.70 |
| 2012 | 5.98 | 6.50 | 5.43 | 4.01 | 4.34 | 3.67 | 1.97 | 2.16 | 1.76 |
| 2011 | 6.07 | 6.58 | 5.52 | 4.06 | 4.36 | 3.73 | 2.01 | 2.22 | 1.79 |
| 2010 | 6.15 | 6.69 | 5.57 | 4.05 | 4.37 | 3.71 | 2.10 | 2.32 | 1.87 |
| Non-Hispanic, single-race white[2,3] | | | | | | | | | |
| 2018 | 4.55 | 4.98 | 4.09 | 3.02 | 3.27 | 2.76 | 1.53 | 1.71 | 1.34 |
| Non-Hispanic, bridged-race white[4] | | | | | | | | | |
| 2018 | 4.63 | 5.08 | 4.16 | 3.08 | 3.34 | 2.80 | 1.56 | 1.74 | 1.36 |
| 2017 | 4.61 | 5.07 | 4.12 | 3.05 | 3.34 | 2.74 | 1.56 | 1.73 | 1.38 |
| 2016 | 4.80 | 5.24 | 4.34 | 3.10 | 3.33 | 2.86 | 1.70 | 1.90 | 1.48 |
| 2015 | 4.82 | 5.27 | 4.36 | 3.16 | 3.37 | 2.92 | 1.67 | 1.89 | 1.43 |
| 2014 | 4.81 | 5.26 | 4.34 | 3.23 | 3.48 | 2.97 | 1.58 | 1.78 | 1.37 |
| 2013 | 4.96 | 5.53 | 4.36 | 3.33 | 3.67 | 2.97 | 1.63 | 1.86 | 1.38 |
| 2012 | 4.97 | 5.38 | 4.54 | 3.31 | 3.54 | 3.06 | 1.66 | 1.84 | 1.47 |
| 2011 | 5.05 | 5.52 | 4.56 | 3.34 | 3.62 | 3.06 | 1.71 | 1.90 | 1.50 |
| 2010 | 5.10 | 5.54 | 4.64 | 3.34 | 3.58 | 3.07 | 1.76 | 1.96 | 1.56 |
| Non-Hispanic, single-race black[2,3] | | | | | | | | | |
| 2018 | 11.10 | 12.35 | 9.81 | 7.13 | 7.93 | 6.31 | 3.97 | 4.42 | 3.50 |
| Non-Hispanic, bridged-race black[4] | | | | | | | | | |
| 2018 | 10.97 | 12.19 | 9.73 | 7.02 | 7.78 | 6.23 | 3.96 | 4.40 | 3.50 |
| 2017 | 11.46 | 12.59 | 10.29 | 7.28 | 8.04 | 6.51 | 4.17 | 4.55 | 3.78 |
| 2016 | 11.76 | 12.67 | 10.82 | 7.64 | 8.32 | 6.95 | 4.11 | 4.35 | 3.87 |
| 2015 | 11.73 | 12.75 | 10.67 | 7.60 | 8.16 | 7.02 | 4.13 | 4.59 | 3.65 |
| 2014 | 11.37 | 12.33 | 10.39 | 7.51 | 8.13 | 6.87 | 3.86 | 4.21 | 3.51 |
| 2013 | 11.61 | 12.48 | 10.73 | 7.66 | 8.16 | 7.14 | 3.96 | 4.31 | 3.59 |
| 2012 | 11.59 | 12.80 | 10.35 | 7.58 | 8.30 | 6.83 | 4.02 | 4.49 | 3.52 |
| 2011 | 11.98 | 13.13 | 10.80 | 7.85 | 8.53 | 7.14 | 4.14 | 4.60 | 3.67 |
| 2010 | 11.99 | 13.08 | 10.85 | 7.71 | 8.32 | 7.09 | 4.28 | 4.77 | 3.77 |
| Hispanic[3,5] | | | | | | | | | |
| 2018 | 5.06 | 5.55 | 4.56 | 3.54 | 3.88 | 3.18 | 1.52 | 1.67 | 1.38 |
| 2017 | 5.35 | 5.76 | 4.93 | 3.73 | 4.00 | 3.46 | 1.62 | 1.76 | 1.47 |
| 2016 | 5.24 | 5.72 | 4.75 | 3.63 | 3.94 | 3.30 | 1.62 | 1.78 | 1.45 |
| 2015 | 5.20 | 5.56 | 4.83 | 3.73 | 4.02 | 3.42 | 1.47 | 1.54 | 1.41 |
| 2014 | 5.22 | 5.63 | 4.79 | 3.67 | 3.98 | 3.34 | 1.55 | 1.66 | 1.45 |
| 2013 | 5.27 | 5.65 | 4.88 | 3.73 | 3.99 | 3.45 | 1.54 | 1.66 | 1.43 |
| 2012 | 5.30 | 5.76 | 4.83 | 3.71 | 4.05 | 3.35 | 1.60 | 1.71 | 1.47 |
| 2011 | 5.25 | 5.59 | 4.90 | 3.67 | 3.87 | 3.46 | 1.58 | 1.72 | 1.44 |
| 2010 | 5.47 | 5.96 | 4.96 | 3.73 | 4.07 | 3.37 | 1.74 | 1.89 | 1.59 |

[1]Includes race and origin groups not shown separately; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Infant 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 in this report. Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget (OMB) standards.
[4]Multiple-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 in this report.
[5]Includes persons of Hispanic origin of any race; see Technical Notes in this report.

SOURCE: National Center for Health Statistics, 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, 2018

