

## Deaths: Final Data for 2019

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### Abstract

**Objectives**—This report presents final 2019 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, different from reports prior to 2018, which followed 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*. Beginning in 2018, all states and the District of Columbia were using the 2003 revised certificate of death for the entire year, which includes the 1997 OMB revised standards for race. The 2019 and 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 2019, a total of 2,854,838 deaths were reported in the United States. The age-adjusted death rate was 715.2 deaths per 100,000 U.S. standard population, a decrease of 1.2% from the 2018 rate. Life expectancy at birth was 78.8 years, an increase of 0.1 year from 2018. Age-specific death rates decreased in 2019 from 2018 for age groups 45–54, 65–74, 75–84, and 85 and over and increased for age group 35–44. The 15 leading causes of death in 2019 remained the same as in 2018, although two causes exchanged ranks. Influenza and pneumonia, the eighth leading cause of death in 2018, became the ninth leading cause of death in 2019, while kidney disease, the ninth leading cause of death in 2018, became the eighth leading cause of death in 2019. The infant mortality rate, 5.58 infant deaths per 1,000 live births in 2019, remained a historic low but was not statistically different from the rate in 2018.

**Conclusions**—In 2019, the age-adjusted death rate decreased and life expectancy at birth increased for the total, male, and female populations for the second consecutive year.

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

### Highlights

#### Mortality experience in 2019

- In 2019, a total of 2,854,838 resident deaths were registered in the United States, yielding a crude death rate of 869.7 per 100,000 population.
- The age-adjusted death rate, which accounts for the aging of the population, was 715.2 deaths per 100,000 U.S. standard population.
- Life expectancy at birth was 78.8 years.
- The 15 leading causes of death in 2019 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. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
  9. Influenza and pneumonia
  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 2019, the infant mortality rate was 5.58 infant deaths per 1,000 live births.
- The 10 leading causes of infant death were:
  1. Congenital malformations, deformations and chromosomal abnormalities (congenital malformations)
  2. Disorders related to short gestation and low birth weight, not elsewhere classified (low birth weight)
  3. Accidents (unintentional injuries)
  4. Sudden infant death syndrome (SIDS)
  5. Newborn affected by maternal complications of pregnancy (maternal complications)
  6. Newborn affected by complications of placenta, cord and membranes (cord and placental complications)
  7. Bacterial sepsis of newborn
  8. Respiratory distress of newborn
  9. Diseases of the circulatory system
  10. Necrotizing enterocolitis of newborn

## Comparison to previous year

- The age-adjusted death rate decreased 1.2% from 723.6 per 100,000 standard population in 2018 to 715.2 in 2019.
- The age-adjusted death rate was 1.2 times greater for the non-Hispanic black population (884.0) than for the non-Hispanic white population (739.9).
- The age-adjusted death rate for the non-Hispanic white population (739.9) was 1.4 times greater than for the Hispanic population (523.8).
- Life expectancy for the total population increased 0.1 year from 78.7 in 2018 to 78.8 in 2019.
- Life expectancy for females was 5.1 years higher than for males, an increase of 0.1 year from 2018. The difference in life expectancy between the sexes has narrowed since 1979, when it was 7.8 years.
- Life expectancy in 2019 for the Hispanic population was 3.0 years higher than for the non-Hispanic white population.
- The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations increased 0.2 year from 3.9 years in 2018 to 4.1 years in 2019.
- From 2018 and 2019, life expectancy increased for non-Hispanic white males (0.1 year), non-Hispanic white females (0.2 year), non-Hispanic black females (0.1 year), and Hispanic females (0.1 year). Life expectancy decreased 0.1 year for non-Hispanic black males.
- The 15 leading causes of death in 2019 were the same as in 2018, although Influenza and pneumonia exchanged ranks with kidney disease.
- Age-adjusted death rates decreased significantly in 2019 from 2018 for 9 of the 15 leading causes of death: heart disease, cancer, Chronic lower respiratory diseases, Alzheimer disease, kidney disease, Influenza and pneumonia, suicide, Septicemia, and Pneumonitis due to solids and liquids. Significant increases occurred in 2019 from 2018 for 2 of

the 15 leading causes of death: unintentional injuries, and Chronic liver disease and cirrhosis.

- Age-adjusted death rates increased in 2019 from 2018 for drug-induced causes (4.6%) and for alcohol-induced causes (5.1%).
- The increase in life expectancy at birth for the total population in 2019 was mainly due to decreases in mortality from cancer, Chronic lower respiratory diseases, Influenza and pneumonia, and suicide.
- Among external causes of injury death, unintentional poisoning has been the leading mechanism of injury mortality since 2011.
- The infant mortality rate of 5.58 infant deaths per 1,000 live births in 2019 remained a record low, but the difference from the rate in 2018 (5.66) was not statistically significant.
- Five out of the 10 leading causes of infant death in 2019 changed ranks from 2018.

## Introduction

This report presents detailed 2019 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.

The 2003 revision of the U.S. Standard Certificate of Death uses the revised 1997 Office of Management and Budget (OMB) Standards for the collection of race and Hispanic ethnicity (4,5). The 1997 standards allow individuals to report more than one race and increase the race choices from four to five by separating the Asian and Pacific Islander groups. Beginning with the 2018 data year, all 50 states and the District of Columbia reported deaths based on the 2003 revision for the entire year, so the revised standards became the official standards for presenting mortality data by race and ethnicity (6). The category “Hispanic” did not change, remaining consistent with reports prior to 2018.

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 (NHOP). Data presented in this report according to the new race and Hispanic-origin categories represent the official data by race and origin for 2018 and 2019. The new categories differ from the bridged-race

categories shown in previous reports. For comparison purposes and to show the impact of the change, select data for 2018 and 2019 are presented for both single- and bridged-race categories. See [Methods](#) and [Technical Notes](#) in this report 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,” (7) 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](https://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm) (8). The public-use file does not include geographic detail, but a file with this information may be available upon request (9). 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 (10).

## 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 (11). 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) (12–14). 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 2019 compared with 2018 and differences in death rates across demographic groups in 2019 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 (15,16). 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 2019 is relatively small (0.5%), these deaths are included in totals but are shown separately in only one report table ([Table 2](#)). Comparisons between race and ethnicity groups in this report are limited to the major groups, based on population size: non-Hispanic, single-race white; non-Hispanic, single-race black; and Hispanic.

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](#). Beginning in 2018, all states collected data on race according to the 1997 OMB guidelines, so the use of the bridged-race process was 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 and 2019. Because single-race data are not available for the entire United States before 2018, data by race for 2018 and 2019 are not completely comparable with data for previous years, and comparisons should be made with this consideration. However, data for select estimates for 2018 and 2019 were also 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 2019 and earlier years are comparable.

The changes in rates and life expectancies in 2019 from 2018 are discussed by Hispanic origin, single-race categories, and sex. However, for comparison purposes, [Tables A, 1, 4, and 13](#) present data for 2018 and 2019 by both bridged- and single-race categories. [Tables I–20 through I–27](#) show trend data by bridged-race categories for 2019 and previous years and single-race data for 2018 and 2019. 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” (7).

The population data used to calculate death rates for 2019 shown in this report are postcensal population estimates based on the 2010 decennial census and are available from the U.S. Census Bureau website: <https://www2.census.gov/programs-surveys/popest/tables/2010-2019/state/asrh/sc-est2019-alldata6.csv> (17). 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).

**Table A. Age-adjusted death rates based on bridged race versus unbridged race, by race and Hispanic origin and sex: United States, 2019**

[Age-adjusted rates are per 100,000 U.S. standard population. Bridged-race categories are consistent with 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 <sup>1</sup>		Unbridged race <sup>2</sup>	
Race and Hispanic origin and sex	Age-adjusted death rate	Race and Hispanic origin and sex	Age-adjusted death rate
All races and origins <sup>3</sup> . . . . .	715.2	All races and origins <sup>3</sup> . . . . .	715.2
Male . . . . .	846.7	Male . . . . .	846.7
Female . . . . .	602.7	Female . . . . .	602.7
Non-Hispanic:		Non-Hispanic:	
White . . . . .	736.8	White . . . . .	739.9
Male . . . . .	864.9	Male . . . . .	868.8
Female . . . . .	625.0	Female . . . . .	627.4
Black . . . . .	870.7	Black . . . . .	884.0
Male . . . . .	1,074.7	Male . . . . .	1,092.8
Female . . . . .	715.4	Female . . . . .	724.9
American Indian or Alaska Native <sup>4</sup> . . . . .	767.3	American Indian or Alaska Native <sup>4</sup> . . . . .	782.5
Male . . . . .	911.0	Male . . . . .	901.9
Female . . . . .	640.6	Female . . . . .	673.3
Asian or Pacific Islander <sup>5</sup> . . . . .	384.9	Asian or Pacific Islander <sup>5</sup> . . . . .	...
Male . . . . .	457.2	Male . . . . .	...
Female . . . . .	326.5	Female . . . . .	...
Asian <sup>6</sup> . . . . .	...	Asian <sup>6</sup> . . . . .	372.8
Male . . . . .	...	Male . . . . .	442.4
Female . . . . .	...	Female . . . . .	317.2
Native Hawaiian or Other Pacific Islander . . . . .	...	Native Hawaiian or Other Pacific Islander . . . . .	679.0
Male . . . . .	...	Male . . . . .	769.0
Female . . . . .	...	Female . . . . .	589.5
Two or more races <sup>7</sup> . . . . .	...	Two or more races <sup>7</sup> . . . . .	326.5
Male . . . . .	...	Male . . . . .	379.6
Female . . . . .	...	Female . . . . .	280.7
Hispanic . . . . .	523.8	Hispanic . . . . .	523.8
Male . . . . .	633.2	Male . . . . .	633.2
Female . . . . .	430.7	Female . . . . .	430.7

... Category not applicable.

<sup>1</sup>Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards; see Technical Notes.

<sup>2</sup>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.

<sup>3</sup>Includes deaths for origin not stated or not classifiable; see Technical Notes.

<sup>4</sup>Includes Aleut and Eskimo persons.

<sup>5</sup>Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.

<sup>6</sup>Includes Chinese, Filipino, Japanese, and other Asian persons.

<sup>7</sup>Two or more races were reported on the death certificate.

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

The populations used to calculate death rates for 2000–2017 and for 2018 and 2019 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 2010–2019 and the intercensal period 2001–2009 are consistent with the 2010 census (17–19). 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 (16). The procedures used to produce the bridged populations are described elsewhere (20,21).

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 2019, a total of 2,854,838 resident deaths were registered in the United States—15,633 more deaths than in 2018. The crude death rate for 2019 (869.7 deaths per 100,000 population) was 0.2% higher than the 2018 rate (867.8) ([Tables B, 1, 2, 5, 7, and 9](#)).

The age-adjusted death rate in 2019 was 715.2 deaths per 100,000 U.S. standard population—1.2% lower than the rate of 723.6 in 2018 ([Tables B and 1](#)). The age-adjusted death rates decreased for males (1.0%) and females (1.4%). 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](#)) (10).

### Death rates by race and Hispanic origin

In 2019, age-adjusted death rates for the major race and ethnicity groups ([Table 1](#)) were:

- Non-Hispanic white population: 739.9 deaths per 100,000 U.S. standard population
- Non-Hispanic black population: 884.0
- Hispanic population: 523.8

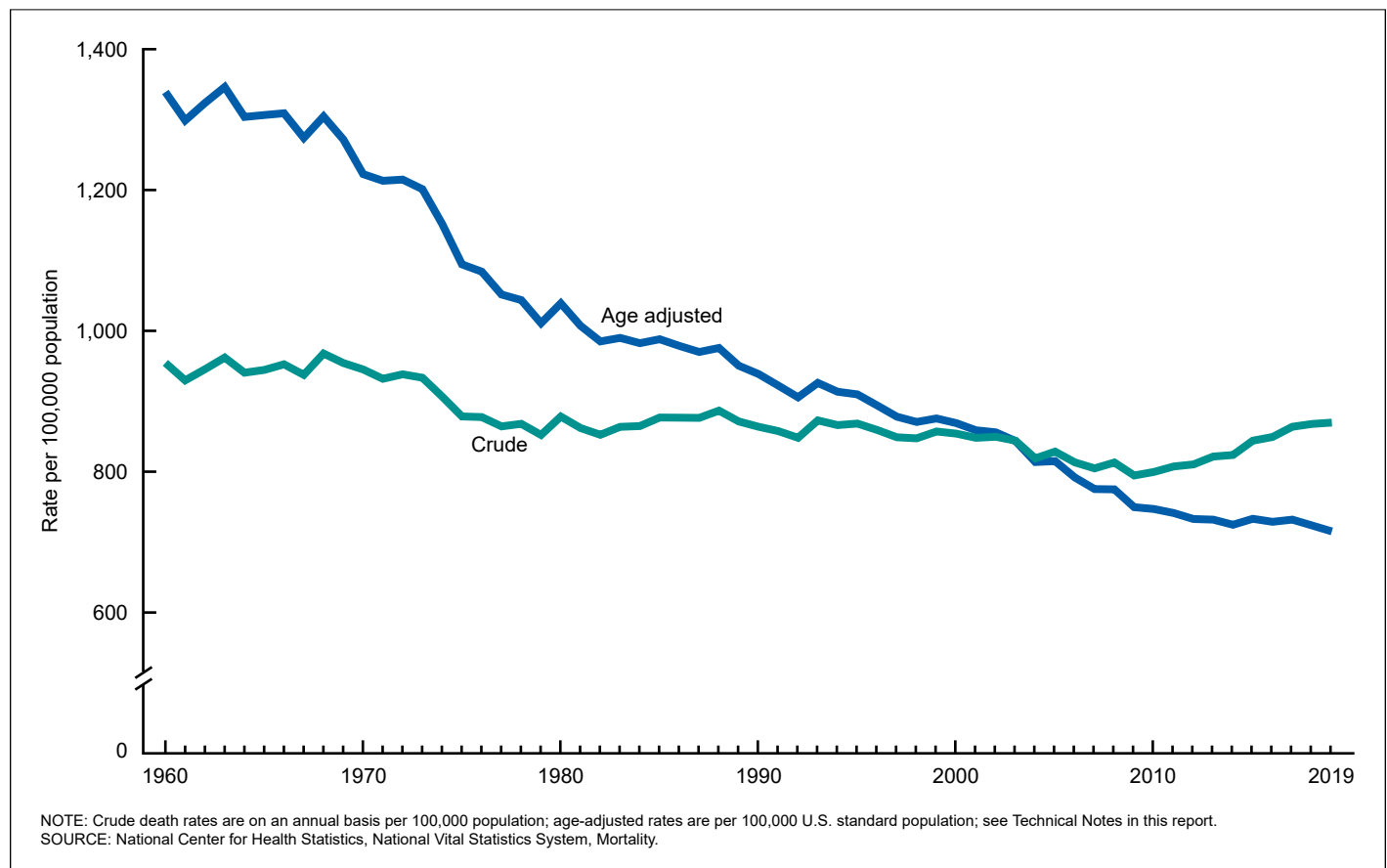
In 2019, the age-adjusted death rate for the non-Hispanic black population was 1.2 times that for the non-Hispanic white population. The rate for the non-Hispanic white population was 1.4 times that for the Hispanic population ([Table C](#)). The age-adjusted rate decreased 1.2% (from 748.7 in 2018 to 739.9 in 2019) for the non-Hispanic white population, 1.0% (from 892.6

in 2018 to 884.0 in 2019) for the non-Hispanic black population, and 2.2% (from 381.2 in 2018 to 372.8 in 2019) for the non-Hispanic Asian population ([Tables B and 1](#)). The changes in age-adjusted rates were not statistically significant for non-Hispanic AIAN, non-Hispanic NHOPI, and Hispanic persons.

From 2018 through 2019, the age-adjusted death rate decreased 1.0% for non-Hispanic white males, 1.4% for non-Hispanic white females, 0.9% for non-Hispanic black males, 1.2% for non-Hispanic black females, 2.6% for non-Hispanic Asian males, and 2.1% for non-Hispanic Asian females ([Tables B and 1](#)). Observed changes in age-adjusted rates for non-Hispanic AIAN males and females, non-Hispanic NHOPI males and females, and Hispanic males and females 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 (22). Although non-Hispanic white and non-Hispanic black populations are not affected by problems of underreporting (22,23), rates by race for other non-Hispanic populations should be interpreted with the consideration that racial misclassification on death certificates exists (22).