[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 1997 Office of Management and Budget standards]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Number[1] | | | | Rate | | | |
|---|---|---|---|---|---|---|---|---|
| | Total[2] | Non-Hispanic, single-race white[3] | Non-Hispanic, single-race black[3] | Hispanic[4] | Total[2] | Non-Hispanic, single-race white[3] | Non-Hispanic, single-race black[3] | Hispanic[4] |
| All causes | 21,467 | 8,893 | 6,127 | 4,487 | 566.2 | 454.6 | 1,109.9 | 506.3 |
| Certain intestinal infectious diseases (A00–A08) | 10 | 4 | 1 | 3 | * | * | * | * |
| Diarrhea and gastroenteritis of infectious origin (A09) | 151 | 58 | 43 | 37 | 4.0 | 3.0 | 7.8 | 4.2 |
| Tuberculosis (A16–A19) | – | – | – | – | * | * | * | * |
| Tetanus (A33,A35) | – | – | – | – | * | * | * | * |
| Diphtheria (A36) | – | – | – | – | * | * | * | * |
| Whooping cough (A37) | 4 | 1 | – | 2 | * | * | * | * |
| Meningococcal infection (A39) | 5 | 4 | 1 | – | * | * | * | * |
| Septicemia (A40–A41) | 151 | 53 | 46 | 30 | 4.0 | 2.7 | 8.3 | 3.4 |
| Congenital syphilis (A50) | – | – | – | – | * | * | * | * |
| Gonococcal infection (A54) | – | – | – | – | * | * | * | * |
| Acute poliomyelitis (A80) | – | – | – | – | * | * | * | * |
| Varicella (chickenpox) (B01) | – | – | – | – | * | * | * | * |
| Measles (B05) | – | – | – | – | * | * | * | * |
| Human immunodeficiency virus (HIV) disease (B20–B24) | – | – | – | – | * | * | * | * |
| Mumps (B26) | – | – | – | – | * | * | * | * |
| Candidiasis (B37) | 3 | – | 3 | – | * | * | * | * |
| Malaria (B50–B54) | – | – | – | – | * | * | * | * |
| Pneumocystosis (B59) | 1 | – | 1 | – | * | * | * | * |
| Malignant neoplasms (C00–C97) | 51 | 23 | 5 | 15 | 1.3 | 1.2 | * | * |
| In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48) | 41 | 18 | 11 | 10 | 1.1 | * | * | * |
| Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89) | 75 | 42 | 21 | 12 | 2.0 | 2.1 | 3.8 | * |
| Short stature, not elsewhere classified (E34.3) | – | – | – | – | * | * | * | * |
| Nutritional deficiencies (E40–E64) | 8 | 2 | 3 | 1 | * | * | * | * |
| Cystic fibrosis (E84) | 3 | 1 | 1 | 1 | * | * | * | * |
| Volume depletion, disorders of fluid, electrolyte and acid-base balance (E86–E87) | 37 | 18 | 12 | 7 | 1.0 | * | * | * |
| Meningitis (G00,G03) | 64 | 28 | 14 | 10 | 1.7 | 1.4 | * | * |
| Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) (G12.0) | 3 | 1 | 2 | – | * | * | * | * |
| Infantile cerebral palsy (G80) | 5 | 1 | 3 | 1 | * | * | * | * |
| Anoxic brain damage, not elsewhere classified (G93.1) | 19 | 7 | 5 | 5 | * | * | * | * |
| Diseases of the ear and mastoid process (H60–H93) | – | – | – | – | * | * | * | * |
| Diseases of the circulatory system (I00–I99) | 428 | 185 | 116 | 89 | 11.3 | 9.5 | 21.0 | 10.0 |
| Acute upper respiratory infections (J00–J06) | 8 | 4 | 2 | 1 | * | * | * | * |
| Influenza and pneumonia (J09–J18) | 176 | 69 | 58 | 33 | 4.6 | 3.5 | 10.5 | 3.7 |
| Acute bronchitis and acute bronchiolitis (J20–J21) | 34 | 9 | 15 | 8 | 0.9 | * | * | * |
| Bronchitis, chronic and unspecified (J40–J42) | 10 | 4 | 4 | 2 | * | * | * | * |
| Asthma (J45–J46) | 1 | 1 | – | – | * | * | * | * |
| Pneumonitis due to solids and liquids (J69) | 4 | 3 | 1 | – | * | * | * | * |
| Gastritis, duodenitis, and noninfective enteritis and colitis (K29,K50–K55) | 27 | 11 | 11 | 2 | 0.7 | * | * | * |
| Hernia of abdominal cavity and intestinal obstruction without hernia (K40–K46,K56) | 41 | 19 | 7 | 10 | 1.1 | * | * | * |
| Renal failure and other disorders of kidney (N17–N19,N25,N27) | 69 | 26 | 22 | 17 | 1.8 | 1.3 | 4.0 | * |
| Newborn affected by maternal hypertensive disorders (P00.0) | 63 | 24 | 21 | 14 | 1.7 | 1.2 | 3.8 | * |
| Newborn affected by other maternal conditions which may be unrelated to present pregnancy (P00.1–P00.9) | 86 | 41 | 20 | 21 | 2.3 | 2.1 | 3.6 | 2.4 |

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, 2018—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 1997 Office of Management and Budget standards]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Number[1] | | | | Rate | | | |
|---|---|---|---|---|---|---|---|---|
| | Total[2] | Non-Hispanic, single-race white[3] | Non-Hispanic, single-race black[3] | Hispanic[4] | Total[2] | Non-Hispanic, single-race white[3] | Non-Hispanic, single-race black[3] | Hispanic[4] |
| Newborn affected by maternal complications of pregnancy (P01) | 1,358 | 469 | 416 | 331 | 35.8 | 24.0 | 75.4 | 37.4 |
| Newborn affected by complications of placenta, cord and membranes (P02) | 724 | 308 | 193 | 158 | 19.1 | 15.7 | 35.0 | 17.8 |
| Newborn affected by other complications of labor and delivery (P03) | 86 | 41 | 19 | 19 | 2.3 | 2.1 | * | * |
| Newborn affected by noxious influences transmitted via placenta or breast milk (P04) | 71 | 34 | 10 | 16 | 1.9 | 1.7 | * | * |
| Slow fetal growth and fetal malnutrition (P05) | 116 | 51 | 40 | 17 | 3.1 | 2.6 | 7.2 | * |
| Disorders related to short gestation and low birth weight, not elsewhere classified (P07) | 3,679 | 1,213 | 1,371 | 735 | 97.0 | 62.0 | 248.4 | 82.9 |
| Disorders related to long gestation and high birth weight (P08) | – | – | – | – | * | * | * | * |
| Birth trauma (P10–P15) | 12 | 7 | 3 | 1 | * | * | * | * |
| Intrauterine hypoxia and birth asphyxia (P20–P21) | 309 | 137 | 93 | 57 | 8.1 | 7.0 | 16.8 | 6.4 |
| Respiratory distress of newborn (P22) | 390 | 164 | 121 | 79 | 10.3 | 8.4 | 21.9 | 8.9 |
| Other respiratory conditions originating in the perinatal period (P23–P28) | 748 | 305 | 219 | 158 | 19.7 | 15.6 | 39.7 | 17.8 |
| Congenital pneumonia (P23) | 48 | 24 | 11 | 10 | 1.3 | 1.2 | * | * |
| Neonatal aspiration syndromes (P24) | 50 | 27 | 7 | 11 | 1.3 | 1.4 | * | * |
| Interstitial emphysema and related conditions originating in the perinatal period (P25) | 68 | 26 | 22 | 16 | 1.8 | 1.3 | 4.0 | * |
| Pulmonary hemorrhage originating in the perinatal period (P26) | 149 | 49 | 53 | 37 | 3.9 | 2.5 | 9.6 | 4.2 |
| Chronic respiratory disease originating in the perinatal period (P27) | 157 | 65 | 57 | 23 | 4.1 | 3.3 | 10.3 | 2.6 |
| Atelectasis (P28.0–P28.1) | 214 | 86 | 55 | 48 | 5.6 | 4.4 | 10.0 | 5.4 |
| Bacterial sepsis of newborn (P36) | 579 | 205 | 186 | 127 | 15.3 | 10.5 | 33.7 | 14.3 |
| Omphalitis of newborn with or without mild hemorrhage (P38) | – | – | – | – | * | * | * | * |
| Neonatal hemorrhage (P50–P52,P54) | 375 | 178 | 85 | 78 | 9.9 | 9.1 | 15.4 | 8.8 |
| Hemorrhagic disease of newborn (P53) | 1 | – | – | 1 | * | * | * | * |
| Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice (P55–P59) | 10 | 4 | 2 | 1 | * | * | * | * |
| Hematological disorders (P60–P61) | 91 | 50 | 14 | 16 | 2.4 | 2.6 | * | * |
| Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2) | 5 | 2 | 1 | 1 | * | * | * | * |
| Necrotizing enterocolitis of newborn (P77) | 298 | 104 | 101 | 63 | 7.9 | 5.3 | 18.3 | 7.1 |
| Hydrops fetalis not due to hemolytic disease (P83.2) | 187 | 98 | 27 | 40 | 4.9 | 5.0 | 4.9 | 4.5 |
| Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99) | 4,473 | 2,139 | 881 | 1,088 | 118.0 | 109.3 | 159.6 | 122.8 |
| Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) | 2,656 | 1,105 | 898 | 429 | 70.0 | 56.5 | 162.7 | 48.4 |
| Sudden infant death syndrome (R95) | 1,334 | 585 | 429 | 216 | 35.2 | 29.9 | 77.7 | 24.4 |
| Accidents (unintentional injuries) (V01–X59) | 1,168 | 526 | 354 | 186 | 30.8 | 26.9 | 64.1 | 21.0 |
| Assault (homicide) (*U01,X85–Y09)[5] | 269 | 117 | 72 | 59 | 7.1 | 6.0 | 13.0 | 6.7 |
| Complications of medical and surgical care (Y40–Y84) | 18 | 8 | 7 | 3 | * | * | * | * |

* Rate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
– Quantity zero.
[1]Only selected causes of death are shown; therefore, subcategories do not add to totals; see Technical Notes in this report.
[2]Includes race and origin groups not shown separately; see Technical Notes in this report.
[3]Only one race was reported on the death certificate; see Technical Notes in this report.
[4]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[5]Asterisks (*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision*; see Technical Notes in this report.

SOURCE: National Center for Health Statistics, 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, 2018

[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 1997 Office of Management and Budget standards; see Technical Notes in this report]

| Area and sex | Total[1] | | Non-Hispanic, single-race white[2] | | Non-Hispanic, single-race black[2] | | Hispanic[3] | |
|---|---|---|---|---|---|---|---|---|
| | Number | Rate | Number | Rate | Number | Rate | Number | Rate |
| United States[4] | 21,467 | 5.66 | 8,893 | 4.55 | 6,127 | 11.10 | 4,487 | 5.06 |
| Male | 12,068 | 6.23 | 4,991 | 4.98 | 3,458 | 12.35 | 2,502 | 5.55 |
| Female | 9,399 | 5.07 | 3,902 | 4.09 | 2,669 | 9.81 | 1,985 | 4.56 |
| Alabama | 405 | 7.01 | 182 | 5.39 | 192 | 10.91 | 13 | * |
| Alaska | 60 | 5.95 | 20 | 3.95 | 2 | * | 8 | * |
| Arizona | 451 | 5.59 | 129 | 3.93 | 33 | 7.67 | 213 | 6.25 |
| Arkansas | 279 | 7.54 | 158 | 6.69 | 85 | 12.20 | 24 | 5.86 |
| California | 1,909 | 4.20 | 421 | 3.42 | 189 | 8.45 | 957 | 4.53 |
| Colorado | 298 | 4.74 | 150 | 4.11 | 22 | 7.26 | 111 | 6.23 |
| Connecticut | 147 | 4.23 | 61 | 3.30 | 34 | 7.69 | 47 | 5.36 |
| Delaware | 62 | 5.84 | 21 | 4.06 | 33 | 11.90 | 7 | * |
| District of Columbia | 64 | 6.95 | 3 | * | 53 | 12.46 | 5 | * |
| Florida | 1,332 | 6.01 | 392 | 4.09 | 523 | 10.86 | 345 | 5.13 |
| Georgia | 888 | 7.04 | 271 | 4.87 | 513 | 11.73 | 76 | 4.36 |
| Hawaii | 116 | 6.83 | 9 | * | 8 | * | 25 | 9.69 |
| Idaho | 109 | 5.09 | 78 | 4.71 | 1 | * | 20 | 5.64 |
| Illinois | 942 | 6.50 | 382 | 4.95 | 336 | 13.72 | 160 | 5.27 |
| Indiana | 556 | 6.81 | 346 | 5.81 | 134 | 13.08 | 48 | 6.10 |
| Iowa | 191 | 5.05 | 124 | 4.23 | 31 | 11.85 | 20 | 5.41 |
| Kansas | 236 | 6.51 | 126 | 4.98 | 28 | 10.87 | 55 | 9.20 |
| Kentucky | 315 | 5.84 | 239 | 5.52 | 47 | 9.49 | 15 | * |
| Louisiana | 454 | 7.62 | 170 | 5.58 | 253 | 11.44 | 25 | 5.30 |
| Maine | 67 | 5.44 | 59 | 5.35 | 3 | * | 1 | * |
| Maryland | 432 | 6.08 | 109 | 3.68 | 224 | 10.23 | 47 | 3.77 |
| Massachusetts | 290 | 4.20 | 143 | 3.61 | 62 | 9.08 | 63 | 4.56 |
| Michigan | 684 | 6.22 | 302 | 4.04 | 277 | 13.47 | 56 | 7.84 |
| Minnesota | 342 | 5.08 | 172 | 3.74 | 76 | 9.26 | 35 | 7.01 |
| Mississippi | 306 | 8.27 | 117 | 6.29 | 175 | 11.08 | 7 | * |
| Missouri | 460 | 6.28 | 292 | 5.44 | 110 | 10.39 | 34 | 7.71 |
| Montana | 55 | 4.78 | 40 | 4.34 | 1 | * | 1 | * |
| Nebraska | 149 | 5.85 | 94 | 5.33 | 19 | * | 24 | 5.78 |
| Nevada | 217 | 6.08 | 83 | 6.37 | 37 | 8.11 | 65 | 4.88 |
| New Hampshire | 43 | 3.58 | 35 | 3.39 | 2 | * | 2 | * |
| New Jersey | 390 | 3.85 | 121 | 2.66 | 123 | 8.86 | 121 | 4.38 |
| New Mexico | 131 | 5.69 | 34 | 5.27 | 2 | * | 76 | 5.95 |
| New York | 974 | 4.31 | 392 | 3.54 | 266 | 8.03 | 182 | 3.52 |
| North Carolina | 797 | 6.70 | 316 | 4.98 | 333 | 12.03 | 88 | 4.79 |
| North Dakota | 59 | 5.55 | 40 | 5.12 | 3 | * | 2 | * |
| Ohio | 938 | 6.94 | 528 | 5.42 | 324 | 14.59 | 45 | 6.05 |
| Oklahoma | 353 | 7.09 | 154 | 5.41 | 58 | 14.02 | 55 | 7.29 |
| Oregon | 176 | 4.17 | 102 | 3.61 | 10 | * | 44 | 5.50 |
| Pennsylvania | 805 | 5.93 | 413 | 4.55 | 222 | 12.49 | 115 | 7.27 |
| Rhode Island | 53 | 5.04 | 24 | 3.99 | 9 | * | 14 | * |
| South Carolina | 406 | 7.16 | 156 | 4.89 | 210 | 12.59 | 29 | 5.52 |
| South Dakota | 70 | 5.89 | 44 | 5.19 | 2 | * | 4 | * |
| Tennessee | 560 | 6.93 | 291 | 5.46 | 194 | 12.19 | 48 | 6.13 |
| Texas | 2,083 | 5.50 | 577 | 4.60 | 519 | 10.78 | 890 | 4.97 |
| Utah | 261 | 5.53 | 163 | 4.75 | 5 | * | 59 | 7.25 |
| Vermont | 35 | 6.44 | 32 | 6.49 | 1 | * | 1 | * |
| Virginia | 558 | 5.59 | 247 | 4.51 | 185 | 8.87 | 72 | 5.00 |
| Washington | 401 | 4.66 | 190 | 3.88 | 40 | 10.20 | 78 | 4.85 |
| West Virginia | 130 | 7.12 | 109 | 6.56 | 13 | * | 2 | * |
| Wisconsin | 393 | 6.13 | 208 | 4.56 | 103 | 15.55 | 45 | 7.07 |
| Wyoming | 35 | 5.33 | 24 | 4.73 | 2 | * | 8 | * |

See footnotes at end of table.

**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, 2018—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 1997 Office of Management and Budget standards; see Technical Notes in this report]

| Area and sex | Total[1] | | Non-Hispanic, single-race white[2] | | Non-Hispanic, single-race black[2] | | Hispanic[3] | |
|---|---|---|---|---|---|---|---|---|
| | Number | Rate | Number | Rate | Number | Rate | Number | Rate |
| Puerto Rico | 141 | 6.58 | – | * | – | * | 141 | 6.77 |
| U.S. Virgin Islands | --- | --- | --- | --- | --- | --- | --- | --- |
| Guam | 36 | 11.37 | – | * | – | * | – | * |
| American Samoa | --- | --- | --- | --- | --- | --- | --- | --- |
| Northern Marianas | 6 | * | – | * | – | * | – | * |

* Rate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
– Quantity zero.
--- Data not available.
[1]Includes race and origin groups not shown separately; see Technical Notes in this report.
[2]Includes only one race reported on the death certificate; see Technical Notes in this report.
[3]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[4]Excludes data for Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

## Table 16. Number of maternal deaths and maternal mortality rates for selected causes, by race and Hispanic origin: United States, 2018

[Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | Non-Hispanic, single race | | | | | Hispanic[3] |
|---|---|---|---|---|---|---|---|
| | | White[2] | Black[2] | American Indian or Alaska Native[2] | Asian[2] | Native Hawaiian or Other Pacific Islander[2] | |
| | Number | | | | | | |
| Maternal causes (A34,000–095,098–099) | 658 | 291 | 206 | 9 | 32 | 4 | 105 |
| Direct obstetric causes (A34,000–095) | 509 | 215 | 164 | 5 | 27 | 4 | 86 |
| Pregnancy with abortive outcome (000–007) | 29 | 9 | 16 | – | – | – | 4 |
| Ectopic pregnancy (000) | 24 | 9 | 12 | – | – | – | 3 |
| Spontaneous abortion (003) | 2 | – | 2 | – | – | – | – |
| Medical abortion (004) | – | – | – | – | – | – | – |
| Other abortion (005) | 1 | – | – | – | – | – | 1 |
| Other and unspecified pregnancy with abortive outcome (001–002,006–007) | 2 | – | 2 | – | – | – | – |
| Other direct obstetric causes (A34,010–092) | 459 | 197 | 141 | 5 | 27 | 4 | 77 |
| Eclampsia and pre-eclampsia (011,013–016) | 35 | 15 | 14 | – | 2 | – | 4 |
| Hemorrhage of pregnancy and childbirth and placenta previa (020,044–046,067,072) | 30 | 12 | 7 | – | 1 | – | 10 |
| Complications predominantly related to the puerperium (A34,085–092) | 71 | 27 | 26 | – | 6 | 1 | 11 |
| Obstetrical tetanus (A34) | – | – | – | – | – | – | – |
| Obstetric embolism (088) | 43 | 17 | 14 | – | 4 | 1 | 7 |
| Other complications predominantly related to the puerperium (085–087,089–092) | 28 | 10 | 12 | – | 2 | – | 4 |
| All other direct obstetric causes (010,012,021–043, 047–066,068–071,073–075) | 323 | 143 | 94 | 5 | 18 | 3 | 52 |
| Obstetric death of unspecified cause (095) | 21 | 9 | 7 | – | – | – | 5 |
| Indirect obstetric causes (098–099) | 149 | 76 | 42 | 4 | 5 | – | 19 |
| Death from any obstetric cause occurring more than 42 days but less than 1 year after delivery (O96)[4] | 277 | 142 | 77 | 6 | 7 | 2 | 40 |

See footnotes at end of table.

## Table 16. Number of maternal deaths and maternal mortality rates for selected causes, by race and Hispanic origin: United States, 2018—Con.

[Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget standards. Data for specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies between reporting these items on death certificates and on censuses and surveys; see Technical Notes in this report]

| Cause of death (based on *International Classification of Diseases, 10th Revision*) | Total[1] | Non-Hispanic, single race | | | | | Hispanic[3] |
|---|---|---|---|---|---|---|---|
| | | White[2] | Black[2] | American Indian or Alaska Native[2] | Asian[2] | Native Hawaiian or Other Pacific Islander[2] | |
| | Rate per 100,000 live births | | | | | | |
| Maternal causes (A34,000–O95,O98–O99) | 17.4 | 14.9 | 37.3 | * | 13.3 | * | 11.8 |
| Direct obstetric causes (A34,000–O95) | 13.4 | 11.0 | 29.7 | * | 11.2 | * | 9.7 |
| Pregnancy with abortive outcome (000–007) | 0.8 | * | * | * | * | * | * |
| Ectopic pregnancy (000) | 0.6 | * | * | * | * | * | * |
| Spontaneous abortion (003) | * | * | * | * | * | * | * |
| Medical abortion (004) | * | * | * | * | * | * | * |
| Other abortion (005) | * | * | * | * | * | * | * |
| Other and unspecified pregnancy with abortive outcome (001–002,006–007) | * | * | * | * | * | * | * |
| Other direct obstetric causes (A34,010–092) | 12.1 | 10.1 | 25.5 | * | 11.2 | * | 8.7 |
| Eclampsia and pre-eclampsia (011,013–016) | 0.9 | * | * | * | * | * | * |
| Hemorrhage of pregnancy and childbirth and placenta previa (020,044–046,067,072) | 0.8 | * | * | * | * | * | * |
| Complications predominantly related to the puerperium (A34,085–092) | 1.9 | 1.4 | 4.7 | * | * | * | * |
| Obstetrical tetanus (A34) | * | * | * | * | * | * | * |
| Obstetric embolism (088) | 1.1 | * | * | * | * | * | * |
| Other complications predominantly related to the puerperium (085–087,089–092) | 0.7 | * | * | * | * | * | * |
| All other direct obstetric causes (010,012,021–043, 047–066,068–071,073–075) | 8.5 | 7.3 | 17.0 | * | * | * | 5.9 |
| Obstetric death of unspecified cause (095) | 0.6 | * | * | * | * | * | * |
| Indirect obstetric causes (098–099) | 3.9 | 3.9 | 7.6 | * | * | * | * |
| Death from any obstetric cause occurring more than 42 days but less than 1 year after delivery (096)[4] | 7.3 | 7.3 | 13.9 | * | * | * | 4.5 |

– Quantity zero.
* Rate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.
[1]Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes in this report.
[2]Only one race was reported on the death certificate; see Technical Notes in this report.
[3]Includes persons of Hispanic origin of any race; see Technical Notes in this report.
[4]Late maternal death.

SOURCE: National Center for Health Statistics, 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 2018 are based on records of deaths that occurred during 2018 and were received as of July 16, 2019. Data for earlier years can be obtained via CDC WONDER (9).

The U.S. Standard Certificate of Death, which the states use as a model, was revised in 2003 (4). Prior to 2003, the certificate had not been revised since 1989 (14). Beginning in 2018, all 50 states and the District of Columbia used the 2003 revision of the U.S. Standard Certificate of Death for the entire year. During 2003–2017, both the 1989 and the 2003 certificates were used. For this transitional period, the race and Hispanic ethnicity of decedents was reported using the 1977 Office of Management and Budget (OMB) guidelines (1989 certificate), which allowed the reporting of only one race and provided four choices. The 1997 OMB guidelines (2003 certificate) allowed the reporting of more than one race and provided five categories (34).

Data for Guam, Commonwealth of the Northern Mariana Islands (Northern Marianas), and Puerto Rico are included in tables showing data by state but are not included in U.S. totals. Data for American Samoa and U.S. Virgin Islands for the 2018 data year were not available at the time of file closing and, so, are not included in this report. In 2018, Guam, Northern Marianas, and Puerto Rico collected and reported death data using the 2003 revision of the U.S. Standard Certificate of Death. Mortality statistics are based on information submitted by the jurisdictions and coded by the National Center for Health Statistics (NCHS) through the Vital Statistics Cooperative Program. For the 2018 data year, all states, the District of Columbia, New York City, and Puerto Rico submitted mortality medical data and demographic data in electronic data files to NCHS. Guam and Northern Marianas submitted copies of death certificates from which NCHS entered and coded all medical and demographic data.

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 Northern Marianas and Puerto Rico exclude deaths of nonresidents for each area. For Guam, however, mortality statistics exclude deaths that occurred to a nonresident of 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 according to World Health Organization (WHO) regulations, which specify that member countries classify and code causes of death according to 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) (46). For earlier years, causes of death were classified according to the revisions then in use: 1979–1998, Ninth Revision; 1968–1978, Eighth Revision; 1958–1967, Seventh Revision; and 1949–1957, Sixth Revision.

Changes in the 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 10th revisions, Eighth and Ninth revisions, Seventh and Eighth revisions, and Sixth and Seventh revisions may be found in other NCHS reports and independent tabulations (47–52).