**Figure 1. Crude and age-adjusted death rates: United States, 1960–2019**



**Table B. Percent change in death rates and age-adjusted death rates in 2019 from 2018, by age, race and Hispanic origin, and sex: United States**

[Based on death rates on an annual basis per 100,000 population and age-adjusted rates per 100,000 U.S. standard population; see Technical Notes in this report. Race and Hispanic-origin categories are consistent with 1997 OMB standards; see Technical Notes. 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 in reporting these items on death certificates and surveys; see Technical Notes]

Age group (years)	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2,3</sup>			Asian <sup>2,4</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>5</sup>		
	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 ages																					
Crude rate . . . . .	0.2	0.7	-0.3	0.2	0.7	-0.4	0.9	1.3	0.5	0.8	-0.2	1.9	1.6	1.3	1.9	4.8	6.8	2.5	2.6	2.9	2.1
Age-adjusted rate . . . . .	-1.2	-1.0	-1.4	-1.2	-1.0	-1.4	-1.0	-0.9	-1.2	-1.0	-1.8	0.0	-2.2	-2.6	-2.1	0.5	1.4	-1.3	-0.1	0.0	-0.2
Under 1 <sup>6</sup> . . . . .	-0.9	-1.6	0.1	-4.9	-4.5	-5.6	1.3	-1.5	4.9	0.1	0.8	-0.7	-6.7	-2.1	-12.1	-7.4	-1.6	-15.0	5.2	5.3	5.1
1-4 . . . . .	-2.9	-8.0	3.9	-7.1	-8.6	-4.2	-2.6	-11.4	9.9	29.5	-2.7	86.6	-7.1	-21.8	14.3	11.1	-13.4	68.8	-1.6	-4.2	2.4
5-14 . . . . .	0.8	3.4	-2.5	2.4	2.1	2.8	-1.3	3.2	-7.0	-10.4	27.6	-40.8	-13.1	-13.0	-14.3	12.3	70.8	-32.9	5.7	11.5	-2.0
15-24 . . . . .	-0.7	-0.4	-1.0	-5.7	-5.5	-6.0	6.3	6.0	7.6	8.1	-3.2	39.8	-0.3	6.3	-13.8	16.8	3.8	58.5	4.6	4.9	4.4
25-34 . . . . .	0.0	0.5	-1.4	-2.5	-2.5	-2.4	1.5	2.4	-1.3	-1.7	-5.7	6.0	8.8	8.7	7.9	25.3	43.4	-7.0	6.6	8.5	1.2
35-44 . . . . .	2.3	3.0	1.0	1.1	2.1	-0.7	3.4	4.3	1.8	5.2	-0.4	14.6	-1.1	1.1	-4.7	25.6	21.3	34.0	6.3	5.6	7.7
45-54 . . . . .	-0.9	-0.4	-1.7	-1.0	-0.3	-2.1	-0.2	0.4	-0.9	2.0	0.4	4.4	1.3	0.2	2.9	-0.7	1.6	-4.4	0.7	0.7	0.8
55-64 . . . . .	-0.4	-0.6	0.0	0.0	-0.4	0.5	-0.6	-0.3	-1.2	-1.8	-3.7	0.8	-1.1	-0.1	-2.7	-4.0	-5.4	-2.2	-0.4	-0.9	0.4
65-74 . . . . .	-1.0	-0.8	-1.3	-0.9	-0.7	-1.2	-1.5	-1.0	-2.2	-3.1	-1.1	-5.2	-1.9	-2.5	-0.9	7.4	13.8	0.4	0.2	0.1	0.1
75-84 . . . . .	-1.8	-1.6	-2.0	-1.4	-1.0	-1.8	-2.4	-3.2	-1.8	-3.8	-1.8	-5.7	-2.8	-1.7	-4.0	-10.9	-8.3	-13.3	-3.2	-3.9	-2.7
85 and over . . . . .	-1.7	-1.9	-1.6	-1.5	-1.8	-1.5	-1.5	-1.6	-1.4	-1.7	-3.1	-0.9	-2.9	-5.7	-1.1	1.7	-10.4	10.3	1.0	2.0	0.3

0.0 Quantity more than zero but less than 0.05.

<sup>1</sup>Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes.

<sup>2</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>3</sup>Includes Aleut and Eskimo persons.

<sup>4</sup>Includes Chinese, Filipino, Japanese, and Other Asian persons.

<sup>5</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

<sup>6</sup>Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes.

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

## Death rates by age and sex

For the total population, age-specific death rates decreased significantly from 2018 to 2019 for age groups 45–54, 65–74, 75–84, and 85 and over and increased for age group 35–44. 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 2019 (Table C). The male-to-female death rate ratio was unchanged from the ratio in 2018.

Death rates for males decreased significantly for age groups 1–4, 55–64, 65–74, 75–84, and 85 and over. The rate increased significantly for the age group 35–44. Changes in rates for males in other age groups were not statistically significant. Death rates for females decreased significantly for age groups 45–54, 65–74, 75–84, and 85 and over. Changes in rates for females in other age groups were not statistically significant.

**Race and ethnicity**—For the total non-Hispanic white population, age-specific death rates decreased significantly between 2018 and 2019 for age groups under 1, 1–4, 15–24, 25–34, 45–54, 65–74, 75–84, and 85 and over (Tables B and 2). Rates for non-Hispanic white males decreased for age groups

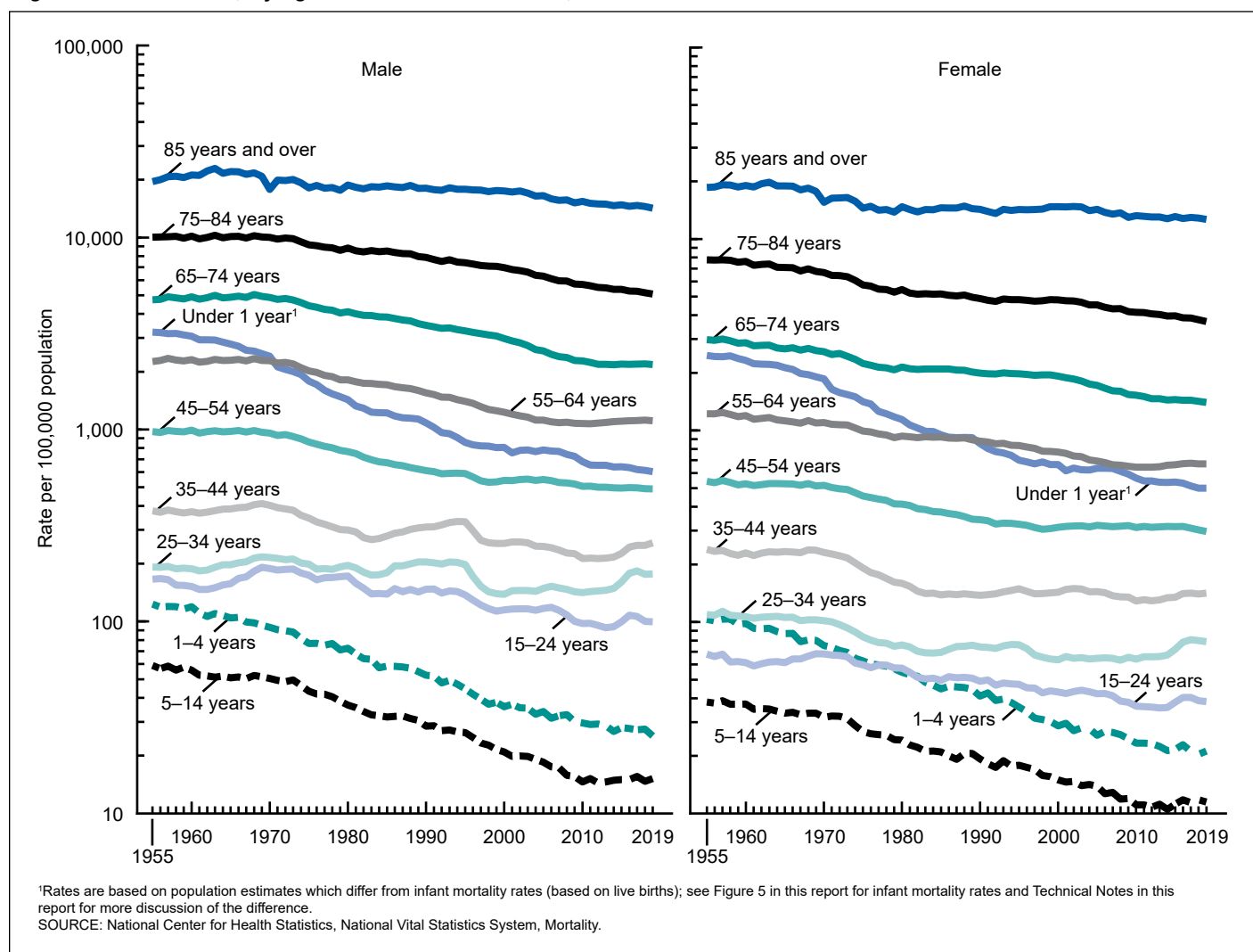
under 1, 1–4, 15–24, 25–34, 65–74, 75–84, and 85 and over. The rate increased for the age group 35–44. Rates for non-Hispanic white females decreased for age groups under 1, 15–24, 45–54, 65–74, 75–84, and 85 and over.

For the total non-Hispanic black population, age-specific death rates decreased between 2018 and 2019 for age groups 65–74, 75–84, and 85 and over. The rates increased for age groups 15–24 and 35–44. The rate for non-Hispanic black males decreased for the age group 75–84 and increased for age groups 15–24 and 35–44. For non-Hispanic black females, rates decreased for age groups 65–74, 75–84, and 85 and over and increased for age group 15–24.

For the non-Hispanic AIAN population, changes in age-specific death rates from 2018 to 2019 were not statistically significant for the total and male populations. For non-Hispanic AIAN females, age-specific death rates decreased for the age group 5–14 and increased for age groups 1–4, 15–24, and 35–44.

For the total non-Hispanic Asian population, age-specific rates decreased from 2018 to 2019 for age groups 75–84 and 85 and over. The rate increased for age group 25–34. The

**Figure 2. Death rates, by age and sex: United States, 1955–2019**



age-specific death rate decreased for non-Hispanic Asian males aged 85 and over and for non-Hispanic Asian females aged 75–84.

For the total non-Hispanic NHOPI population, age-specific death rates decreased for the age group 75–84 and increased for age groups 25–35 and 35–44. For non-Hispanic NHOPI males, the age-specific rate increased for age group 25–34.

For the total Hispanic population, age-specific death rates decreased for the age group 75–84 and increased between 2018 and 2019 for age groups under 1, 15–24, 25–34, and 35–44. Rates for Hispanic males decreased for the age group 75–84 and increased for age groups 15–24, 25–34, and 35–44. For Hispanic females, age-specific death rates decreased for age group 75–84 and increased for age group 35–44.

Other observed changes from 2018 to 2019 in age-specific rates by race and ethnicity and sex were not statistically significant.

Death rates for the non-Hispanic AIAN, Asian, and NHOPI populations are not adjusted for misclassification of race and ethnicity on death certificates. The rates for the non-Hispanic AIAN population are underestimated by about 33% due to misclassification (22). This should be considered when making rate comparisons across racial and ethnic groups.

Death rates for the Hispanic population are not adjusted for misclassification (Technical Notes). Therefore, these rates are underestimated by about 3.0% (22), and this also should be considered when interpreting rate disparities between Hispanic and non-Hispanic populations.

## Expectation of life at birth and at specified ages

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

Life table data shown in this report for 2010–2019 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 2019, life expectancy at birth for the U.S. population was 78.8 years, 0.1 year higher than 2018 (Tables 3 and 4). The general trend in U.S. life expectancy between 1900 and 2019 has been one of improvement. The only decreases in life expectancy in the last 20 years occurred in 2015 and 2017. In 2019, life expectancy for males (76.3 years) was 0.1 year higher than in 2018. Life expectancy for females (81.4 years) was 0.2 year higher than in 2018. 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 2019, the difference in life expectancy between the sexes was 5.1 years, an increase of 0.1 year from 2018.

Life expectancy figures by Hispanic origin have been available starting with data for 2006 (24). Life expectancy increased by 0.2 year for the non-Hispanic white population (from 78.6 years in 2018 to 78.8 in 2019). Life expectancy for the non-Hispanic black population in 2019 (74.7) was the same as in 2018.

The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations increased 0.2 year from 3.9 years in 2018 to 4.1 years in 2019 (Table 4).

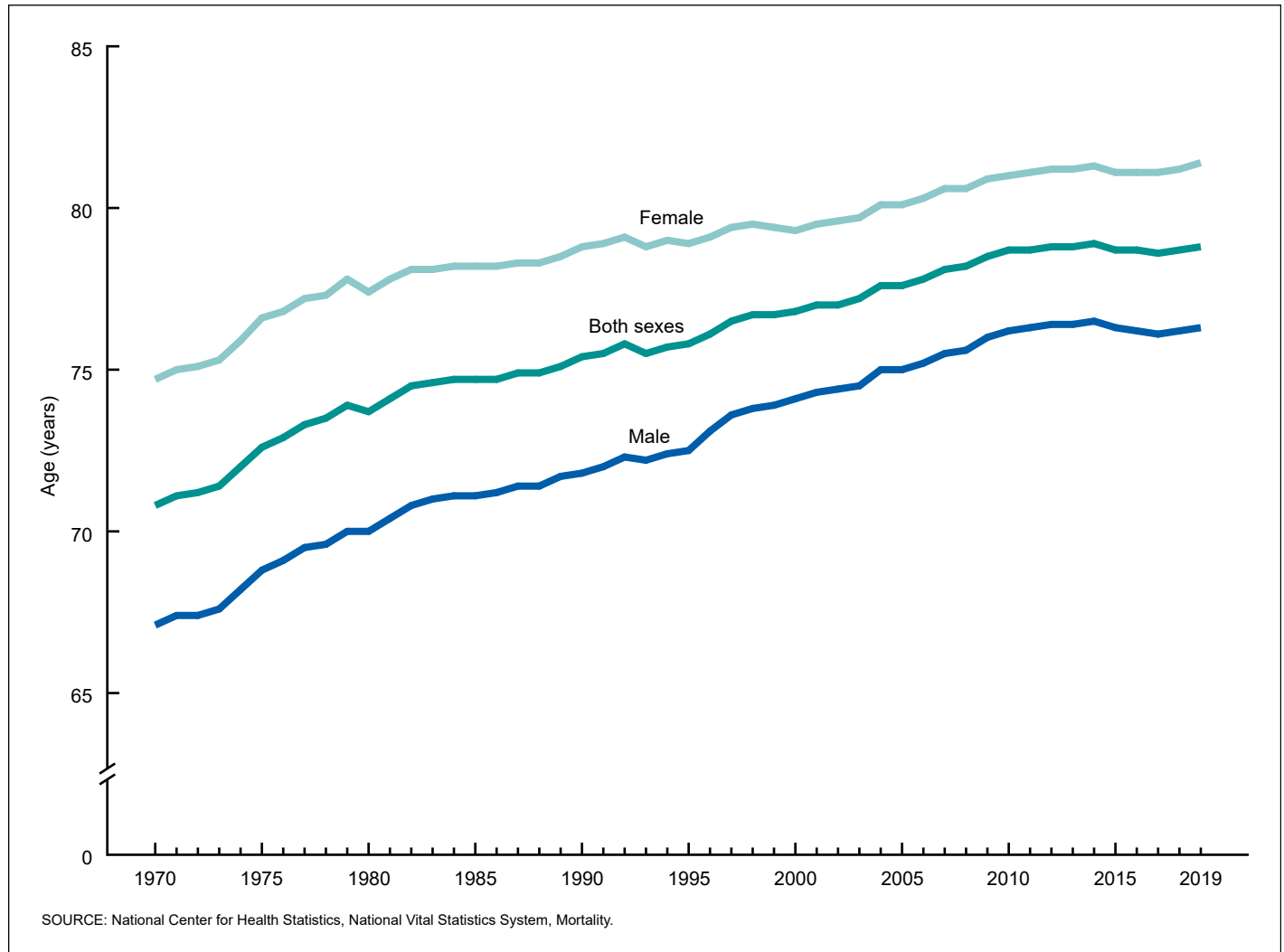
Life expectancy for the Hispanic population was 81.8 years in 2019, unchanged since 2016 (Tables 3 and 4). Life expectancy was 1.5 years higher in 2019 compared with 2006 (Table I–21). The difference in life expectancy between the Hispanic and non-Hispanic white population decreased 0.2 year from 3.2 years in 2018 to 3.0 years in 2019 (Table 4).

Among the six major Hispanic-origin–race–sex groups in 2019, Hispanic females had the highest life expectancy at birth (84.4 years), followed by non-Hispanic white females (81.3), Hispanic males (79.0), non-Hispanic black females (78.1), non-Hispanic white males (76.3), and non-Hispanic black males (71.3) (Tables 3 and 4).