ICD not only details disease classification but also provides definitions, tabulation lists, the format of the death certificate, and 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 (12,53,54). 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) (55), multiple-cause codes are inputted in 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) (56,57) 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 (58), 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 processed automatically by the MICAR and ACME computer systems. Records that cannot be automatically processed by MICAR are manually coded for multiple cause and then further processed through ACME to determine the underlying cause of death. In 2018, 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" (11). 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 (59–61).

## Tabulation lists and cause-of-death ranking

Tabulation lists for ICD–10 are published in NCHS Instruction Manual, "ICD–10 Cause-of-Death Lists for Tabulating Mortality Statistics" (updated September 2018 to include WHO updates to ICD–10 for data year 2017) (62). 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 (62). 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 select causes of death only. 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 available from the NCHS website (https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-tables-508.pdf) and through CDC WONDER (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 2018" (2).

Leading cause-of-death trends discussed in this report are based on cause-of-death data according to ICD–10 for 1999–2018 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" (49) and "Deaths: Final Data for 1999" (63).

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 NCHS 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 (47,49). 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 2018

No ICD–10 codes were added or deleted in data year 2018. Information on categories added or deleted in previous years is available from the NCHS Instruction Manual, Part 9: https://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2017.pdf (62).

## 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 one death coded to Sequelae of terrorism.

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. A death coded to Sequelae of terrorism is one in which an act of terrorism was the underlying cause of death, but the incident occurred a year or more before death.

## Enterocolitis due to *Clostridium difficile*

The number of deaths from Enterocolitis due to *Clostridium difficile* (*C. difficile*) (ICD–10 code A04.7) was 5,249 in 2018. Deaths from this cause increased dramatically from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (9). Because of the increasing importance of this cause of death (35,36), beginning with data year 2006, *C. difficile* was added to the list of rankable causes.

## Quality of reporting and processing cause of death

The 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 which deaths occur for which underlying causes are impossible to determine, 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 the 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 1.16% in 2017 to 1.15% in 2018.

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 "ICD–10 ACME Decision Tables for Classifying Underlying Causes of Death, 2016," available from: https://www.cdc.gov/nchs/data/dvs/2c_2016.pdf (55). No new coding or classification rule changes occurred in 2018. 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 Manuals, Parts 2a, 11, and 20 (53,64,65). In 2018, some states did not confirm some or all deaths from rare causes.

## Codes for dementia-related causes

Causes of death attributable to dementia-related mortality include ICD–10 codes F01, Vascular dementia; F03, Unspecified dementia; G30, Alzheimer disease; and G31, Other degenerative diseases of nervous system, not elsewhere classified.

## 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, 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; X59–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) (4). This change was implemented to reflect the increasing diversity of the U.S. population and to be consistent with the decennial census and the 1997 "Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity," issued by OMB (5). This revision replaced standards that were issued in 1977 (15). The new standards mandate the collection of more than one race, where applicable, for federal data (5) and require the collection of information on a minimum set of five races (more than the minimum number of race categories are reported on death certificates) (4). 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 2018 (Table I). In 2018, 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 2018, only one decedent reported five races.

During 2003–2017, both the 1989 and the 2003 standard death certificates were used. For this transitional period, states using the 1989 certificate reported the race and Hispanic ethnicity of decedents based on the 1977 OMB guidelines, which allowed the reporting of only one race and provided four choices: 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 (15). States using the 2003 death certificate reported the race and Hispanic ethnicity of decedents based on the 1997 OMB guidelines, which allowed the reporting of more than one race and provided five categories (14,15,5). These guidelines provide for the reporting of Asian persons separately from NHOPI persons (14).

Beginning with data year 2018, multiple race data were collected and reported for the entire year by all 50 states and the District of Columbia. Previously, data by race for death certificates collecting only one race—the source of the numerators for death rates—were incompatible with the reporting in other states that had adopted the new standards and 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 multiple-race data from death certificates and population data for multiple-race persons had to be "bridged" to single-race categories. The bridging procedures used for the mortality records, and the multiple-race population estimates were similar (26,27). Multiracial decedents were imputed to a single race (white, black, AIAN, or API) according to their combination of races, Hispanic origin, and geographic area indicated on the death certificate. The imputation procedure is described in detail in "NCHS Procedures for Multiple-Race and Hispanic Origin Data: Collection, Coding, Editing, and Transmitting," available from: https://www.cdc.gov/nchs/data/dvs/Multiple_race_documentation_5-10-04.pdf. Similarly, when calculating infant mortality rates, multiracial infants were bridged to a single race. The bridging procedure for multiple-race mothers and fathers was based on the procedure used to bridge the multiple-race population estimates (44). In 2018, use of the bridged-race process was no longer needed because all states collected data on race according to 1997 OMB guidelines for the entire year, however, bridged estimates will be calculated through 2020 to inform the reporting of trends over time.

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.

Changing from bridged-race to unbridged data had a relatively minor impact on age-adjusted death rates in 2018. Table A presents age-adjusted rates for 2018 based on 1977 bridged-race categories and 1997 race categories. Age-adjusted rates based on unbridged data were higher than rates based on bridged data for the non-Hispanic white population by 0.4% and for the non-Hispanic black population by 1.5%. The difference between rates for the non-Hispanic AIAN population was not significant.

*Quality of race and Hispanic-origin data*—Death rates for Hispanic, non-Hispanic Asian, non-Hispanic NHOPI, and non-Hispanic API populations are affected by 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 and Hispanic decedents, as well as undercounts of these groups in censuses (28,29,66,67).

A number of studies have been conducted on the reliability of race and Hispanic origin reported on the death certificate by comparing them with race and Hispanic origin reported on another data collection instrument, such as the census or a survey (28,29,66,67). Inconsistencies may arise because of

**Table I. Year state started reporting multiple race and year state began using the revised standard certificate of death: Each state, 2003–2018**

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

[1]Indicates year in which the 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.
[2]Began reporting multiple race in March.
[3]Began implementing revised certificate in March.
[4]Began reporting multiple race in July.
[5]Began implementing revised certificate in July.
[6]Began implementing revised certificate in June.
[7]Began implementing revised certificate in September.
[8]Began reporting multiple race in September.
[9]Began reporting multiple race in mid-April.
[10]Began implementing revised certificate in mid-April.
[11]Began reporting multiple race in November.
[12]Began implementing revised certificate in November.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

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 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 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, so, may be considered more valid. A high level of agreement between the death certificate and the census or survey report is essential to assure unbiased death rates by race and ethnicity.

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 a total of 38 Current Population Surveys (CPS) conducted by the Census Bureau for 1979–2011 (28,29). 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. Using the new race standard, Asian and Pacific Islander are separate categories. 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 some race-ethnicity populations.

In addition, undercoverage of minority groups in the census and resultant population estimates introduces biases into death rates by race and Hispanic origin (28,29,66–69). 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 origin and race: United States, 2018

[By state of occurrence. Data exclude deaths with origin not stated or not classifiable. Records with race not stated or not classifiable are imputed; see Technical Notes]