In 2019, life expectancy for Hispanic males decreased for the first time since 2016 (a 0.1-year decrease from 2018) and increased for Hispanic females for the first time since 2015 (a 0.1-year increase from 2018). In 2019, life expectancy was 2.7 years higher for the Hispanic male population than for the non-Hispanic white male population. The difference in life expectancy between these populations decreased 0.2 year from 2018. Life expectancy was 3.1 years higher for the Hispanic female population than for the non-Hispanic white female population. The difference in life expectancy decreased 0.1 year from 2018. 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 (25,26).

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 2019 for the total population, a person aged 50 could expect to live an average



**Figure 3. Life expectancy at birth, by sex: United States, 1970–2019**

of 31.8 more years, for a total of 81.8 years. A person aged 65 could expect to live an average of 19.6 more years, for a total of 84.6 years, and a person aged 85 could expect to live an average of 6.7 more years, for a total of 91.7 years (Table 3). Life expectancy increased from 2018 to 2019 at all ages except age 100 (Table 3) (3).

### Leading causes of death

The 15 leading causes of death in 2019 accounted for 79.5% of all deaths in the United States (Table C). The leading causes of death in 2019 remained the same as in 2018 although two causes exchanged ranks. Influenza and pneumonia (the 8th leading cause of death in 2018) became the 9th leading cause and kidney disease (the 9th leading cause of death in 2018) became the 8th leading cause in 2019. 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 2019 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. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
9. Influenza and pneumonia
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

**Table C. Number of deaths, percent of total deaths, death rates, and age-adjusted death rates for 2019, percent change in age-adjusted death rates in 2019 from 2018, 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 2019: United States**

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

Rank <sup>1</sup>	Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Number	Percent of total deaths, 2019	Crude death rate, 2019	Age-adjusted death rate				
					Percent change		Ratio		
					2019	2018 to 2019	Male to female	Non-Hispanic black <sup>2</sup> to Non-Hispanic white <sup>2</sup>	Non-Hispanic white <sup>2</sup> to Hispanic <sup>3</sup>
...	All causes . . . . .	2,854,838	100.0	869.7	715.2	-1.2	1.4	1.2	1.4
1	Diseases of heart . . . . . (I00–I09,I11,I13,I20–I51)	659,041	23.1	200.8	161.5	-1.3	1.6	1.3	1.5
2	Malignant neoplasms . . . . . (C00–C97)	599,601	21.0	182.7	146.2	-1.9	1.4	1.1	1.4
3	Accidents (unintentional injuries) . . . . . (V01–X59,Y85–Y86)	173,040	6.1	52.7	49.3	2.7	2.2	0.9	1.6
4	Chronic lower respiratory diseases . . . . . (J40–J47)	156,979	5.5	47.8	38.2	-3.8	1.2	0.7	2.7
5	Cerebrovascular diseases . . . . . (I60–I69)	150,005	5.3	45.7	37.0	-0.3	1.1	1.5	1.1
6	Alzheimer disease . . . . . (G30)	121,499	4.3	37.0	29.8	-2.3	0.7	0.9	1.2
7	Diabetes mellitus . . . . . (E10–E14)	87,647	3.1	26.7	21.6	0.9	1.6	2.0	0.7
8	Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07,N17–N19,N25–N27)	51,565	1.8	15.7	12.7	-1.6	1.4	2.2	1.0
9	Influenza and pneumonia . . . . . (J09–J18)	49,783	1.7	15.2	12.3	-17.4	1.3	1.1	1.3
10	Intentional self-harm (suicide) . . . . . (*U03,X60–X84,Y87.0)	47,511	1.7	14.5	13.9	-2.1	3.7	0.4	2.4
11	Chronic liver disease and cirrhosis . . . . . (K70,K73–K74)	44,358	1.6	13.5	11.3	1.8	1.9	0.6	0.8
12	Septicemia . . . . . (A40–A41)	38,431	1.3	11.7	9.5	-6.9	1.2	1.7	1.4
13	Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	36,524	1.3	11.1	8.9	0.0	1.1	2.2	1.0
14	Parkinson disease . . . . . (G20–G21)	35,311	1.2	10.8	8.8	1.1	2.3	0.5	1.5
15	Pneumonitis due to solids and liquids . . . . . (J69)	19,184	0.7	5.8	4.7	-2.1	1.9	1.1	1.5
...	All other causes . . . . . (residual)	584,359	20.5	178.0	...	...	...	...	...

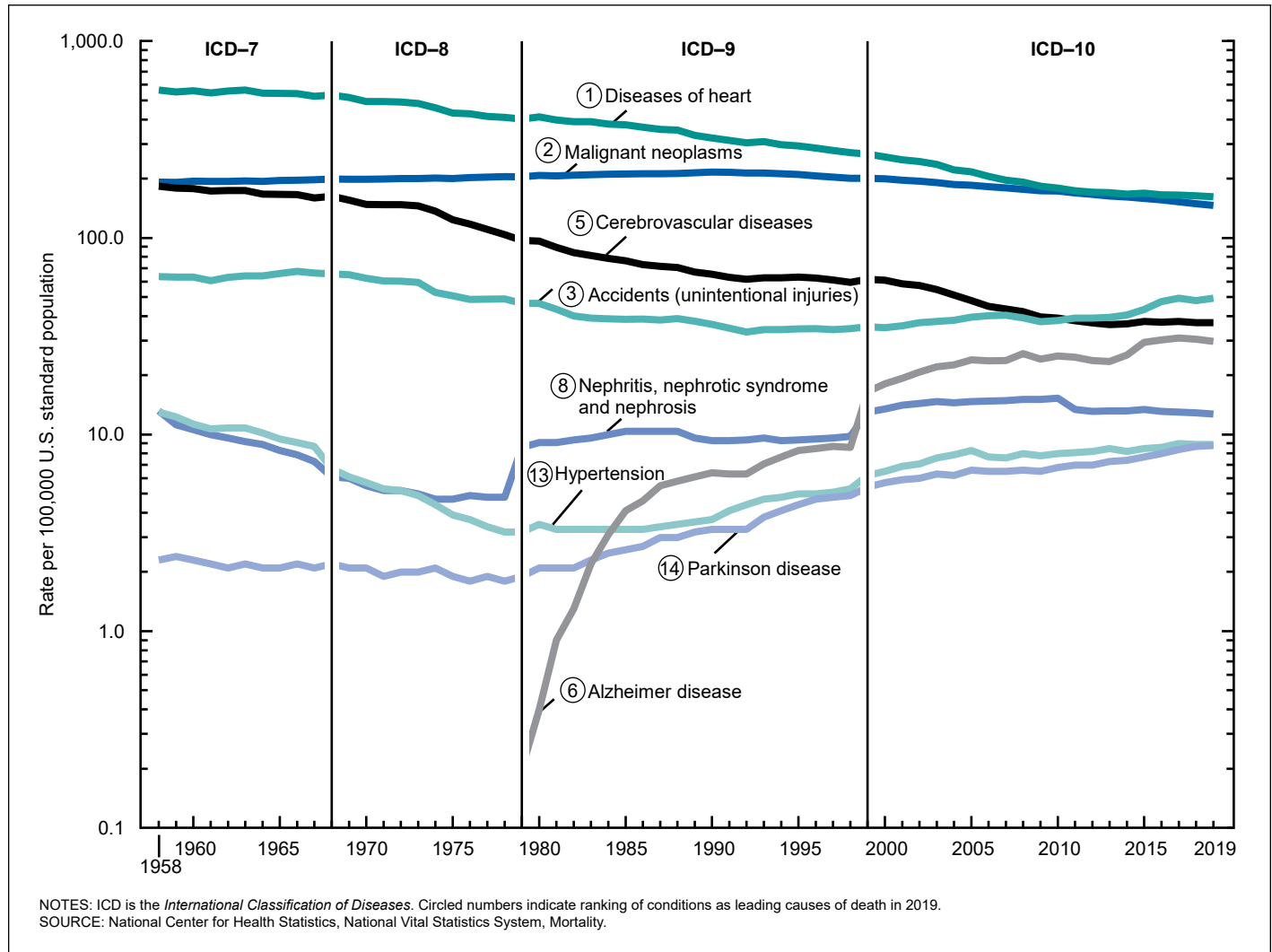
... Category not applicable.

<sup>1</sup>Rank based on number of deaths; see Technical Notes in this report.

<sup>2</sup>Includes only one race reported on the death certificate.

<sup>3</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

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

**Figure 4. Age-adjusted death rates for selected leading causes of death: United States, 1958–2019**

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 2018 through 2019, age-adjusted death rates decreased significantly for 9 of the 15 leading causes of death and increased for 2 of the 15 leading causes (Table C). The rate for the top leading cause of death, heart disease, decreased 1.3% in 2019 from 2018 (Figure 4; Tables C and 5) (10). The rate for the second leading cause of death, cancer, decreased 1.9%, continuing a gradual but consistent downward trend since 1993. Deaths from these two diseases combined accounted for 44.1% of deaths in the United States in 2019 (Table C).

Other leading causes of death that showed significant decreases in 2019 from 2018 were Chronic lower respiratory diseases (3.8%), Alzheimer disease (2.3%), kidney disease (1.6%), Influenza and pneumonia (17.4%), suicide (2.1%), Septicemia (6.9%), and Pneumonitis due to solids and liquids (2.1%).

The age-adjusted rate increased significantly in 2019 from 2018 for unintentional injuries (2.7%) and Chronic liver disease and cirrhosis (1.8%).

The age-adjusted death rates from 2018 to 2019 for stroke, diabetes, hypertension, and Parkinson disease were not significantly different.

Assault (homicide), the 16th leading cause of death in 2019, dropped from among the 15 leading causes of death in 2010. In 2019, the age-adjusted rate for homicide did not change significantly from 2018. Homicide remains a major issue for some age groups. Homicide was among the 15 leading causes of death in 2019 for age groups under 1 year (13th), 1–4 (4th), 5–14 (5th), 15–24 (3rd), 25–34 (3rd), 35–44 (5th), 45–54 (12th), and 55–64 (15th) (10).

Although Human immunodeficiency virus (HIV) disease has not been among the 15 leading causes of death since 1997 (27), it is still considered a major public health problem for some age groups. The age-adjusted death rate for HIV disease decreased 6.7% from 1.5 deaths per 100,000 U.S. standard population in 2018 to 1.4 in 2019. 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 2019 (6,10).

In 2019, HIV disease was among the 15 leading causes of death for age groups 25–34 (10th), 35–44 (12th), and 45–54 (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—is often acquired in hospitals or other health care facilities with long-term patients or residents (28,29). The number of deaths from *C. difficile* climbed from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (10). Since 2011, the number of deaths from this cause has decreased nearly every year. In 2019, the number of deaths from *C. difficile* fell to 4,533. The age-adjusted death rate decreased 15.4%, from 1.6 deaths per 100,000 U.S. standard population in 2018 to 1.1 in 2019. Since 2015, the rate for *C. difficile* has decreased an average of 11.6% per year. In 2019, *C. difficile*, the 21st leading cause of death, dropped from among the top 20 leading causes of death for the population aged 65 and over. Approximately 85.7% 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 14 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 (2.2), Chronic liver disease and cirrhosis and Pneumonitis due to solids and liquids (1.9 each), heart disease and diabetes (1.6 each), kidney disease and cancer (1.4 each), Influenza and pneumonia (1.3), Chronic lower respiratory diseases and Septicemia (1.2 each), and stroke and hypertension (1.1 each). Age-adjusted rates were lower for males than for females for one leading cause, Alzheimer disease (0.7).

Age-adjusted death rates for the non-Hispanic black population were higher than for the non-Hispanic white population for 9 of the 15 leading causes of death (Table C). The largest ratios were for kidney disease and hypertension (2.2 each). Other causes for which the ratio was high include diabetes (2.0), Septicemia (1.7), stroke (1.5), heart disease (1.3), and cancer, Influenza and pneumonia, and Pneumonitis due to solids and liquids (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 2019 for the total population and for specific subpopulations are detailed further in a companion *National Vital Statistics Report* on leading causes by age, race and 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 ratio was for Chronic lower respiratory diseases (2.7). Other causes for which the ratio was high include suicide (2.4), unintentional injuries (1.6), heart disease, Parkinson disease, and Pneumonitis due to solids and liquids (1.5 each), cancer and Septicemia (1.4 each), Influenza and pneumonia (1.3), Alzheimer disease (1.2), and stroke (1.1). Age-adjusted rates were lower for the non-Hispanic white population than for the Hispanic population for diabetes (0.7) and Chronic liver disease and cirrhosis (0.8).

## Other select causes

### Dementia-related mortality

In 2019, 271,872 persons died of dementia-related causes in the United States (Tables 6, 8, and I–1). Deaths from dementia-related causes were presented for the first time in this report series in 2018 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 (30). Dementia is characterized by memory impairment and cognitive decline (30–32). 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 (30–32).

Certification and coding rule changes can impact data analysis of component causes of dementia. In 2019, Alzheimer disease accounted for 44.7% of all dementia deaths; Unspecified dementia for 35.9%; Other degenerative diseases of nervous system, not elsewhere classified for 13.0%; and Vascular dementia for 6.5%. For detailed information, see CDC WONDER (10). Changes in the percentage of deaths assigned to individual causes comprising dementia may be the result of many factors (33). Combining the types of dementia provides a more comprehensive and stable measure of dementia mortality.

The age-adjusted death rate for dementia-related causes was unchanged in 2019 from 2018 for the total population and did not change significantly for the male and female populations (Tables 5, 10, and I–1).

### Drug-induced mortality

In 2019, a total of 74,511 persons died of drug-induced causes in the United States (Tables 6, 8, and I–2). The category of drug-induced causes includes deaths from drug overdose as well as deaths from other medical conditions caused by use of legal or illegal drugs. In 2019, drug-overdose deaths accounted for 94.8% of all drug-induced deaths (Tables 6 and 8). The drug-induced category excludes deaths indirectly related to drug use,

as well as newborn deaths due to the mother's drug use. (For a list of all drug-induced causes including those specifically classified as drug-overdose causes, see [Technical Notes](#).)

The age-adjusted death rate for drug-induced causes increased 4.6% for the total population from 21.8 in 2018 to 22.8 in 2019 ([Table 10](#)). For males in 2019, the age-adjusted death rate for drug-induced causes was 2.1 times the rate for females. The rate for males increased by 6.1% in 2019 from 2018.

*Among the major race-ethnicity groups*—Age-adjusted rates increased in 2019 from 2018 by 15.0% for the non-Hispanic black population and by 15.5% for the Hispanic population. The age-adjusted death rate for non-Hispanic white males was 9.5% lower than for non-Hispanic black males and 76.1% higher than for Hispanic males. The rate for non-Hispanic white females was 31.7% higher than for non-Hispanic black females and 211.7% higher than for Hispanic females. Rates increased between 2018 and 2019 for non-Hispanic white males (2.3%), non-Hispanic black males (15.3%), non-Hispanic black females (15.4%), Hispanic males (17.1%), and Hispanic females (7.1%) ([Tables 5, 10, and 1–2](#)). The age-adjusted death rate for drug-induced causes did not change significantly in 2019 from 2018 for the total female population, total non-Hispanic white population, and non-Hispanic white females.

### Alcohol-induced mortality

In 2019, a total of 39,043 persons died of alcohol-induced causes in the United States ([Tables 6, 8, and 1–3](#)). 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 increased 5.1%, from 9.9 in 2018 to 10.4 in 2019 ([Tables 5, 10, and 1–3](#)). For males in 2019, the age-adjusted death rate for alcohol-induced causes was 2.6 times the rate for females. The rate increased 3.4% for males and 5.4% for females from 2018 to 2019 ([Tables 5, 10, and 1–3](#)).

*Among the major race-ethnicity groups*—Age-adjusted rates increased 4.7% for the non-Hispanic white population, 7.0% for the non-Hispanic black population, and 7.1% for the Hispanic population from 2018 to 2019. In 2019, the age-adjusted death rate for non-Hispanic white males was 32.8% higher than for non-Hispanic black males and 11.2% lower than for Hispanic males. The rate for non-Hispanic white females was 61.9% higher than for non-Hispanic black females and 78.9% higher than for Hispanic females. Rates increased 3.3% for non-Hispanic white males, 4.6% for non-Hispanic white females, 6.3% for non-Hispanic black males, and 15.2% for Hispanic females.

The age-adjusted rate for alcohol-induced death did not change significantly in 2019 from 2018 for non-Hispanic black females and Hispanic males.