| Origin and race | Deaths | Percent of non-Hispanic deaths |
|---|---|---|
| Non-Hispanic | 2,626,499 | 100.0 |
| One race | 2,613,795 | 99.5 |
| White | 2,182,552 | 83.1 |
| Black | 341,408 | 13.0 |
| AIAN | 17,790 | 0.7 |
| Asian | 68,768 | 2.6 |
| NHOPI | 3,277 | 0.1 |
| Two or more races | 12,704 | 0.5 |
| Two races | 11,930 | 0.5 |
| Black and White | 1,876 | 0.1 |
| Black and AIAN | 755 | 0.0 |
| Black and Asian | 280 | 0.0 |
| Black and NHOPI | 91 | 0.0 |
| AIAN and White | 4,697 | 0.2 |
| AIAN and Asian | 148 | 0.0 |
| AIAN and NHOPI | 28 | 0.0 |
| Asian and White | 2,289 | 0.1 |
| Asian and NHOPI | 964 | 0.0 |
| NHOPI and White | 802 | 0.0 |
| Three races | 756 | 0.0 |
| Black, AIAN and White | 175 | 0.0 |
| Black, AIAN and Asian | 8 | 0.0 |
| Black, AIAN and NHOPI | 3 | 0.0 |
| Black, Asian and White | 45 | 0.0 |
| Black, Asian and NHOPI | 6 | 0.0 |
| Black, NHOPI and White | 12 | 0.0 |
| AIAN, Asian and White | 22 | 0.0 |
| AIAN, NHOPI and White | 8 | 0.0 |
| AIAN, Asian and NHOPI | 6 | 0.0 |
| Asian, NHOPI and White | 471 | 0.0 |
| Four races | 17 | 0.0 |
| Black, AIAN, Asian and White | 6 | 0.0 |
| Black, AIAN, Asian and NHOPI | 1 | 0.0 |
| Black, AIAN, NHOPI and White | 2 | 0.0 |
| Black, Asian, NHOPI and White | – | 0.0 |
| AIAN, Asian, NHOPI and White | 8 | 0.0 |
| Five races | 1 | 0.0 |
| Black, AIAN, Asian, NHOPI and White | 1 | 0.0 |

| Origin and race | Deaths | Percent of Hispanic deaths |
|---|---|---|
| Hispanic | 204,719 | 100.0 |
| One race | 202,898 | 99.1 |
| White | 197,484 | 96.5 |
| Black | 3,584 | 1.8 |
| AIAN | 981 | 0.5 |
| Asian | 614 | 0.3 |
| NHOPI | 235 | 0.1 |
| Two or more races | 1,821 | 0.9 |
| Two races | 1,660 | 0.8 |
| Black and White | 398 | 0.2 |
| Black and AIAN | 29 | 0.0 |
| Black and Asian | 10 | 0.0 |
| Black and NHOPI | 9 | 0.0 |
| AIAN and White | 677 | 0.3 |
| AIAN and Asian | 16 | 0.0 |
| AIAN and NHOPI | 4 | 0.0 |
| Asian and White | 370 | 0.2 |
| Asian and NHOPI | 22 | 0.0 |
| NHOPI and White | 125 | 0.1 |
| Three races | 157 | 0.1 |
| Black, AIAN and White | 29 | 0.0 |
| Black, AIAN and Asian | – | 0.0 |
| Black, AIAN and NHOPI | 2 | 0.0 |
| Black, Asian and White | 9 | 0.0 |
| Black, Asian and NHOPI | – | 0.0 |
| Black, NHOPI and White | 1 | 0.0 |
| AIAN, Asian and White | 15 | 0.0 |
| AIAN, NHOPI and White | 4 | 0.0 |
| AIAN, Asian and NHOPI | – | 0.0 |
| Asian, NHOPI and White | 97 | 0.0 |
| Four races | 4 | 0.0 |
| Black, AIAN, Asian and White | 2 | 0.0 |
| Black, AIAN, Asian and NHOPI | – | 0.0 |
| Black, AIAN, NHOPI and White | – | 0.0 |
| Black, Asian, NHOPI and White | – | 0.0 |
| AIAN, Asian, NHOPI and White | 2 | 0.0 |
| Five races | – | 0.0 |
| Black, AIAN, Asian, NHOPI and White | – | 0.0 |

0.0 Quantity more than zero but less than 0.05.
– Quantity zero.

NOTE: AIAN is American Indian or Alaska Native, and NHOPI is Native Hawaiian or Other Pacific Islander.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

population (overcounted by approximately 1.13%) and non-Hispanic black population (undercounted by approximately 1.84%) (68). 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 (70).

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

*Race not stated or not classifiable and Hispanic origin not stated or not classifiable*—In 2018, death records with race not stated or not classifiable (1.1% of all records) were imputed to one of the five single-race categories by assigning the record a single-race value based on the last single-race record processed. Records with Hispanic origin not stated or not classifiable were not imputed and accounted for 0.3% of all records.

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

In 2018, multiple race was reported on the revised birth certificates of all 50 states, the District of Columbia, Puerto Rico, Guam, and Northern Marianas using the 2003 revision of the U.S. Standard Certificate of Birth (71).

Infant mortality rates by race and origin are based on numbers of resident infant deaths by race and origin and numbers of resident live births by race and origin of mother for the United States. In computing infant mortality rates, deaths and live births of unknown or not classifiable origin are not distributed among the specified Hispanic and non-Hispanic groups. In the United States in 2018, the percentage of infant deaths of unknown origin was 1.0%, and the percentage of live births to mothers of unknown origin was 0.9%.

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 (44). 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 (44,66).

## 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 (72). 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 (73), using a methodology similar to that of the 1989–1991 decennial life tables (74). The methodology was again revised for data years 2000–2007 using a methodology similar to that of the 1999–2001 decennial life tables (75).

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 (76), 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 (77). Life table data shown in this report for data years 2001–2018 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 (25), the values may differ from those previously published in annual final mortality and life table reports. 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) (30), 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 (28,29). 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.

Race-specific life tables for 2018 presented in this report are based on the new standard and show estimates for single race groups. These estimates may not be comparable to those of previous years that are based on bridged-race groups. To document the impact of changing to the 1997 standards, trend life expectancy estimates for bridged-race categories are included

in this report for years 2006–2018 (Table I–21). Estimates for bridged-race categories will continue to be calculated through data year 2020. The category "Hispanic" is consistent with previous reports, so trend data for the Hispanic population are presented. Life tables by race and ethnicity are shown in this report for 2018 with trend data shown from 2010 through 2018 for the total population and the Hispanic population (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 (78–80).

## 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 "Deaths: Injuries, 2002," available from: https://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_10.pdf (81). Data for later years are available through CDC WONDER (https://wonder.cdc.gov/) and CDC WISQARS (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 2018. 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: "Births: Final Data for 2018" (71). 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, 2018, 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 (44), 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.

## Maternal mortality

Maternal mortality rates are computed based on the number of live births. The maternal mortality rate indicates the likelihood of a pregnant woman dying of maternal causes. The rates are calculated by dividing the number of maternal deaths in a calendar year by the number of live births registered for the same period, and are presented as rates per 100,000 live births. Because the population of pregnant women who are at risk of a maternal death is unknown, the number of live births is used as the denominator.

Maternal deaths are defined by WHO as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" (11). Included in these deaths are ICD–10 codes A34, O00–O95, and O98–O99.

The 2003 revision of the U.S. Standard Certificate of Death introduced a pregnancy-related checkbox question to help identify pregnancy-related deaths. Adopting a pregnancy status question consistent with the standard death certificate increased the identification of maternal deaths. Because maternal mortality was not comparable between states using a pregnancy checkbox and those not using a checkbox, NCHS suspended publishing maternal mortality data in 2007 until all states adopted use of the revised certificate (45).

In 2018, all 50 states and the District of Columbia used the revised certificate for the entire year, including its pregnancy checkbox (California implemented a different checkbox from that on the U.S. Standard Certificate of Death that specifies if pregnant within the last year but does not indicate detail on

whether pregnant at the time of death, pregnant 42 days before death, or pregnant 2 days to 1 year before death) (45).

Because maternal mortality data among states are now comparable, NCHS is resuming publication of maternal mortality statistics. Maternal mortality data are included in this report for the first time since 2007.

NCHS recently adopted a new method (called the 2018 method) for coding maternal deaths, which was developed to improve the quality of maternal mortality data after studies concluded that implementation of the checkbox had resulted in overreporting of maternal deaths, particularly among older women (45). The 2018 method further restricts application of the pregnancy checkbox to decedents aged 10–44 (previously application of the checkbox was restricted to age group 10–54). In addition, if the checkbox is the only indication of pregnancy on the death certificate and no other pregnancy information is provided in the cause-of-death section, the 2018 method restricts assignment of maternal codes solely to the underlying cause of death.

## 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 Table I–5 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-tables-508.pdf.

### Marital status

Mortality data by marital status no longer appear in the printed version of this report but are available in Table I–6 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-tables-508.pdf.