### Firearm-related mortality

In 2019, 39,707 persons died from firearm-related injuries in the United States ([Tables 6, 8, and 1–4](#)). The age-adjusted death rate for firearm-related injuries for the total, male, and female populations did not change significantly from 2018 to 2019 ([Tables 5, 10, and 1–4](#)). For males in 2019, the age-adjusted death rate for firearm-related injuries was 6.1 times the rate for females.

The age-adjusted death rate decreased 2.6% for the total non-Hispanic white population and increased 5.6% for the total non-Hispanic black population in 2019 from 2018. In 2019, the age-adjusted death rate from firearm-related injuries for non-Hispanic white males was 57.6% lower than for non-Hispanic black males and 69.6% higher than for Hispanic males. The rate for non-Hispanic white females was 29.4% lower than for non-Hispanic black females and 89.5% higher than for Hispanic females. The rate for firearm-related injuries increased 6.7% for non-Hispanic black males in 2019 from 2018.

The age-adjusted death rates for firearm-related injuries did not change significantly in 2019 from 2018 for non-Hispanic white females, non-Hispanic black females, Hispanic total, 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 2019 (78.8) from 2018 primarily because of decreases in mortality from cancer, Chronic lower respiratory diseases, Influenza and pneumonia, suicide, and stroke. The increase in life expectancy for the total population was slightly offset by increases in mortality from HIV disease, Nutritional deficiencies, Complications of medical and surgical care, and Parkinson disease. Life expectancy at birth for males increased 0.1 year due to decreases in mortality from cancer, heart disease, Influenza and pneumonia, Chronic lower respiratory diseases, and suicide. These decreases were offset somewhat by increases in mortality from unintentional injuries, homicide, diabetes, Chronic liver disease and cirrhosis, and Nutritional deficiencies. For the female population, life expectancy increased 0.2 year due to decreases in mortality from cancer, Influenza and pneumonia, heart disease, Chronic lower respiratory diseases, and Septicemia, which were offset by increases in mortality from Nutritional deficiencies, Chronic liver disease and cirrhosis, unintentional injuries, and Complications of medical and surgical care. (For a discussion of the major causes contributing to the change in life expectancy, see [Technical Notes](#).)

Life expectancy for the non-Hispanic white population in 2019 increased 0.2 year to 78.8 years ([Table 4](#)). This increase was due to decreases in mortality from cancer, Influenza and pneumonia, heart disease, Chronic lower respiratory diseases, and suicide. These decreases in mortality were offset to some extent by increases for Chronic liver disease and cirrhosis,

diabetes, Nutritional deficiencies, unintentional injuries, and Parkinson disease. Life expectancy for the non-Hispanic white male population increased 0.1 year in 2019 (76.3 years) from 2018 due to decreases in mortality from cancer, heart disease, Influenza and pneumonia, Chronic lower respiratory diseases, and suicide, which were offset somewhat by increases in mortality for unintentional injuries, Chronic liver disease and cirrhosis, diabetes, Parkinson disease, and Nutritional deficiencies. Life expectancy for non-Hispanic white females increased 0.2 year in 2019 (81.3 years) from 2018 due to decreases in mortality from cancer, Influenza and pneumonia, heart disease, Chronic lower respiratory diseases, and suicide, which were offset somewhat by increases in mortality for Chronic liver disease and cirrhosis and Nutritional deficiencies.

Life expectancy for the non-Hispanic black population remained unchanged at 74.7 years in 2019 due to increases in mortality from unintentional injuries, homicide, Certain conditions originating in the perinatal period, suicide, and Complications of medical and surgical care, which were offset by decreases for cancer, heart disease, Influenza and pneumonia, Chronic lower respiratory diseases, and Septicemia. Life expectancy for the non-Hispanic black male population in 2019 remained the same as in 2018 (71.3 years) due to decreases in mortality from cancer, heart disease, Influenza and pneumonia, HIV disease, and kidney disease, which were offset by increases in mortality for unintentional injuries, homicide, suicide, Atherosclerosis, and Complications of medical and surgical care. Life expectancy for the non-Hispanic black female population increased 0.1 year in 2019 (78.1 years) from 2018 due to decreases in mortality from heart disease, cancer, Influenza and pneumonia, Chronic lower respiratory diseases, and Septicemia, which were offset somewhat by increases in mortality for unintentional injuries, Certain conditions originating in the perinatal period, stroke, Pregnancy, childbirth and the puerperium, and hypertension.

Life expectancy for the Hispanic population in 2019 remained unchanged at 81.8 years due to increases in mortality from unintentional injuries, diabetes, congenital malformations, Certain conditions originating in the perinatal period, and stroke, which were offset by decreases in mortality for heart disease, cancer, Influenza and pneumonia, Septicemia, and Chronic lower respiratory diseases. Life expectancy for the Hispanic male population decreased 0.1 year in 2019 (79.0) from 2018 due to increases in mortality from unintentional injuries, diabetes, Certain conditions originating in the perinatal period, stroke, and congenital malformations, which were offset somewhat by decreases in mortality for cancer, heart disease, Influenza and pneumonia, Alzheimer disease, and Septicemia. Life expectancy for the Hispanic female population in 2019 (84.4) increased 0.1 year from 2018 due to decreases in mortality from heart disease, Influenza and pneumonia, Septicemia, Chronic lower respiratory diseases, and cancer, which were offset somewhat by increases in mortality for unintentional injuries, diabetes, congenital malformations, Complications of medical and surgical care, and Nutritional deficiencies.

The difference in life expectancy between the male and female populations increased 0.1 year in 2019 to 5.1 years (Table 4). The widening in the male–female life expectancy gap

was due primarily to greater increases in mortality for the male population for unintentional injuries, homicide, and diabetes (data not shown).

Life table partitioning analysis indicates that the difference in 2019 of 3.0 years in life expectancy between the Hispanic and non-Hispanic white populations is mostly explained by lower mortality for the Hispanic population from heart disease, cancer, Chronic lower respiratory diseases, unintentional injuries, 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 2019, a total of 246,041 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 (34,35). 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 2019—poisoning, motor-vehicle traffic, firearm, and fall—accounted for 78.8% of all injury deaths (Table 11). A total of 75,795 deaths occurred as the result of poisonings in 2019, accounting for 30.8% of all injury deaths (Table 11). The age-adjusted death rate for poisoning increased significantly, by 4.5% from 22.2 deaths per 100,000 U.S. standard population in 2018 to 23.2 in 2019. Most poisoning deaths were either unintentional (86.8%) or suicides (8.1%). However, 4.9% of poisoning deaths were of undetermined intent. The age-adjusted death rate for unintentional poisoning increased 4.7%, from 19.3 in 2018 to 20.2 in 2019. Motor vehicle traffic-related injuries in 2019 resulted in 37,595 deaths, accounting for 15.3% of all injury deaths (Table 11). The age-adjusted death rate for these injuries did not change significantly between 2018 and 2019. In 2019, 39,707 persons died from firearm injuries in the United States (Table 11), accounting for 16.1% of all injury deaths that year. The age-adjusted death rate for firearm injuries (all intents) in 2019, 11.9, was the same as in 2018. The two major component causes of firearm injury deaths in 2019 were suicide (60.3%) and homicide (36.3%). The age-adjusted death rate for firearm suicide decreased 2.9% from 7.0 in 2018 to 6.8 in 2019. The age-adjusted rate for firearm homicide increased 4.5% from 4.4 in 2018 to 4.6 in 2019. A total of 40,727 persons died as the result of falls in 2019, accounting for 16.6% of all injury deaths (Table 11). The age-adjusted death rate for falls in 2019 increased 4.1% from 9.8 in 2018 to 10.2 in 2019. 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 2019 was West Virginia (945.4 per 100,000 U.S. standard population), with a rate 32.2% above the national rate (715.2). The state with the lowest age-adjusted death rate was Hawaii (573.3), with a rate 19.8% below the national rate. The age-adjusted death rate for West Virginia was 64.9% 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 (36).

## Infant mortality

In 2019, a total of 20,921 deaths occurred among children under age 1 year (Tables D, E, 14, and 15). This number represents 546 fewer infant deaths in 2019 than in 2018. The ratio of male to female infant mortality rates was 1.2, the same as in 2018. The infant mortality rate (IMR) was 5.58 per 1,000 live births, the neonatal mortality rate (deaths of infants aged 0–27 days per 1,000 live births) was 3.68, and the postneonatal mortality rate (deaths of infants aged 28 days through 11 months per 1,000 live births) was 1.90 in 2019 (Figure 5; Tables D and 13; see Technical Notes for information on alternative data sources). The changes in infant, neonatal, and postneonatal mortality rates from 2018 to 2019 were not statistically significant.

The 10 leading causes of infant death in 2019 accounted for 67.1% 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. Accidents (unintentional injuries)
4. Sudden infant death syndrome (SIDS)
5. Newborn affected by maternal complications of pregnancy (maternal complications)
6. Newborn affected by complications of placenta, cord and membranes (cord and placental complications)
7. Bacterial sepsis of newborn
8. Respiratory distress of newborn
9. Diseases of the circulatory system
10. Necrotizing enterocolitis of newborn

The rankings of the 10 leading causes of infant death changed for several causes between 2018 and 2019 (6). Maternal complications, the third leading cause in 2018, became the fifth leading cause in 2019, while unintentional injuries, the fifth leading cause in 2018, became the third leading cause in 2019. Diseases of the circulatory system, the eighth leading cause in 2018, became the ninth leading cause in 2019, while Respiratory distress of newborn, the ninth leading cause in 2018, became the eighth leading cause in 2019. Neonatal hemorrhage, the 10th leading cause in 2018, dropped out of the list and was replaced by Necrotizing enterocolitis of newborn, which was the 12th leading cause of infant death in 2018. Among the 10 leading causes, the IMR decreased 5.3% from 2018 for low birth weight. The IMR increased 9.7% for unintentional injuries and 19.0% for Necrotizing enterocolitis of newborn. Changes in rates among the other leading causes of infant death were not statistically significant (Table E).

**Table D. Number of infant, neonatal, and postneonatal deaths and mortality rates, by sex: United States, 2018–2019**

[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	2019		2018		Percent change <sup>1</sup> from 2018 to 2019
	Number	Rate	Number	Rate	
<b>Infant</b>					
Total .....	20,921	5.58	21,467	5.66	-1.4
Male .....	11,674	6.09	12,068	6.23	-2.2
Female .....	9,247	5.05	9,399	5.07	-0.4
<b>Neonatal</b>					
Total .....	13,801	3.68	14,289	3.77	-2.4
Male .....	7,684	4.01	8,008	4.13	-2.9
Female .....	6,117	3.34	6,281	3.39	-1.5
<b>Postneonatal</b>					
Total .....	7,120	1.90	7,178	1.89	0.5
Male .....	3,990	2.08	4,060	2.09	-0.5
Female .....	3,130	1.71	3,118	1.68	1.8

<sup>1</sup>Based on a comparison of 2019 and 2018 mortality rates.

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

**Table E. Number of infant deaths, percentage of total infant deaths, and infant mortality rates for 2019, and percentage change in infant mortality rates from 2018 to 2019 for the 10 leading causes of infant death in 2019: United States**

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

Rank <sup>1</sup>	Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Number	Percent of total deaths	Rate	Percent change <sup>2</sup> from 2018 to 2019
...	All causes.....	20,921	100.0	558.3	-1.4
1	Congenital malformations, deformations and chromosomal abnormalities..... (Q00–Q99)	4,301	20.6	114.8	-2.7
2	Disorders related to short gestation and low birth weight, not elsewhere classified..... (P07)	3,445	16.5	91.9	-5.3
3	Accidents (unintentional injuries)..... (V01–X59)	1,266	6.1	33.8	9.7
4	Sudden infant death syndrome..... (R95)	1,248	6.0	33.3	-5.4
5	Newborn affected by maternal complications of pregnancy..... (P01)	1,245	6.0	33.2	-7.3
6	Newborn affected by complications of placenta, cord and membranes..... (P02)	742	3.5	19.8	3.7
7	Bacterial sepsis of newborn..... (P36)	603	2.9	16.1	5.2
8	Respiratory distress of newborn..... (P22)	424	2.0	11.3	9.7
9	Diseases of the circulatory system..... (I00–I99)	406	1.9	10.8	-4.4
10	Necrotizing enterocolitis of newborn..... (P77)	354	1.7	9.4	19.0
...	All other causes..... (residual)	6,887	32.9	183.8	...

... Category not applicable.

<sup>1</sup>Rank based on number of deaths; see Technical Notes in this report.<sup>2</sup>Based on a comparison of the 2019 infant mortality rate with the 2018 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.

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 (37); 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 (22).

In 2019, the infant mortality rate for non-Hispanic white infants was 4.37 per 1,000 live births, a decrease of 4.0% from 4.55 in 2018. The infant mortality rate was 5.20 for Hispanic infants and 11.12 for non-Hispanic black infants ([Table 13](#)). The changes in infant mortality rates in 2019 from 2018 for Hispanic infants and non-Hispanic black infants were not significant.

## Maternal mortality

In 2019, a total of 754 women died of maternal causes in the United States—96 more deaths than in 2018 ([Table 16](#)). The overall maternal mortality rate increased 15.5% from 17.4 deaths per 100,000 live births in 2018 to 20.1 in 2019. The maternal mortality rate for non-Hispanic white women increased 20.1% from 14.9 in 2018 to 17.9 in 2019. The changes in maternal mortality rates for non-Hispanic black, non-Hispanic Asian, and Hispanic women were not significant. The maternal mortality rate for non-Hispanic black women (44.0) was 2.5 times the rate for non-Hispanic white women (17.9), 3.2 times the rate for non-Hispanic Asian women (13.8), and 3.5 times the rate for Hispanic women (12.6). The maternal mortality rates for non-Hispanic

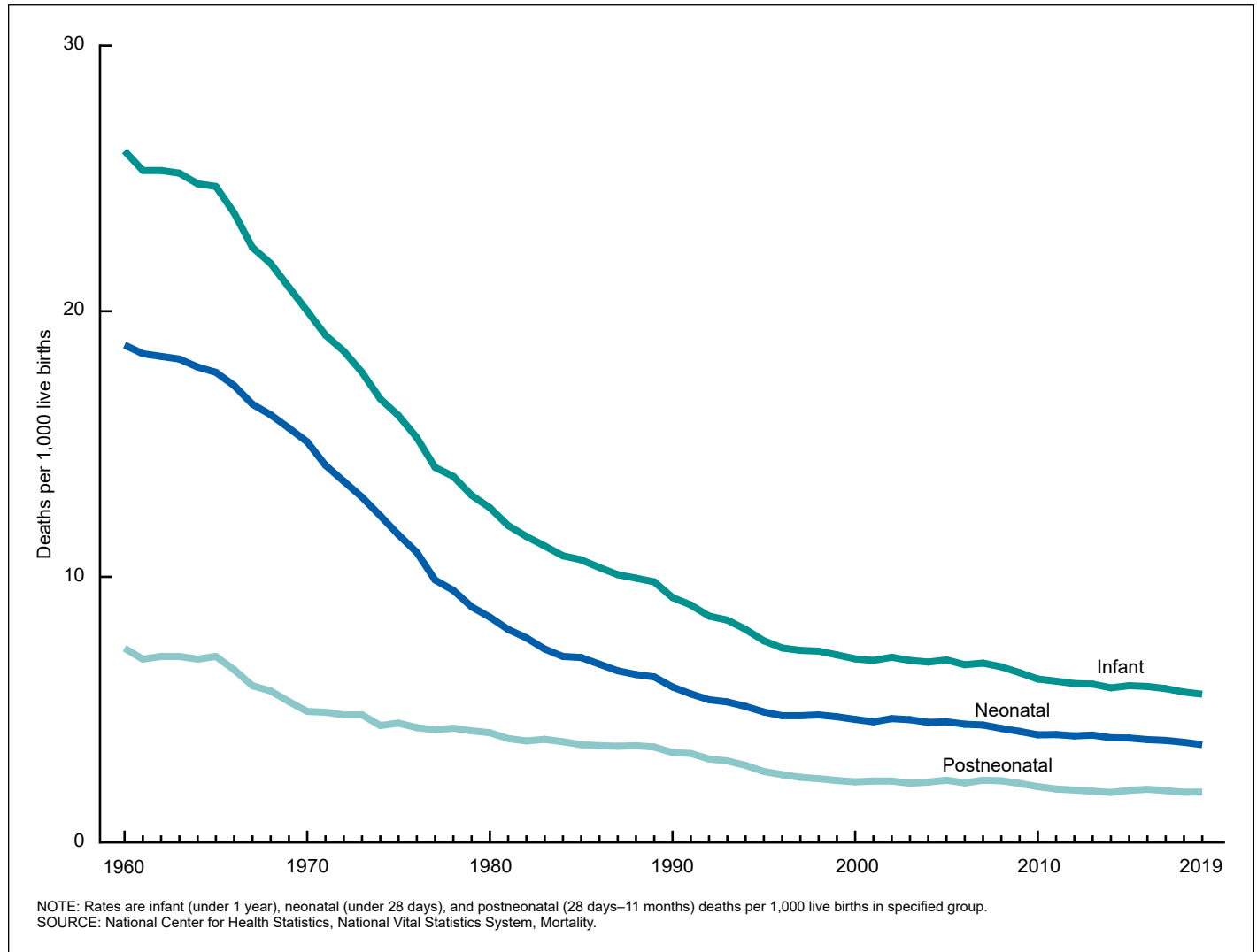
AIAN and NHPI women do not meet standards of reliability because the numbers of deaths are too low.

Maternal deaths and death rates shown in this report are based on the new method for coding maternal deaths that was adopted by NCHS starting with the 2018 data year (9) (see [Technical Notes](#)). This method restricts application of the pregnancy checkbox to decedents aged 10–44 for coding cause of death to a maternal cause when the death certificate has no mention of a maternal-related condition but has a positive checkbox entry (38). 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” (38) and [Technical Notes](#).

## Additional mortality tables based on 2019 final data

Trend data on mortality due to 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/nvsr70/nvsr70-08-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



**Figure 5. Infant, neonatal, and postneonatal mortality rates: United States, 1960–2019**

(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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**Table 1. Number of deaths, death rates, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 2010–2019**

[Excludes deaths of nonresidents of the United States]

Race and Hispanic origin and year	Number			Crude death rate <sup>1</sup>			Age-adjusted death rate <sup>2</sup>		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All races and origins <sup>3</sup>									
2019.....	2,854,838	1,473,823	1,381,015	869.7	911.7	829.0	715.2	846.7	602.7
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 <sup>4</sup>									
2019.....	2,183,844	1,115,767	1,068,077	1,106.8	1,146.6	1,068.1	739.9	868.8	627.4
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 <sup>5</sup>									
2019.....	2,189,567	1,118,660	1,070,907	1,089.8	1,129.1	1,051.7	736.8	864.9	625.0
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 <sup>4</sup>									
2019.....	346,677	181,363	165,314	842.5	921.8	769.9	884.0	1,092.8	724.9
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 <sup>5</sup>									
2019.....	348,761	182,341	166,420	806.6	880.2	739.0	870.7	1,074.7	715.4
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 <sup>4</sup>									
2019.....	18,057	9,732	8,325	741.6	812.1	673.3	782.5	901.9	673.3
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 <sup>5</sup>									
2019.....	19,696	10,842	8,854	712.2	799.6	628.2	767.3	911.0	640.6
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

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, 2010–2019—Con.**

[Excludes deaths of nonresidents of the United States]

Race and Hispanic origin and year	Number			Crude death rate <sup>1</sup>			Age-adjusted death rate <sup>2</sup>		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Non-Hispanic, single-race Asian <sup>4</sup>									
2019.....	70,532	35,914	34,618	373.1	398.7	349.8	372.8	442.4	317.2
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 <sup>4</sup>									
2019.....	3,491	1,938	1,553	585.8	646.5	524.4	679	769.0	589.5
2018.....	3,277	1,786	1,491	558.9	605.4	511.8	675.7	758.1	597.3
Non-Hispanic, bridged-race Asian or Pacific Islander <sup>5,6</sup>									
2019.....	77,474	39,830	37,644	373.2	400.9	347.7	384.9	457.2	326.5
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 <sup>7</sup>									
2019.....	212,397	117,683	94,714	350.7	384.9	315.7	523.8	633.2	430.7
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

<sup>1</sup>Rates are on an annual basis per 100,000 population in specified group; see Technical Notes in this report.<sup>2</sup>Age-adjusted rates are per 100,000 U.S. standard population. For method of computation, see Technical Notes.<sup>3</sup>Includes races and origins not shown separately; see Technical Notes.<sup>4</sup>Only one race was reported on the death certificate. Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget (OMB) standards; see Technical Notes.<sup>5</sup>Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards. Race and Hispanic-origin categories are consistent with 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.<sup>6</sup>Includes Chinese, Filipino, Hawaiian, Japanese, and other Asian or Pacific Islander persons.<sup>7</sup>Includes persons of Hispanic origin of any race. The Hispanic-origin category is consistent with 1997 OMB standards; see Technical Notes.

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, 2019**

[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. 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	Age group (years)													Age not stated	Age-adjusted rate <sup>2</sup>
	All ages	Under 1 <sup>1</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over			
	Number														
Total . . . . .	2,854,838	20,921	3,676	5,497	29,771	59,178	82,986	160,393	374,937	555,559	688,027	873,746	147	...	
Male . . . . .	1,473,823	11,674	2,041	3,186	21,748	41,351	53,436	98,847	227,925	320,247	355,100	338,165	103	...	
Female . . . . .	1,381,015	9,247	1,635	2,311	8,023	17,827	29,550	61,546	147,012	235,312	332,927	535,581	44	...	
Single race <sup>3</sup> . . . . .	2,839,907	20,013	3,501	5,320	29,062	58,269	82,006	159,050	372,617	552,946	685,509	871,467	147	...	
Male . . . . .	1,465,729	11,180	1,944	3,094	21,258	40,747	52,849	98,036	226,557	318,818	353,843	337,300	103	...	
Female . . . . .	1,374,178	8,833	1,557	2,226	7,804	17,522	29,157	61,014	146,060	234,128	331,666	534,167	44	...	
Two or more races <sup>4</sup> . . . . .	14,931	908	175	177	709	909	980	1,343	2,320	2,613	2,518	2,279	–	...	
Male . . . . .	8,094	494	97	92	490	604	587	811	1,368	1,429	1,257	865	–	...	
Female . . . . .	6,837	414	78	85	219	305	393	532	952	1,184	1,261	1,414	–	...	
Non-Hispanic, single race <sup>3</sup> . . . . .	2,622,601	15,386	2,747	4,165	23,085	49,006	70,030	139,632	340,319	514,126	642,093	821,939	73	...	
Male . . . . .	1,344,714	8,586	1,526	2,430	16,742	33,799	44,639	85,197	205,909	296,142	331,877	317,816	51	...	
Female . . . . .	1,277,887	6,800	1,221	1,735	6,343	15,207	25,391	54,435	134,410	217,984	310,216	504,123	22	...	
White . . . . .	2,183,844	8,366	1,637	2,625	14,635	33,845	49,699	102,752	263,160	420,378	552,717	733,978	52	...	
Male . . . . .	1,115,767	4,719	937	1,523	10,349	23,165	31,957	63,368	160,514	243,812	288,331	287,052	40	...	
Female . . . . .	1,068,077	3,647	700	1,102	4,286	10,680	17,742	39,384	102,646	176,566	264,386	446,926	12	...	
Black . . . . .	346,677	6,092	901	1,256	7,138	12,535	16,716	30,371	65,348	76,804	68,102	61,395	19	...	
Male . . . . .	181,363	3,342	485	740	5,481	8,888	10,455	17,908	38,334	42,843	32,462	20,414	11	...	
Female . . . . .	165,314	2,750	416	516	1,657	3,647	6,261	12,463	27,014	33,961	35,640	40,981	8	...	
American Indian or Alaska Native . . . . .	18,057	229	75	87	502	1,126	1,412	2,078	3,322	3,693	3,270	2,263	–	...	
Male . . . . .	9,732	124	36	55	329	719	843	1,237	1,914	2,023	1,623	829	–	...	
Female . . . . .	8,325	105	39	32	173	407	569	841	1,408	1,670	1,647	1,434	–	...	
Asian . . . . .	70,532	628	123	179	718	1,323	1,943	4,017	7,836	12,409	17,425	23,929	2	...	
Male . . . . .	35,914	358	62	100	521	897	1,220	2,433	4,773	6,993	9,174	9,383	–	...	
Female . . . . .	34,618	270	61	79	197	426	723	1,584	3,063	5,416	8,251	14,546	2	...	
Native Hawaiian or Other Pacific Islander . . . . .	3,491	71	11	18	92	177	260	414	653	842	579	374	–	...	
Male . . . . .	1,938	43	6	12	62	130	164	251	374	471	287	138	–	...	
Female . . . . .	1,553	28	5	6	30	47	96	163	279	371	292	236	–	...	
Non-Hispanic, two or more races <sup>4</sup> . . . . .	12,897	723	147	142	589	774	815	1,136	2,061	2,276	2,250	1,984	–	...	
Male . . . . .	6,959	388	81	73	404	503	486	680	1,215	1,252	1,122	755	–	...	
Female . . . . .	5,938	335	66	69	185	271	329	456	846	1,024	1,128	1,229	–	...	

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, 2019—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. 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	Age group (years)												Age not stated	Age-adjusted rate <sup>2</sup>
	All ages	Under 1 <sup>1</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over		
	Number													
Hispanic, total <sup>5</sup> . . . . .	212,397	4,607	772	1,181	6,054	9,269	11,929	19,062	31,042	37,337	42,375	48,759	10	...
Male . . . . .	117,683	2,571	429	677	4,571	6,957	8,169	12,572	19,693	21,604	21,286	19,145	9	...
Female . . . . .	94,714	2,036	343	504	1,483	2,312	3,760	6,490	11,349	15,733	21,089	29,614	1	...
Hispanic, single race <sup>3</sup> . . . . .	210,392	4,425	745	1,146	5,935	9,136	11,765	18,857	30,786	37,009	42,110	48,468	10	...
Male . . . . .	116,565	2,468	414	658	4,485	6,858	8,068	12,443	19,542	21,429	21,153	19,038	9	...
Female . . . . .	93,827	1,957	331	488	1,450	2,278	3,697	6,414	11,244	15,580	20,957	29,430	1	...
White . . . . .	204,524	4,079	696	1,091	5,668	8,750	11,399	18,311	29,930	36,080	41,114	47,396	10	...
Male . . . . .	113,266	2,266	386	625	4,283	6,571	7,828	12,093	19,033	20,894	20,651	18,627	9	...
Female . . . . .	91,258	1,813	310	466	1,385	2,179	3,571	6,218	10,897	15,186	20,463	28,769	1	...
Black . . . . .	3,852	263	39	34	171	247	231	345	532	611	664	715	–	...
Male . . . . .	2,195	152	23	21	130	184	154	226	324	352	345	284	–	...
Female . . . . .	1,657	111	16	13	41	63	77	119	208	259	319	431	–	...
American Indian or Alaska Native . . . . .	1,109	37	4	10	53	84	90	119	198	177	164	173	–	...
Male . . . . .	633	21	2	9	43	59	56	74	117	113	73	66	–	...
Female . . . . .	476	16	2	1	10	25	34	45	81	64	91	107	–	...
Asian . . . . .	627	29	6	9	24	28	23	50	80	92	134	152	–	...
Male . . . . .	299	19	3	2	17	19	14	28	42	40	64	51	–	...
Female . . . . .	328	10	3	7	7	9	9	22	38	52	70	101	–	...
Native Hawaiian or Other Pacific Islander . . . . .	280	17	–	2	19	27	22	32	46	49	34	32	–	...
Male . . . . .	172	10	–	1	12	25	16	22	26	30	20	10	–	...
Female . . . . .	108	7	–	1	7	2	6	10	20	19	14	22	–	...
Hispanic, two or more races <sup>4</sup> . . . . .	2,005	182	27	35	119	133	164	205	256	328	265	291	–	...
Male . . . . .	1,118	103	15	19	86	99	101	129	151	175	133	107	–	...
Female . . . . .	887	79	12	16	33	34	63	76	105	153	132	184	–	...
Not stated or not classifiable origin <sup>6</sup> . . . . .	6,943	205	10	9	43	129	212	563	1,515	1,820	1,309	1,064	64	...
Male . . . . .	4,467	129	5	6	31	92	142	398	1,108	1,249	815	449	43	...
Female . . . . .	2,476	76	5	3	12	37	70	165	407	571	494	615	21	...

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, 2019—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. 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	Age group (years)												Age not stated	Age-adjusted rate <sup>2</sup>
	All ages	Under 1 <sup>1</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over		
							Rate <sup>7</sup>							
Total <sup>8</sup> .....	869.7	553.0	23.3	13.4	69.7	128.8	199.2	392.4	883.3	1,764.6	4,308.3	13,228.6	...	715.2
Male .....	911.7	603.3	25.3	15.2	99.7	177.0	257.0	490.0	1,111.9	2,178.6	5,074.1	14,229.6	...	846.7
Female .....	829.0	500.4	21.2	11.5	38.4	78.9	141.6	297.3	669.8	1,402.0	3,710.9	12,666.1	...	602.7
Single race <sup>3</sup> .....	890.0	563.4	23.6	13.7	71.0	130.5	201.2	395.5	889.1	1,774.2	4,329.5	13,294.8	...	719.7
Male .....	932.8	615.3	25.6	15.6	101.7	179.4	259.6	493.6	1,119.1	2,190.8	5,099.5	14,303.7	...	852.2
Female .....	848.4	509.1	21.5	11.8	39.0	79.9	143.0	299.7	674.2	1,409.3	3,728.9	12,728.0	...	606.3
Two or more races <sup>4</sup> .....	163.3	393.0	18.5	7.8	39.9	69.7	108.2	203.8	430.7	823.3	1,844.0	4,556.1	...	312.9
Male .....	178.8	418.7	20.1	7.9	54.4	94.0	135.9	260.1	538.4	973.1	2,116.7	4,713.6	...	364.8
Female .....	148.1	366.2	16.8	7.6	25.0	46.1	83.0	153.3	334.5	694.3	1,634.1	4,464.8	...	268.5
Non-Hispanic, single race <sup>3</sup> .....	1,007.2	588.4	25.1	14.6	73.6	138.5	216.7	420.2	921.5	1,810.8	4,414.5	13,580.5	...	741.1
Male .....	1,054.7	641.6	27.3	16.6	104.4	189.0	278.8	521.4	1,155.9	2,229.6	5,185.0	14,611.7	...	875.7
Female .....	961.5	532.7	22.9	12.4	41.3	86.8	155.7	322.2	703.0	1,442.6	3,809.0	13,002.1	...	625.7
White .....	1,106.8	444.6	20.9	12.8	64.7	134.5	210.9	408.4	892.1	1,783.6	4,468.3	14,067.8	...	739.9
Male .....	1,146.6	489.3	23.4	14.5	89.2	180.9	269.5	504.6	1,113.8	2,178.7	5,226.0	15,123.0	...	868.8
Female .....	1,068.1	397.5	18.4	11.0	38.9	86.5	151.6	312.6	680.4	1,426.4	3,858.3	13,464.4	...	627.4
Black .....	842.5	1,174.7	41.6	22.3	119.8	192.3	314.3	595.1	1,319.2	2,477.0	4,982.1	12,002.0	...	884.0
Male .....	921.8	1,266.1	44.2	25.9	181.7	273.8	413.8	749.7	1,689.7	3,222.5	6,134.6	13,094.9	...	1,092.8
Female .....	769.9	1,080.0	38.9	18.6	56.4	111.4	224.3	459.0	1,006.2	1,917.5	4,254.1	11,522.9	...	724.9
American Indian or Alaska Native .....	741.6	727.1	57.5	24.9	139.8	299.6	468.4	722.3	1,114.1	1,924.9	3,956.5	8,407.6	...	782.5
Male .....	812.1	769.2	54.0	31.0	180.4	376.7	564.5	884.4	1,363.1	2,281.4	4,434.7	8,268.5	...	901.9
Female .....	673.3	682.8	61.2	18.6	98.0	220.1	374.1	568.9	892.4	1,618.5	3,576.5	8,490.2	...	673.3
Asian .....	373.1	358.4	15.7	8.6	30.4	40.9	63.8	153.8	369.6	831.6	2,454.8	8,229.2	...	372.8
Male .....	398.7	397.8	15.4	9.4	43.9	56.5	85.4	199.9	495.5	1,067.7	2,956.5	8,624.8	...	442.4
Female .....	349.8	316.8	16.0	7.8	16.8	25.8	44.7	113.5	264.7	646.8	2,065.2	7,992.7	...	317.2
Native Hawaiian or Other Pacific Islander .....	585.8	931.6	*	*	108.9	172.0	288.6	572.1	1,031.6	2,165.8	3,637.2	6,606.6	...	679.0
Male .....	646.5	1,102.0	*	*	143.1	245.8	356.5	693.2	1,214.7	2,529.0	3,897.9	6,138.8	...	769.0
Female .....	524.4	752.9	*	*	72.9	94.0	217.7	450.9	858.2	1,831.8	3,412.8	6,914.7	...	589.5
Non-Hispanic, two or more races <sup>4</sup> .....	177.3	391.1	19.5	7.8	41.3	75.5	118.9	221.3	469.4	848.2	1,920.6	4,557.9	...	326.5
Male .....	193.7	411.0	21.0	7.9	55.9	100.3	150.7	281.7	586.0	1,002.7	2,178.7	4,693.2	...	379.6
Female .....	161.3	370.4	17.9	7.8	26.3	51.7	90.7	167.7	365.1	713.7	1,718.1	4,478.5	...	280.7