### Educational attainment

Mortality data by educational attainment no longer appear in the printed version of this report but are available in Table I–7 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-tables-508.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/nvsr69/nvsr69-13-tables-508.pdf.

## 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 2018 are shown for 5-year age groups by race and Hispanic origin in Table III (16).

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, 2018 (16). Rates for Puerto Rico also are based on population estimates from the 2010 census as of July 1, 2018, and are provided by the Census Bureau (82). Rates for Guam and Northern Marianas are based on population estimates provided by the Census Bureau's International Data Base (83). 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 2011–2018 are based on postcensal population estimates consistent with the 2010 census, estimated as of July 1 (16,18–24). Rates for 2010 are based on populations enumerated as of April 1, 2010 (17). 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 (25). Death rates for 2000 are based on populations enumerated as of April 1, 2000 (84). Rates for 1991–1999 are based on intercensal population estimates consistent with the 2000 census levels (85).

Prior to 2018, population estimates were produced under a collaborative arrangement with the Census Bureau, based on the 2000 census counts by age, race, and sex, and were modified for consistency with 1977 OMB race categories and historical categories for death data (15,86). The modification procedures are described in detail elsewhere (26,27).

Beginning with 2018, death rates are based on unbridged, multiple-race data collected on death certificates according to the 1997 OMB standards. The denominator of the rates is unbridged, multiple-race population data collected according to the same standards by the U.S. Census Bureau. Overall, changing from bridged-race to unbridged data had a relatively minor impact on mortality rates in 2018 (6).

## Computing rates

Except for infant and maternal mortality rates, rates are on an annual basis per 100,000 estimated population residing in the specified area. Infant and maternal 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 ($R_i$) 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

## Table III. Estimated population by 5-year age groups, according to race and Hispanic origin and sex: United States, 2018

[Populations are postcensal estimates based on 2010 census estimated as of July 1, 2018; see Technical Notes in this report]

| Race, Hispanic origin, and sex | Total | Age group (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 1 year | 1–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 |
| All origins[1] | 327,167,434 | 3,848,208 | 15,962,067 | 20,195,642 | 20,879,527 | 21,097,221 | 21,873,579 | 23,561,756 | 22,136,018 | 21,563,587 |
| Male | 161,128,679 | 1,968,505 | 8,163,697 | 10,315,990 | 10,658,840 | 10,774,908 | 11,201,547 | 12,018,838 | 11,191,871 | 10,790,190 |
| Female | 166,038,755 | 1,879,703 | 7,798,370 | 9,879,652 | 10,220,687 | 10,322,313 | 10,672,032 | 11,542,918 | 10,944,147 | 10,773,397 |
| Non-Hispanic, single race[2]: | | | | | | | | | | |
| White | 197,546,407 | 1,901,862 | 7,864,666 | 9,993,820 | 10,614,714 | 11,142,697 | 11,730,085 | 12,793,828 | 12,392,215 | 12,184,509 |
| Male | 97,418,608 | 974,706 | 4,037,757 | 5,123,491 | 5,442,265 | 5,718,583 | 6,025,174 | 6,530,723 | 6,271,679 | 6,137,490 |
| Female | 100,127,799 | 927,156 | 3,826,909 | 4,870,329 | 5,172,449 | 5,424,114 | 5,704,911 | 6,263,105 | 6,120,536 | 6,047,019 |
| Black | 40,902,223 | 528,430 | 2,195,577 | 2,781,726 | 2,846,100 | 2,927,001 | 3,127,543 | 3,477,092 | 2,915,530 | 2,767,220 |
| Male | 19,560,023 | 269,097 | 1,112,581 | 1,409,935 | 1,441,436 | 1,484,024 | 1,585,198 | 1,746,680 | 1,423,424 | 1,320,630 |
| Female | 21,342,200 | 259,333 | 1,082,996 | 1,371,791 | 1,404,664 | 1,442,977 | 1,542,345 | 1,730,412 | 1,492,106 | 1,446,590 |
| American Indian or Alaska Native | 2,417,371 | 31,525 | 130,716 | 171,054 | 177,641 | 178,610 | 184,162 | 200,130 | 170,496 | 156,743 |
| Male | 1,189,703 | 16,114 | 66,670 | 86,906 | 89,958 | 90,979 | 93,539 | 102,205 | 85,824 | 77,933 |
| Female | 1,227,668 | 15,411 | 64,046 | 84,148 | 87,683 | 87,631 | 90,623 | 97,925 | 84,672 | 78,810 |
| Asian | 18,728,675 | 182,275 | 810,104 | 1,024,398 | 1,061,466 | 1,097,417 | 1,292,983 | 1,605,360 | 1,634,132 | 1,562,088 |
| Male | 8,918,924 | 93,516 | 416,108 | 524,051 | 536,298 | 549,970 | 653,178 | 793,743 | 788,445 | 733,443 |
| Female | 9,809,751 | 88,759 | 393,996 | 500,347 | 525,168 | 547,447 | 639,805 | 811,617 | 845,687 | 828,645 |
| Native Hawaiian or Other Pacific Islander | 586,346 | 7,856 | 32,818 | 40,354 | 41,889 | 40,969 | 43,835 | 51,313 | 50,670 | 47,615 |
| Male | 294,994 | 4,017 | 16,729 | 20,547 | 21,229 | 21,018 | 22,506 | 26,492 | 26,031 | 24,467 |
| Female | 291,352 | 3,839 | 16,089 | 19,807 | 20,660 | 19,951 | 21,329 | 24,821 | 24,639 | 23,148 |
| Hispanic[3] | 59,871,746 | 1,007,577 | 4,164,396 | 5,256,407 | 5,278,748 | 4,975,084 | 4,839,172 | 4,877,375 | 4,551,791 | 4,478,782 |
| Male | 30,234,185 | 514,677 | 2,123,725 | 2,677,320 | 2,691,359 | 2,537,685 | 2,490,343 | 2,544,442 | 2,396,015 | 2,323,263 |
| Female | 29,637,561 | 492,900 | 2,040,671 | 2,579,087 | 2,587,389 | 2,437,399 | 2,348,829 | 2,332,933 | 2,155,776 | 2,155,519 |