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, 2019—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. 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	Age group (years)												Age not stated	Age-adjusted rate <sup>2</sup>
	All ages	Under 1 <sup>1</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over		
							Rate <sup>7</sup>							
Hispanic, total <sup>5</sup> . . . . .	350.7	468.4	18.8	11.2	61.2	97.3	137.8	267.4	611.4	1,323.0	3,240.3	9,577.6	...	523.8
Male . . . . .	384.9	511.7	20.5	12.6	90.4	139.7	183.1	350.1	794.7	1,671.6	3,898.2	10,330.6	...	633.2
Female . . . . .	315.7	423.2	17.0	9.7	30.7	50.8	89.6	183.5	436.7	1,028.5	2,768.6	9,146.5	...	430.7
Hispanic, single race <sup>3</sup> . . . . .	358.4	472.1	19.0	11.3	62.3	98.8	139.5	270.1	618.5	1,334.6	3,268.5	9,643.4	...	528.6
Male . . . . .	393.3	515.4	20.7	12.8	92.0	141.8	185.4	353.4	803.8	1,686.7	3,930.6	10,399.9	...	639.0
Female . . . . .	322.8	426.9	17.2	9.9	31.1	51.7	90.5	185.3	441.6	1,036.9	2,793.5	9,210.0	...	434.4
White . . . . .	384.4	485.3	19.8	12.0	65.8	105.0	149.2	286.9	657.0	1,410.1	3,425.3	10,032.6	...	555.5
Male . . . . .	421.4	527.7	21.5	13.5	97.2	150.5	198.1	375.1	854.5	1,783.1	4,120.3	10,799.5	...	671.7
Female . . . . .	346.6	441.1	18.0	10.5	32.9	54.9	96.8	196.9	468.0	1,095.0	2,927.1	9,591.6	...	456.1
Black . . . . .	131.6	497.2	17.7	6.1	34.8	50.5	56.0	113.9	245.9	528.5	1,322.7	4,067.1	...	223.6
Male . . . . .	152.5	563.5	20.5	7.4	51.6	74.5	78.1	160.1	323.0	684.8	1,669.0	4,782.8	...	284.0
Female . . . . .	111.3	428.3	*	*	17.1	26.1	35.8	73.6	179.2	403.4	1,080.3	3,702.1	...	177.2
American Indian or Alaska Native . . . . .	63.3	125.2	*	*	18.3	29.3	34.4	57.2	137.2	258.9	644.7	2,043.7	...	111.9
Male . . . . .	69.5	139.4	*	*	29.1	38.3	39.7	67.0	157.7	337.3	651.2	2,076.1	...	125.1
Female . . . . .	56.5	*	*	*	18.9	28.2	46.1	115.6	183.6	639.6	2,024.2	...	98.4	
Asian . . . . .	104.7	267.3	*	*	24.1	28.6	26.7	75.2	174.4	390.1	1,379.0	4,614.5	...	201.7
Male . . . . .	100.1	*	*	*	*	*	*	86.0	191.9	381.2	1,614.5	4,493.4	...	216.7
Female . . . . .	109.3	*	*	*	*	*	*	64.9	158.4	397.2	1,216.8	4,678.1	...	189.1
Native Hawaiian or Other Pacific Islander . . . . .	132.7	*	*	*	*	72.0	64.3	134.7	304.7	707.7	1,256.5	3,791.5	...	242.0
Male . . . . .	157.5	*	*	*	*	122.4	*	181.0	349.0	910.5	1,803.4	*	...	291.9
Female . . . . .	106.0	*	*	*	*	*	*	*	261.5	*	*	4,247.1	...	194.3
Hispanic, two or more races <sup>4</sup> . . . . .	107.3	394.1	14.2	7.6	33.9	47.8	74.4	140.8	257.0	668.8	1,366.0	4,482.4	...	247.0
Male . . . . .	119.6	437.2	*	*	48.2	70.1	92.4	183.1	323.0	796.0	1,686.5	4,726.1	...	293.6
Female . . . . .	94.9	349.3	*	*	19.2	24.8	56.7	101.1	198.6	565.5	1,146.5	4,351.9	...	209.0

... Category not applicable.

– Quantity zero.

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes.

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

<sup>2</sup>For method of computation, see Technical Notes.

<sup>3</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>4</sup>Two or more races were reported on the death certificate; see Technical Notes.

<sup>5</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

<sup>6</sup>Includes origin not stated or not classifiable; see Technical Notes.

<sup>7</sup>Figures for age not stated included in “All ages” but not distributed among age groups.

<sup>8</sup>Includes deaths with origin not stated and origin not classifiable.

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, 2019**

[Life expectancies are preliminary estimates and may change slightly when updated data become available. Race and Hispanic-origin categories are consistent with the 1997 Office of Management and Budget (OMB) standards]

Exact age	Total <sup>1</sup>			Non-Hispanic, single-race white <sup>2</sup>			Non-Hispanic, single-race black <sup>2</sup>			Hispanic <sup>3,4</sup>		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
0.....	78.8	76.3	81.4	78.8	76.3	81.3	74.7	71.3	78.1	81.8	79.0	84.4
1.....	78.3	75.8	80.8	78.1	75.7	80.6	74.6	71.1	77.9	81.3	78.5	83.8
5.....	74.4	71.9	76.9	74.2	71.8	76.6	70.7	67.3	74.0	77.3	74.6	79.9
10.....	69.4	66.9	71.9	69.2	66.8	71.7	65.8	62.3	69.1	72.4	69.6	74.9
15.....	64.5	62.0	66.9	64.3	61.9	66.7	60.9	57.4	64.1	67.4	64.6	69.9
20.....	59.6	57.2	62.0	59.4	57.1	61.8	56.1	52.8	59.2	62.5	59.8	65.0
25.....	54.9	52.5	57.2	54.7	52.4	56.9	51.5	48.4	54.5	57.8	55.1	60.2
30.....	50.2	47.9	52.4	50.0	47.8	52.1	47.0	43.9	49.7	53.0	50.5	55.3
35.....	45.5	43.4	47.6	45.3	43.2	47.4	42.4	39.6	45.0	48.3	45.9	50.4
40.....	40.9	38.8	42.9	40.7	38.7	42.7	38.0	35.2	40.4	43.6	41.3	45.6
45.....	36.3	34.4	38.2	36.2	34.3	38.0	33.6	31.0	35.9	38.9	36.7	40.9
50.....	31.8	30.0	33.6	31.7	29.9	33.5	29.4	26.9	31.5	34.4	32.2	36.2
55.....	27.5	25.8	29.2	27.4	25.7	29.0	25.3	23.0	27.3	29.9	27.9	31.6
60.....	23.5	21.9	24.9	23.4	21.8	24.8	21.6	19.5	23.4	25.6	23.8	27.1
65.....	19.6	18.2	20.8	19.5	18.1	20.7	18.2	16.3	19.7	21.6	19.9	22.9
70.....	15.9	14.7	16.9	15.8	14.6	16.7	15.0	13.4	16.2	17.7	16.2	18.7
75.....	12.4	11.4	13.2	12.3	11.3	13.1	12.0	10.7	12.9	14.0	12.8	14.8
80.....	9.3	8.5	9.9	9.2	8.4	9.8	9.3	8.2	9.9	10.7	9.6	11.2
85.....	6.7	6.0	7.1	6.6	6.0	7.0	6.9	6.2	7.3	7.8	6.9	8.1
90.....	4.6	4.1	4.9	4.5	4.0	4.8	5.1	4.6	5.3	5.5	4.8	5.6
95.....	3.2	2.8	3.3	3.1	2.7	3.2	3.7	3.4	3.8	3.8	3.3	3.8
100.....	2.2	2.0	2.3	2.2	2.0	2.2	2.8	2.6	2.8	2.7	2.3	2.7

<sup>1</sup>Includes races and origins not shown separately; see Technical Notes in this report.

<sup>2</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>3</sup>Based on death rates adjusted for misclassification; see Technical Notes.

<sup>4</sup>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, 2010–2019**

[Life table data are based on revised life table methodology; see Technical Notes in this report]

Race and Hispanic origin and year	Both sexes	Male	Female
<b>All races and origins<sup>1</sup></b>			
2019 <sup>2</sup> .....	78.8	76.3	81.4
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
<b>Non-Hispanic, single-race white<sup>3</sup></b>			
2019 <sup>2</sup> .....	78.8	76.3	81.3
2018.....	78.6	76.2	81.1
<b>Non-Hispanic, bridged-race white<sup>4</sup></b>			
2019 <sup>2</sup> .....	78.8	76.4	81.3
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
<b>Non-Hispanic, single-race black<sup>3</sup></b>			
2019 <sup>2</sup> .....	74.7	71.3	78.1
2018.....	74.7	71.3	78.0
<b>Non-Hispanic, bridged-race black<sup>4</sup></b>			
2019 <sup>2</sup> .....	74.9	71.5	78.2
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
<b>Hispanic<sup>5-7</sup></b>			
2019 <sup>2</sup> .....	81.8	79.0	84.4
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

<sup>1</sup>Includes races and origins not shown separately; see Technical Notes.<sup>2</sup>Life expectancies for 2019 are preliminary estimates and may change slightly when updated data become available.<sup>3</sup>Only one race was reported on the death certificate. Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget (OMB) standards; see Technical Notes.<sup>4</sup>Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards. Race and Hispanic-origin categories are consistent with 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.<sup>5</sup>Includes persons of Hispanic origin of any race. The Hispanic-origin category is consistent with 1997 OMB standards; see Technical Notes.<sup>6</sup>Based on death rates adjusted for misclassification; see Technical Notes.<sup>7</sup>Life expectancies by Hispanic origin were revised using updated adjustment factors to correct for race and Hispanic-origin misclassification; see Technical Notes.

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 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>All causes</b>													
2019.....	869.7	553.0	23.3	13.4	69.7	128.8	199.2	392.4	883.3	1,764.6	4,308.3	13,228.6	715.2
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
<b>Diseases of heart (100–109,I11,I13,I20–I51)</b>													
2019.....	200.8	7.1	0.8	0.4	2.0	7.6	25.2	76.2	190.4	388.8	991.2	3,798.3	161.5
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

**Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Malignant neoplasms (C00–C97)</b>													
2019.....	182.7	1.5	1.8	1.9	3.3	7.8	25.7	87.1	263.3	543.3	1,005.9	1,571.0	146.2
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
<b>Accidents (unintentional injuries) (V01–X59, Y85–Y86)</b>													
2019.....	52.7	33.5	7.3	3.6	27.5	53.4	57.8	57.1	58.6	54.5	115.5	377.4	49.3
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



**Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Chronic lower respiratory diseases (J40–J47)</b>													
2019.....	47.8	*	0.2	0.4	0.4	0.8	1.6	8.8	44.2	124.6	318.0	654.3	38.2
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
<b>Cerebrovascular diseases (I60–I69)</b>													
2019.....	45.7	2.7	0.3	0.2	0.4	1.3	4.2	12.6	30.5	76.4	254.2	977.3	37.0
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

**Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Alzheimer disease (G30)</b>													
2019.....	37.0	*	*	*	*	*	*	0.3	3.0	24.9	210.2	1,191.3	29.8
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
<b>Diabetes mellitus (E10–E14)</b>													
2019.....	26.7	*	*	0.1	0.6	1.9	5.3	15.5	36.5	73.3	138.9	259.5	21.6
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 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Nephritis, nephrotic syndrome and nephrosis (N00–N07, N17–N19, N25–N27)</b>													
2019.....	15.7	1.6	*	*	0.2	0.7	1.8	5.6	13.8	34.7	92.2	250.9	12.7
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
<b>Influenza and pneumonia (J09–J18)</b>													
2019.....	15.2	4.1	0.8	0.3	0.4	1.0	2.3	5.1	12.5	27.3	77.2	294.7	12.3
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

**Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Intentional self-harm (suicide)</b> (*U03,X60–X84,Y87.0) <sup>4</sup>													
2019.....	14.5	...	...	1.3	13.9	17.5	18.1	19.6	19.4	15.5	18.6	20.1	13.9
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 <sup>5</sup> .....	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
<b>Dementia-related causes<sup>6</sup></b>													
2019.....	82.8	*	*	0.1	*	0.1	0.1	0.9	8.2	59.3	448.6	2,688.9	66.6
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 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Drug-induced causes<sup>6</sup></b>													
2019.....	22.7	1.3	0.3	0.2	11.5	36.9	42.3	38.9	32.7	12.6	5.2	4.6	22.8
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
<b>Alcohol-induced causes<sup>6</sup></b>													
2019.....	11.9	*	*	*	0.4	4.2	11.1	22.0	32.5	22.5	12.6	6.4	10.4
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

**Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2019, dementia-related causes, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> ) and year	Age group (years)												Age- adjusted rate <sup>3</sup>
	All ages <sup>1</sup>	Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
<b>Injury by firearms<sup>6</sup></b>													
2019.....	12.1	*	0.5	1.0	17.4	18.1	14.6	12.7	12.3	11.1	15.0	16.1	11.9
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.

... Category not applicable.

<sup>1</sup>Figures for age not stated included in "All ages" but not distributed among age groups.<sup>2</sup>Death rates for "Under 1" (based on population estimates) differ from infant mortality rates (based on live births); see Technical Notes.<sup>3</sup>For method of computation, see Technical Notes.<sup>4</sup>Asterisks (\*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD-10); see Technical Notes.<sup>5</sup>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," Vital Statistics Reports vol 52 no 3.<sup>6</sup>For the list of ICD-10 codes included, see Technical Notes.

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

**Table 6. Number of deaths from selected causes, by age: United States, 2019**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	All ages	Age group (years)											Age not stated
		Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
All causes . . . . .	2,854,838	20,921	3,676	5,497	29,771	59,178	82,986	160,393	374,937	555,559	688,027	873,746	147
Enterocolitis due to <i>Clostridium difficile</i> . . . . . (A04.7)	4,533	3	2	–	2	18	48	134	442	948	1,384	1,552	–
Septicemia . . . . . (A40–A41)	38,431	133	53	63	113	381	812	2,176	5,672	8,810	10,298	9,919	1
Viral hepatitis . . . . . (B15–B19)	4,285	–	–	1	7	44	177	623	1,726	1,228	345	134	–
Human immunodeficiency virus (HIV) disease . . . . . (B20–B24)	5,044	1	1	1	55	486	694	1,232	1,543	767	223	39	2
Malignant neoplasms . . . . . (C00–C97)	599,601	55	285	775	1,388	3,577	10,695	35,587	111,765	171,062	160,639	103,761	12
Malignant neoplasms of lip, oral cavity and pharynx . . . . . (C00–C14)	10,492	–	–	1	15	54	182	825	2,708	3,138	2,217	1,352	–
Malignant neoplasm of esophagus . . . . . (C15)	15,962	–	–	–	6	49	233	1,122	3,808	5,192	3,852	1,699	1
Malignant neoplasm of stomach . . . . . (C16)	11,092	–	–	1	20	125	430	1,021	2,068	2,920	2,696	1,811	–
Malignant neoplasms of colon, rectum and anus . . . . . (C18–C21)	52,986	–	–	1	37	324	1,428	4,887	10,351	13,050	12,444	10,464	–
Malignant neoplasms of liver and intrahepatic bile ducts . . . . . (C22)	27,959	4	15	9	35	112	319	1,488	7,152	9,570	6,203	3,051	1
Malignant neoplasm of pancreas . . . . . (C25)	45,886	–	1	–	7	53	479	2,448	9,047	14,423	12,684	6,743	1
Malignant neoplasms of trachea, bronchus and lung . . . . . (C33–C34)	139,682	2	2	4	22	106	771	5,579	27,511	45,445	41,661	18,577	2
Malignant melanoma of skin . . . . . (C43)	8,092	–	3	3	14	113	295	607	1,470	2,063	2,067	1,457	–
Malignant neoplasm of breast . . . . . (C50)	42,748	–	–	–	11	433	1,916	4,627	8,976	10,568	8,810	7,406	1
Malignant neoplasm of cervix uteri . . . . . (C53)	4,152	–	–	–	8	183	550	846	1,018	828	468	251	–
Malignant neoplasm of ovary . . . . . (C56)	13,445	–	–	1	18	88	297	1,063	2,862	3,945	3,389	1,782	–
Malignant neoplasm of prostate . . . . . (C61)	31,638	–	1	–	3	2	23	385	2,922	7,590	10,487	10,223	2
Malignant neoplasms of kidney and renal pelvis . . . . . (C64–C65)	14,021	–	12	23	27	62	196	879	2,645	4,068	3,679	2,430	–
Malignant neoplasm of bladder . . . . . (C67)	16,796	–	–	1	1	15	76	373	1,785	3,773	5,331	5,441	–
Malignant neoplasms of meninges, brain and other parts of central nervous system . . . . . (C70–C72)	17,233	17	70	294	232	416	794	1,743	3,998	5,001	3,286	1,381	1
Non-Hodgkin lymphoma . . . . . (C82–C85)	20,270	–	5	18	97	151	319	848	2,556	4,991	6,540	4,745	–
Multiple myeloma and immunoproliferative neoplasms . . . . . (C88,C90)	12,954	–	–	1	1	6	97	482	1,793	3,629	4,297	2,648	–
Leukemia . . . . . (C91–C95)	23,170	13	90	189	296	361	536	996	2,692	5,545	7,087	5,365	–
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	15,590	42	49	66	66	112	227	533	1,475	3,099	4,793	5,128	–
Anemias . . . . . (D50–D64)	5,254	11	24	29	54	126	209	250	485	859	1,221	1,985	1
Diabetes mellitus . . . . . (E10–E14)	87,647	–	2	26	248	887	2,228	6,348	15,508	23,069	22,185	17,143	3
Nutritional deficiencies . . . . . (E40–E64)	11,570	13	4	3	10	22	72	202	662	1,396	2,778	6,408	–
Obesity . . . . . (E66)	8,379	–	–	9	84	425	909	1,548	2,310	1,883	952	259	–
Parkinson disease . . . . . (G20–G21)	35,311	–	–	–	–	2	10	70	794	5,276	14,902	14,257	–
Alzheimer disease . . . . . (G30)	121,499	–	–	–	–	2	10	116	1,281	7,836	33,566	78,688	–

See footnotes at end of table.

**Table 6. Number of deaths from selected causes, by age: United States, 2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	All ages	Age group (years)											Age not stated
		Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Major cardiovascular diseases . . . . . (I00–I78)	869,883	387	187	275	1,097	4,401	13,282	38,903	100,807	158,086	213,880	338,535	43
Diseases of heart . . . . . (I00–I09,I11,I13,I20–I51)	659,041	268	133	178	872	3,495	10,499	31,138	80,837	122,421	158,287	250,875	38
Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	36,524	1	1	–	19	125	496	1,485	4,143	6,583	8,670	15,001	–
Cerebrovascular diseases . . . . . (I60–I69)	150,005	102	52	85	158	585	1,741	5,153	12,931	24,051	40,592	64,550	5
Atherosclerosis . . . . . (I70)	4,417	2	1	2	–	6	16	83	340	666	1,076	2,225	–
Aortic aneurysm and dissection . . . . . (I71)	9,904	1	–	6	28	121	398	670	1,399	2,215	2,658	2,408	–
Influenza and pneumonia . . . . . (J09–J18)	49,783	156	122	123	175	464	951	2,085	5,305	8,603	12,332	19,464	3
Chronic lower respiratory diseases . . . . . (J40–J47)	156,979	12	37	150	168	367	659	3,592	18,743	39,238	50,791	43,217	5
Pneumonitis due to solids and liquids . . . . . (J69)	19,184	8	4	10	33	110	210	535	1,580	3,042	5,064	8,588	–
Chronic liver disease and cirrhosis . . . . . (K70,K73–K74)	44,358	–	–	3	33	1,112	3,417	8,098	14,385	10,411	5,144	1,751	4
Alcoholic liver disease . . . . . (K70)	24,110	–	–	–	25	938	2,653	5,661	8,805	4,536	1,266	222	4
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	3,850	–	–	1	2	16	51	117	368	685	1,051	1,559	–
Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07,N17–N19,N25–N27)	51,565	61	5	12	68	302	761	2,269	5,857	10,938	14,720	16,572	–
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	1,103	...	...	2	150	532	398	15	4	–	–	1	1
Certain conditions originating in the perinatal period . . . . . (P00–P96)	10,412	10,294	57	30	12	5	3	3	2	5	–	1	–
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	9,713	4,301	416	381	390	396	434	707	1,282	653	417	336	–
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	32,408	2,453	229	103	502	1,154	1,365	1,795	3,396	4,199	5,576	11,600	36
Accidents (unintentional injuries) . . . . . (V01–X59,Y85–Y86)	173,040	1,266	1,149	1,492	11,755	24,516	24,070	23,359	24,892	17,163	18,438	24,926	14
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)	39,107	74	361	847	6,031	6,807	5,397	5,280	5,811	4,132	2,953	1,412	2
Falls . . . . . (W00–W19)	39,443	7	23	28	178	330	537	1,206	2,922	5,388	10,565	18,259	–
Accidental discharge of firearms . . . . . (W32–W34)	486	2	24	25	128	74	57	63	51	26	29	7	–
Accidental drowning and submersion . . . . . (W65–W74)	3,692	34	378	233	415	451	415	466	500	419	273	105	3
Accidental hanging, strangulation, and suffocation . . . . . (W75–W84)	7,076	1,095	139	61	108	171	224	425	859	1,119	1,286	1,589	–
Accidental exposure to smoke, fire and flames . . . . . (X00–X09)	2,692	8	74	111	81	154	191	271	568	614	406	213	1
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	65,773	14	27	33	4,346	15,595	16,063	14,105	11,856	3,055	477	195	7
Intentional self-harm (suicide) . . . . . (*U03,X60–X84,Y87.0) <sup>1</sup>	47,511	...	...	546	5,954	8,059	7,525	8,012	8,238	4,867	2,977	1,329	4
Intentional self-harm (suicide) by poisoning . . . . . (X60–X69)	6,125	...	...	31	482	714	958	1,398	1,385	697	332	128	–
Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70)	13,563	...	...	328	2,153	3,113	2,782	2,303	1,834	702	247	100	1
Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74)	23,941	...	...	172	2,800	3,507	3,187	3,616	4,266	3,130	2,244	1,018	1

See footnotes at end of table.



**Table 6. Number of deaths from selected causes, by age: United States, 2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	All ages	Age group (years)											Age not stated
		Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Assault (homicide) . . . . . (*U01–*U02,X85–Y09,Y87.1) <sup>1</sup>	19,141	263	284	346	4,774	5,341	3,446	2,053	1,561	693	274	104	2
Assault (homicide) by discharge of firearms . . . . . (*U01.4,X93–X95) <sup>1</sup>	14,414	10	47	212	4,339	4,498	2,660	1,359	824	314	114	36	1
Legal intervention . . . . . (Y35,Y89.0)	652	–	–	–	104	207	153	107	61	12	7	1	–
Complications of medical and surgical care . . . . . (Y40–Y84,Y88)	5,329	29	26	38	53	107	199	407	894	1,414	1,291	871	–
Dementia-related causes <sup>2</sup> . . . . .	271,872	10	19	25	5	26	48	359	3,464	18,666	71,646	177,602	2
Drug-induced deaths <sup>2</sup> . . . . .	74,511	50	50	63	4,891	16,953	17,607	15,908	13,873	3,982	825	301	8
Drug overdose deaths <sup>2</sup> . . . . .	70,630	50	50	63	4,777	16,375	16,859	15,083	12,896	3,557	672	240	8
Alcohol-induced deaths <sup>2</sup> . . . . .	39,043	–	–	2	164	1,918	4,614	9,004	13,814	7,077	2,020	421	9
Injury by firearms <sup>2</sup> . . . . .	39,707	12	74	424	7,437	8,323	6,071	5,173	5,225	3,502	2,401	1,062	3

– Quantity zero.

... Category not applicable.

<sup>1</sup>Asterisks (\*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision* (ICD–10); see Technical Notes.<sup>2</sup>Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

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

**Table 7. Death rates for selected causes, by age: United States, 2019**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	All ages <sup>1</sup>	Age group (years)										
		Under 1 <sup>2</sup>	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
All causes . . . . .	869.7	553.0	23.3	13.4	69.7	128.8	199.2	392.4	883.3	1,764.6	4,308.3	13,228.6
Enterocolitis due to <i>Clostridium difficile</i> . . . . . (A04.7)	1.4	*	*	*	*	*	0.1	0.3	1.0	3.0	8.7	23.5
Septicemia . . . . . (A40–A41)	11.7	3.5	0.3	0.2	0.3	0.8	1.9	5.3	13.4	28.0	64.5	150.2
Viral hepatitis . . . . . (B15–B19)	1.3	*	*	*	*	0.1	0.4	1.5	4.1	3.9	2.2	2.0
Human immunodeficiency virus (HIV) disease . . . . . (B20–B24)	1.5	*	*	*	0.1	1.1	1.7	3.0	3.6	2.4	1.4	0.6
Malignant neoplasms . . . . . (C00–C97)	182.7	1.5	1.8	1.9	3.3	7.8	25.7	87.1	263.3	543.3	1,005.9	1,571.0
Malignant neoplasms of lip, oral cavity and pharynx . . . . . (C00–C14)	3.2	*	*	*	*	0.1	0.4	2.0	6.4	10.0	13.9	20.5
Malignant neoplasm of esophagus . . . . . (C15)	4.9	*	*	*	*	0.1	0.6	2.7	9.0	16.5	24.1	25.7
Malignant neoplasm of stomach . . . . . (C16)	3.4	*	*	*	0.0	0.3	1.0	2.5	4.9	9.3	16.9	27.4
Malignant neoplasms of colon, rectum and anus . . . . . (C18–C21)	16.1	*	*	*	0.1	0.7	3.4	12.0	24.4	41.5	77.9	158.4
Malignant neoplasms of liver and intrahepatic bile ducts . . . . . (C22)	8.5	*	*	*	0.1	0.2	0.8	3.6	16.8	30.4	38.8	46.2
Malignant neoplasm of pancreas . . . . . (C25)	14.0	*	*	*	*	0.1	1.1	6.0	21.3	45.8	79.4	102.1
Malignant neoplasms of trachea, bronchus and lung . . . . . (C33–C34)	42.6	*	*	*	0.1	0.2	1.9	13.6	64.8	144.3	260.9	281.3
Malignant melanoma of skin . . . . . (C43)	2.5	*	*	*	*	0.2	0.7	1.5	3.5	6.6	12.9	22.1
Malignant neoplasm of breast . . . . . (C50)	13.0	*	*	*	*	0.9	4.6	11.3	21.1	33.6	55.2	112.1
Malignant neoplasm of cervix uteri . . . . . (C53)	1.3	*	*	*	*	0.4	1.3	2.1	2.4	2.6	2.9	3.8
Malignant neoplasm of ovary . . . . . (C56)	4.1	*	*	*	*	0.2	0.7	2.6	6.7	12.5	21.2	27.0
Malignant neoplasm of prostate . . . . . (C61)	9.6	*	*	*	*	*	0.1	0.9	6.9	24.1	65.7	154.8
Malignant neoplasms of kidney and renal pelvis . . . . . (C64–C65)	4.3	*	*	0.1	0.1	0.1	0.5	2.2	6.2	12.9	23.0	36.8
Malignant neoplasm of bladder . . . . . (C67)	5.1	*	*	*	*	*	0.2	0.9	4.2	12.0	33.4	82.4
Malignant neoplasms of meninges, brain and other parts of central nervous system . . . . . (C70–C72)	5.3	*	0.4	0.7	0.5	0.9	1.9	4.3	9.4	15.9	20.6	20.9
Non-Hodgkin lymphoma . . . . . (C82–C85)	6.2	*	*	*	0.2	0.3	0.8	2.1	6.0	15.9	41.0	71.8
Multiple myeloma and immunoproliferative neoplasms . . . . . (C88,C90)	3.9	*	*	*	*	*	0.2	1.2	4.2	11.5	26.9	40.1
Leukemia . . . . . (C91–C95)	7.1	*	0.6	0.5	0.7	0.8	1.3	2.4	6.3	17.6	44.4	81.2
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	4.7	1.1	0.3	0.2	0.2	0.2	0.5	1.3	3.5	9.8	30.0	77.6
Anemias . . . . . (D50–D64)	1.6	*	0.2	0.1	0.1	0.3	0.5	0.6	1.1	2.7	7.6	30.1
Diabetes mellitus . . . . . (E10–E14)	26.7	*	*	0.1	0.6	1.9	5.3	15.5	36.5	73.3	138.9	259.5
Nutritional deficiencies . . . . . (E40–E64)	3.5	*	*	*	*	0.0	0.2	0.5	1.6	4.4	17.4	97.0
Obesity . . . . . (E66)	2.6	*	*	*	0.2	0.9	2.2	3.8	5.4	6.0	6.0	3.9
Parkinson disease . . . . . (G20–G21)	10.8	*	*	*	*	*	*	0.2	1.9	16.8	93.3	215.9
Alzheimer disease . . . . . (G30)	37.0	*	*	*	*	*	*	0.3	3.0	24.9	210.2	1,191.3

See footnotes at end of table.

**Table 7. Death rates for selected causes, by age: United States, 2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	All ages <sup>1</sup>	Age group (years)										
		Under 1 <sup>2</sup>	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)	265.0	10.2	1.2	0.7	2.6	9.6	31.9	95.2	237.5	502.1	1,339.3	5,125.5
Diseases of heart . . . . . (I00–I09,I11,I13,I20–I51)	200.8	7.1	0.8	0.4	2.0	7.6	25.2	76.2	190.4	388.8	991.2	3,798.3
Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	11.1	*	*	*	*	0.3	1.2	3.6	9.8	20.9	54.3	227.1
Cerebrovascular diseases . . . . . (I60–I69)	45.7	2.7	0.3	0.2	0.4	1.3	4.2	12.6	30.5	76.4	254.2	977.3
Atherosclerosis . . . . . (I70)	1.3	*	*	*	*	*	*	0.2	0.8	2.1	6.7	33.7
Aortic aneurysm and dissection . . . . . (I71)	3.0	*	*	*	0.1	0.3	1.0	1.6	3.3	7.0	16.6	36.5
Influenza and pneumonia . . . . . (J09–J18)	15.2	4.1	0.8	0.3	0.4	1.0	2.3	5.1	12.5	27.3	77.2	294.7
Chronic lower respiratory diseases . . . . . (J40–J47)	47.8	*	0.2	0.4	0.4	0.8	1.6	8.8	44.2	124.6	318.0	654.3
Pneumonitis due to solids and liquids . . . . . (J69)	5.8	*	*	*	0.1	0.2	0.5	1.3	3.7	9.7	31.7	130.0
Chronic liver disease and cirrhosis . . . . . (K70,K73–K74)	13.5	*	*	*	0.1	2.4	8.2	19.8	33.9	33.1	32.2	26.5
Alcoholic liver disease . . . . . (K70)	7.3	*	*	*	0.1	2.0	6.4	13.8	20.7	14.4	7.9	3.4
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	1.2	*	*	*	*	*	0.1	0.3	0.9	2.2	6.6	23.6
Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07,N17–N19,N25–N27)	15.7	1.6	*	*	0.2	0.7	1.8	5.6	13.8	34.7	92.2	250.9
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	0.3	...	...	*	0.4	1.2	1.0	*	*	*	*	*
Certain conditions originating in the perinatal period . . . . . (P00–P96)	3.2	272.1	0.4	0.1	*	*	*	*	*	*	*	*
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	3.0	113.7	2.6	0.9	0.9	0.9	1.0	1.7	3.0	2.1	2.6	5.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	9.9	64.8	1.4	0.3	1.2	2.5	3.3	4.4	8.0	13.3	34.9	175.6
Accidents (unintentional injuries) . . . . . (V01–X59,Y85–Y86)	52.7	33.5	7.3	3.6	27.5	53.4	57.8	57.1	58.6	54.5	115.5	377.4
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)	11.9	2.0	2.3	2.1	14.1	14.8	13.0	12.9	13.7	13.1	18.5	21.4
Falls . . . . . (W00–W19)	12.0	*	0.1	0.1	0.4	0.7	1.3	3.0	6.9	17.1	66.2	276.4
Accidental discharge of firearms . . . . . (W32–W34)	0.1	*	0.2	0.1	0.3	0.2	0.1	0.2	0.1	0.1	0.2	*
Accidental drowning and submersion . . . . . (W65–W74)	1.1	0.9	2.4	0.6	1.0	1.0	1.0	1.1	1.2	1.3	1.7	1.6
Accidental hanging, strangulation, and suffocation . . . . . (W75–W84)	2.2	28.9	0.9	0.1	0.3	0.4	0.5	1.0	2.0	3.6	8.1	24.1
Accidental exposure to smoke, fire and flames . . . . . (X00–X09)	0.8	*	0.5	0.3	0.2	0.3	0.5	0.7	1.3	2.0	2.5	3.2
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	20.0	*	0.2	0.1	10.2	33.9	38.6	34.5	27.9	9.7	3.0	3.0

See footnotes at end of table.