| 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] | 19,714,301 | 20,747,135 | 20,884,564 | 21,940,985 | 20,331,651 | 17,086,893 | 13,405,423 | 9,267,066 | 6,127,308 | 6,544,503 |
| Male | 9,797,410 | 10,263,995 | 10,277,207 | 10,669,327 | 9,729,536 | 8,034,813 | 6,211,272 | 4,144,674 | 2,590,366 | 2,325,693 |
| Female | 9,916,891 | 10,483,140 | 10,607,357 | 11,271,658 | 10,602,115 | 9,052,080 | 7,194,151 | 5,122,392 | 3,536,942 | 4,218,810 |
| Non-Hispanic, single race[2]: | | | | | | | | | | |
| White | 11,201,675 | 12,552,736 | 13,424,380 | 15,067,528 | 14,557,417 | 12,666,029 | 10,285,916 | 7,199,125 | 4,772,053 | 5,201,152 |
| Male | 5,632,832 | 6,287,182 | 6,670,494 | 7,404,163 | 7,061,814 | 6,056,012 | 4,848,052 | 3,277,281 | 2,053,177 | 1,865,733 |
| Female | 5,568,843 | 6,265,554 | 6,753,886 | 7,663,365 | 7,495,603 | 6,610,017 | 5,437,864 | 3,921,844 | 2,718,876 | 3,335,419 |
| Black | 2,490,221 | 2,589,420 | 2,591,715 | 2,609,607 | 2,284,200 | 1,754,604 | 1,205,737 | 796,677 | 513,818 | 500,005 |
| Male | 1,172,340 | 1,214,301 | 1,213,202 | 1,207,731 | 1,031,907 | 762,528 | 508,320 | 317,148 | 188,551 | 150,990 |
| Female | 1,317,881 | 1,375,119 | 1,378,513 | 1,401,876 | 1,252,293 | 992,076 | 697,417 | 479,529 | 325,267 | 349,015 |
| American Indian or Alaska Native | 140,766 | 144,577 | 149,197 | 156,860 | 137,914 | 106,787 | 76,293 | 48,614 | 29,364 | 25,922 |
| Male | 69,417 | 70,811 | 71,927 | 74,410 | 64,086 | 49,607 | 35,335 | 22,008 | 12,448 | 9,526 |
| Female | 71,349 | 73,766 | 77,270 | 82,450 | 73,828 | 57,180 | 40,958 | 26,606 | 16,916 | 16,396 |
| Asian | 1,437,081 | 1,390,607 | 1,183,352 | 1,091,473 | 986,559 | 823,758 | 599,679 | 404,835 | 268,634 | 272,474 |
| Male | 669,283 | 648,286 | 549,221 | 500,149 | 441,878 | 361,509 | 264,479 | 179,421 | 115,141 | 100,805 |
| Female | 767,798 | 742,321 | 634,131 | 591,324 | 544,681 | 462,249 | 335,200 | 225,414 | 153,493 | 171,669 |
| Native Hawaiian or Other Pacific Islander | 39,421 | 36,989 | 34,697 | 33,467 | 27,659 | 21,656 | 15,153 | 9,142 | 5,655 | 5,188 |
| Male | 20,105 | 18,509 | 17,122 | 16,362 | 13,308 | 10,403 | 7,324 | 4,283 | 2,513 | 2,029 |
| Female | 19,316 | 18,480 | 17,575 | 17,105 | 14,351 | 11,253 | 7,829 | 4,859 | 3,142 | 3,159 |
| Hispanic[3] | 4,108,330 | 3,760,917 | 3,264,648 | 2,749,799 | 2,140,634 | 1,566,030 | 1,116,654 | 740,775 | 495,599 | 499,028 |
| Male | 2,094,048 | 1,896,748 | 1,643,900 | 1,356,435 | 1,023,247 | 725,376 | 499,020 | 314,286 | 200,528 | 181,768 |
| Female | 2,014,282 | 1,864,169 | 1,620,748 | 1,393,364 | 1,117,387 | 840,654 | 617,634 | 426,489 | 295,071 | 317,260 |

[1]Includes origin not stated, origin not classifiable, and two or more races reported; see Technical Notes in this report.
[2]Only one race was reported.
[3]Includes persons of Hispanic origin of any race.

SOURCE: National Center for Health Statistics, estimates of July 1, 2018, U.S. resident population by age, sex, race, and Hispanic origin prepared by U.S. Census Bureau, 2019.

**Table IV. Estimated population for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2018**

[Populations are postcensal estimates based on 2010 census, estimated as of July 1, 2018]

| Area | Total | Area | Total |
|---|---|---|---|
| United States | 327,167,434 | New Jersey | 8,908,520 |
| Alabama | 4,887,871 | New Mexico | 2,095,428 |
| Alaska | 737,438 | New York | 19,542,209 |
| Arizona | 7,171,646 | North Carolina | 10,383,620 |
| Arkansas | 3,013,825 | North Dakota | 760,077 |
| California | 39,557,045 | Ohio | 11,689,442 |
| Colorado | 5,695,564 | Oklahoma | 3,943,079 |
| Connecticut | 3,572,665 | Oregon | 4,190,713 |
| Delaware | 967,171 | Pennsylvania | 12,807,060 |
| District of Columbia | 702,455 | Rhode Island | 1,057,315 |
| Florida | 21,299,325 | South Carolina | 5,084,127 |
| Georgia | 10,519,475 | South Dakota | 882,235 |
| Hawaii | 1,420,491 | Tennessee | 6,770,010 |
| Idaho | 1,754,208 | Texas | 28,701,845 |
| Illinois | 12,741,080 | Utah | 3,161,105 |
| Indiana | 6,691,878 | Vermont | 626,299 |
| Iowa | 3,156,145 | Virginia | 8,517,685 |
| Kansas | 2,911,505 | Washington | 7,535,591 |
| Kentucky | 4,468,402 | West Virginia | 1,805,832 |
| Louisiana | 4,659,978 | Wisconsin | 5,813,568 |
| Maine | 1,338,404 | Wyoming | 577,737 |
| Maryland | 6,042,718 | Puerto Rico | 3,195,153 |
| Massachusetts | 6,902,149 | U.S. Virgin Islands | 106,977 |
| Michigan | 9,995,915 | Guam | 167,772 |
| Minnesota | 5,611,179 | American Samoa | 50,826 |
| Mississippi | 2,986,530 | Northern Marianas | 51,994 |
| Missouri | 6,126,452 | | |
| Montana | 1,062,305 | | |
| Nebraska | 1,929,268 | | |
| Nevada | 3,034,392 | | |
| New Hampshire | 1,356,458 | | |

SOURCES: U.S. Census Bureau. 2018 population estimates. Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2018. Available from: https://www2.census.gov/programs-surveys/popest/tables/2010-2018/state/totals/nst-est2018-01.xlsx; and International data base, 2018 (available from: https://www.census.gov/data-tools/demo/idb/informationGateway.php).

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: "Age Standardization of Death Rates: Implementation of the Year 2000 Standard" (87). 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, 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 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: National Center for Health Statistics, 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 (88,89). 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 (88). Using the properties of the Poisson distribution, the standard error (SE) associated with the number of deaths ($D$) is

$$\mathrm{SE}(D) = \sqrt{\mathrm{var}(D)} = \sqrt{D} \qquad [1]$$

where var($D$) denotes the variance of $D$.

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

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

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,

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

For crude and age-specific death rates,

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

Thus,

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

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

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

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 "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

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

For tables showing infant and maternal 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:

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

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

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

For maternal mortality rates, Formulas 5 and 6 may be used, substituting the maternal mortality rate for the IMR.

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–5, I–6, and I–7, 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 and maternal 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 and maternal 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 (10,87,89). Formula 7 is used to calculate 95% confidence limits for the death rate when the normal approximation is appropriate:

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

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 also can 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

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

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 also can 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 (87,89). 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:

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

and

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

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, $R$,

$$L(D) = L \bullet D \text{ and } U(D) = U \bullet D \qquad [9]$$

$$L(R) = L \bullet R \text{ and } U(R) = U \bullet R \qquad [10]$$

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

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

and

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

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 and maternal mortality rates, and rates that are subject to sampling variability in the denominator are somewhat more complicated (11,89).

Refer to the most recent version of the Mortality Technical Appendix for more details: https://www.cdc.gov/nchs/data/statab/techap95.pdf.

**Table VI. Lower and upper 95% confidence limit factors for the number of deaths and death rate when the 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: National Center for Health Statistics, National Vital Statistics System, Mortality.

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 race AIAN females aged 1–4 have a death rate ($R_1$) of 39.5 based on 50 deaths, and non-Hispanic Asian 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

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

and

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

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

and

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

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

This test also may 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 (90). 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 (91), $E(X) = yz$ and $Var(X) = yz^2$. For the number of deaths, $D$, $E(D) = D$ and $Var(D) = D$. It follows that $y = D$ and $z = 1$, and thus,

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

From Equation 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 $Var(R) = D/P^2$. It follows, in this case, that $y = D$ and $z = P^{-1}$, and thus,

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

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 Equation 12 in its simplified form gives:

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

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

Using the results of Equations 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

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

where $\Gamma^{-1}$ 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

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

For more detail regarding the derivation of the gamma method and its application to age-adjusted death rates and other mortality statistics, see references 10, 88, and 90.

## Availability of mortality data

Mortality data are available in publications, unpublished tables, and electronic products as described on the NCHS mortality website: 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: 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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For more NCHS NVSRs, visit:
https://www.cdc.gov/nchs/products/nvsr.htm.

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## Contents



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