**Table 7. Death rates for selected causes, by age: United States, 2019—Con.**

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

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	All ages <sup>1</sup>	Age group (years)										
		Under 1 <sup>2</sup>	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) <sup>3</sup>	14.5	...	...	1.3	13.9	17.5	18.1	19.6	19.4	15.5	18.6	20.1
Intentional self-harm (suicide) by poisoning . . . . . (X60–X69)	1.9	...	...	0.1	1.1	1.6	2.3	3.4	3.3	2.2	2.1	1.9
Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70)	4.1	...	...	0.8	5.0	6.8	6.7	5.6	4.3	2.2	1.5	1.5
Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74)	7.3	...	...	0.4	6.6	7.6	7.7	8.8	10.0	9.9	14.1	15.4
Assault (homicide) . . . . . (*U01–*U02,X85–Y09,Y87.1) <sup>3</sup>	5.8	7.0	1.8	0.8	11.2	11.6	8.3	5.0	3.7	2.2	1.7	1.6
Assault (homicide) by discharge of firearms . . . . . (*U01.4,X93–X95) <sup>3</sup>	4.4	*	0.3	0.5	10.2	9.8	6.4	3.3	1.9	1.0	0.7	0.5
Legal intervention . . . . . (Y35,Y89.0)	0.2	*	*	*	0.2	0.5	0.4	0.3	0.1	*	*	*
Complications of medical and surgical care . . . . . (Y40–Y84,Y88)	1.6	0.8	0.2	0.1	0.1	0.2	0.5	1.0	2.1	4.5	8.1	13.2
Dementia-related causes <sup>4</sup> . . . . .	82.8	*	*	0.1	*	0.1	0.1	0.9	8.2	59.3	448.6	2,688.9
Drug-induced deaths <sup>4</sup> . . . . .	22.7	1.3	0.3	0.2	11.5	36.9	42.3	38.9	32.7	12.6	5.2	4.6
Drug overdose deaths <sup>4</sup> . . . . .	21.5	1.3	0.3	0.2	11.2	35.6	40.5	36.9	30.4	11.3	4.2	3.6
Alcohol-induced deaths <sup>4</sup> . . . . .	11.9	*	*	*	0.4	4.2	11.1	22.0	32.5	22.5	12.6	6.4
Injury by firearms <sup>4</sup> . . . . .	12.1	*	0.5	1.0	17.4	18.1	14.6	12.7	12.3	11.1	15.0	16.1

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes.

... Category not applicable.

<sup>1</sup>Figures for age not stated included in "All ages" but not distributed among age groups.

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

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

<sup>4</sup>Included in selected categories above. For the list of ICD-10 codes included, see Technical Notes.

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, 2019**

[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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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 . . . . .	2,854,838	1,473,823	1,381,015	2,183,844	1,115,767	1,068,077	346,677	181,363	165,314	18,057	9,732	8,325	70,532	35,914	34,618	3,491	1,938	1,553	212,397	117,683	94,714
Enterocolitis due to <i>Clostridium</i> <i>difficile</i> . . . . . (A04.7)	4,533	1,889	2,644	3,584	1,502	2,082	435	161	274	42	17	25	83	35	48	8	2	6	358	163	195
Septicemia . . . . . (A40–A41)	38,431	18,867	19,564	28,143	13,808	14,335	6,347	3,015	3,332	261	131	130	716	335	381	49	22	27	2,701	1,428	1,273
Viral hepatitis . . . . . (B15–B19)	4,285	2,777	1,508	2,703	1,770	933	618	410	208	55	30	25	181	115	66	7	2	5	644	393	251
Human immunodeficiency virus (HIV) disease . . . . . (B20–B24)	5,044	3,753	1,291	1,598	1,327	271	2,556	1,717	839	31	22	9	54	49	5	5	3	2	736	587	149
Malignant neoplasms . . . . . (C00–C97)	599,601	315,876	283,725	460,950	245,380	215,570	70,513	35,426	35,087	2,979	1,536	1,443	17,702	8,889	8,813	752	375	377	43,079	22,320	20,759
Malignant neoplasms of lip, oral cavity and pharynx . . . . . (C00–C14)	10,492	7,375	3,117	8,269	5,790	2,479	1,062	775	287	43	30	13	411	275	136	16	11	5	626	438	188
Malignant neoplasm of esophagus . . . . . (C15)	15,962	12,823	3,139	13,467	10,965	2,502	1,241	867	374	84	58	26	289	218	71	11	9	2	789	643	146
Malignant neoplasm of stomach . . . . . (C16)	11,092	6,622	4,470	6,185	3,846	2,339	1,903	1,128	775	98	62	36	852	463	389	30	17	13	1,946	1,063	883
Malignant neoplasms of colon, rectum and anus . . . . . (C18–C21)	52,986	28,093	24,893	39,131	20,591	18,540	7,021	3,751	3,270	294	146	148	1,769	923	846	58	34	24	4,373	2,458	1,915
Malignant neoplasms of liver and intrahepatic bile ducts . . . . . (C22)	27,959	18,692	9,267	18,459	12,296	6,163	3,632	2,516	1,116	240	160	80	1,631	1,073	558	60	46	14	3,710	2,440	1,270
Malignant neoplasm of pancreas . . . . . (C25)	45,886	23,732	22,154	34,759	18,261	16,498	5,695	2,718	2,977	191	94	97	1,420	693	727	43	21	22	3,512	1,809	1,703
Malignant neoplasms of trachea, bronchus and lung . . . . . (C33–C34)	139,682	74,909	64,773	113,788	60,285	53,503	14,891	8,420	6,471	703	348	355	3,640	1,989	1,651	144	83	61	5,667	3,327	2,340
Malignant melanoma of skin . . . . . (C43)	8,092	5,295	2,797	7,619	5,024	2,595	121	68	53	18	13	5	45	20	25	4	3	1	254	146	108
Malignant neoplasm of breast . . . . . (C50)	42,748	467	42,281	30,985	357	30,628	6,642	82	6,560	212	3	209	1,262	6	1,256	64	–	64	3,319	19	3,300
Malignant neoplasm of cervix uteri . . . . . (C53)	4,152	...	4,152	2,545	...	2,545	783	...	783	31	...	31	157	...	157	13	...	13	588	...	588
Malignant neoplasm of ovary . . . . . (C56)	13,445	...	13,445	10,314	...	10,314	1,387	...	1,387	49	...	49	485	...	485	12	...	12	1,113	...	1,113
Malignant neoplasm of prostate . . . . . (C61)	31,638	31,638	...	23,262	23,262	...	5,312	5,312	...	132	132	...	566	566	...	31	31	...	2,135	2,135	...

See footnotes at end of table.

**Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	14,021	9,226	4,795	10,953	7,236	3,717	1,302	848	454	103	66	37	287	191	96	16	13	3	1,291	826	465
Malignant neoplasm of bladder . . . . . (C67)	16,796	12,056	4,740	14,248	10,397	3,851	1,248	759	489	42	31	11	318	217	101	15	8	7	836	579	257
Malignant neoplasms of meninges, brain and other parts of central nervous system . . . . . (C70–C72)	17,233	9,803	7,430	13,992	8,017	5,975	1,222	680	542	48	32	16	402	213	189	18	4	14	1,458	802	656
Non-Hodgkin lymphoma . . . . . (C82–C85)	20,270	11,478	8,792	16,182	9,173	7,009	1,521	819	702	85	50	35	678	402	276	29	17	12	1,667	950	717
Multiple myeloma and immunoproliferative neoplasms . . . . . (C88,C90)	12,954	7,247	5,707	9,194	5,301	3,893	2,369	1,189	1,180	47	28	19	275	152	123	13	6	7	994	535	459
Leukemia . . . . . (C91–C95)	23,170	13,508	9,662	18,544	10,999	7,545	1,992	1,036	956	85	44	41	623	368	255	38	19	19	1,764	972	792
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	15,590	8,424	7,166	12,613	6,940	5,673	1,436	667	769	58	24	34	463	241	222	20	12	8	928	506	422
Anemias . . . . . (D50–D64)	5,254	2,392	2,862	3,646	1,647	1,999	1,072	497	575	26	10	16	113	52	61	6	3	3	348	163	185
Diabetes mellitus . . . . . (E10–E14)	87,647	49,512	38,135	57,168	33,405	23,763	15,415	7,879	7,536	1,006	524	482	3,000	1,562	1,438	224	114	110	10,166	5,617	4,549
Nutritional deficiencies . . . . . (E40–E64)	11,570	4,337	7,233	9,166	3,350	5,816	1,323	541	782	66	28	38	244	93	151	6	2	4	699	293	406
Obesity . . . . . (E66)	8,379	4,404	3,975	5,958	3,219	2,739	1,555	684	871	61	31	30	38	18	20	21	10	11	662	399	263
Parkinson disease (G20–G21)	35,311	21,592	13,719	30,263	18,645	11,618	1,646	979	667	110	66	44	1,014	592	422	19	15	4	2,126	1,212	914
Alzheimer disease . . . . . (G30)	121,499	37,983	83,516	100,371	31,615	68,756	9,208	2,642	6,566	298	91	207	2,887	883	2,004	62	22	40	8,221	2,590	5,631
Major cardiovascular diseases . . . . . (I00–I78)	869,883	451,389	418,494	667,143	344,715	322,428	110,962	57,135	53,827	4,183	2,329	1,854	22,508	11,599	10,909	1,196	696	500	58,338	31,669	26,669
Diseases of heart . . . . . (I00–I09,I11, I13,I20–I51)	659,041	357,761	301,280	512,600	277,283	235,317	81,306	43,519	37,787	3,208	1,883	1,325	14,925	8,162	6,763	870	544	326	41,794	23,713	18,081
Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	36,524	16,613	19,911	24,962	11,182	13,780	6,605	3,074	3,531	186	87	99	1,458	659	799	56	27	29	3,030	1,458	1,572
Cerebrovascular diseases . . . . . (I60–I69)	150,005	64,347	85,658	110,804	46,490	64,314	20,003	8,966	11,037	686	309	377	5,495	2,456	3,039	242	110	132	11,959	5,649	6,310
Atherosclerosis . . . . . (I70)	4,417	2,046	2,371	3,520	1,631	1,889	430	203	227	17	6	11	107	45	62	4	2	2	311	144	167
Aortic aneurysm and dissection . . . . . (I71)	9,904	5,816	4,088	7,705	4,457	3,248	1,174	707	467	37	21	16	323	177	146	14	9	5	565	388	177

See footnotes at end of table.

**Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	49,783	24,644	25,139	38,066	18,696	19,370	5,363	2,646	2,717	367	171	196	1,784	901	883	79	38	41	3,808	2,028	1,780
Chronic lower respiratory diseases . . . . . (J40–J47)	156,979	73,724	83,255	136,136	62,997	73,139	11,446	5,796	5,650	778	360	418	1,859	1,080	779	76	38	38	5,700	2,923	2,777
Pneumonitis due to solids and liquids . . . . . (J69)	19,184	10,837	8,347	15,257	8,647	6,610	1,958	1,059	899	121	71	50	595	339	256	15	8	7	1,146	658	488
Chronic liver disease and cirrhosis . . . (K70,K73–K74)	44,358	28,105	16,253	31,881	19,954	11,927	3,421	2,104	1,317	1,079	551	528	683	434	249	32	22	10	6,877	4,781	2,096
Alcoholic liver disease . . . . . (K70)	24,110	16,650	7,460	17,040	11,514	5,526	1,815	1,171	644	803	410	393	286	219	67	16	14	2	3,904	3,154	750
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	3,850	1,889	1,961	2,967	1,474	1,493	343	153	190	33	18	15	139	69	70	7	2	5	339	163	176
Nephritis, nephrotic syndrome and nephrosis . . . (N00–N07, N17–N19, N25–N27)	51,565	26,669	24,896	35,081	18,358	16,723	9,740	4,794	4,946	373	179	194	1,523	780	743	88	47	41	4,488	2,356	2,132
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	1,103	...	1,103	483	...	483	361	...	361	22	...	22	43	...	43	8	...	8	175	...	175
Certain conditions originating in the perinatal period . . . . . (P00–P96)	10,412	5,858	4,554	3,830	2,171	1,659	3,316	1,838	1,478	81	40	41	364	202	162	32	20	12	2,297	1,314	983
Congenital malformations, deformations and chromosomal abnormalities . . . (Q00–Q99)	9,713	5,075	4,638	5,918	3,096	2,822	1,491	778	713	74	38	36	241	137	104	27	17	10	1,729	900	829
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	32,408	15,687	16,721	24,333	11,191	13,142	4,537	2,411	2,126	253	144	109	549	274	275	42	23	19	2,294	1,395	899

See footnotes at end of table.

**Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	173,040	112,720	60,320	125,151	78,616	46,535	21,615	15,142	6,473	2,046	1,303	743	3,092	1,978	1,114	189	143	46	18,874	14,147	4,727
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)	39,107	27,835	11,272	24,770	17,501	7,269	6,196	4,481	1,715	633	385	248	824	515	309	65	54	11	6,165	4,584	1,581
Falls . . . . . (W00–W19)	39,443	20,088	19,355	33,801	16,785	17,016	1,789	1,000	789	202	118	84	1,024	580	444	31	20	11	2,424	1,494	930
Accidental discharge of firearms . . . . . (W32–W34)	486	436	50	291	257	34	115	105	10	6	5	1	8	8	–	1	1	–	60	55	5
Accidental drowning and submersion . . . . . (W65–W74)	3,692	2,784	908	2,270	1,641	629	564	458	106	68	57	11	175	125	50	8	8	–	534	438	96
Accidental hanging, strangulation, and suffocation . . . . . (W75–W84)	7,076	4,124	2,952	5,113	2,969	2,144	1,066	607	459	71	45	26	170	99	71	9	4	5	540	334	206
Accidental exposure to smoke, fire and flames . . . . . (X00–X09)	2,692	1,613	1,079	1,897	1,119	778	496	301	195	34	21	13	34	21	13	–	–	–	200	136	64
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	65,773	46,169	19,604	45,981	31,344	14,637	9,702	7,045	2,657	822	510	312	586	464	122	56	42	14	7,543	6,029	1,514
Intentional self-harm (suicide) . . . . . (*U03, X60–X84, Y87.0) <sup>4</sup>	47,511	37,256	10,255	37,428	29,382	8,046	3,115	2,491	624	546	401	145	1,342	950	392	90	72	18	4,331	3,445	886
Intentional self-harm (suicide) by poisoning . . . . . (X60–X69)	6,125	3,046	3,079	5,086	2,522	2,564	318	148	170	45	20	25	183	105	78	5	3	2	418	218	200
Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70)	13,563	10,592	2,971	9,588	7,549	2,039	871	669	202	303	221	82	606	407	199	54	44	10	1,896	1,516	380
Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74)	23,941	20,725	3,216	20,090	17,329	2,761	1,546	1,378	168	154	128	26	316	276	40	21	19	2	1,534	1,350	184

See footnotes at end of table.



**Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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) <sup>4</sup>	19,141	15,264	3,877	5,176	3,460	1,716	9,951	8,624	1,327	292	212	80	292	191	101	39	29	10	3,122	2,534	588
Assault (homicide) by discharge of firearms . . . . (*U01.4,X93–X95) <sup>4</sup>	14,414	12,127	2,287	3,129	2,203	926	8,438	7,548	890	154	118	36	173	124	49	29	22	7	2,301	1,955	346
Legal intervention . . . . (Y35,Y89.0)	652	613	39	300	280	20	162	153	9	22	22	–	16	16	–	2	2	–	132	122	10
Complications of medical and surgical care . . . . . (Y40–Y84,Y88)	5,329	2,863	2,466	3,893	2,137	1,756	791	387	404	38	19	19	99	57	42	13	8	5	465	240	225
Dementia-related causes <sup>5</sup> . . .	271,872	90,482	181,390	226,969	75,549	151,420	21,629	7,067	14,562	733	254	479	5,931	1,932	3,999	147	64	83	15,412	5,243	10,169
Drug-induced deaths <sup>5</sup> . . . . .	74,511	50,393	24,118	52,796	34,490	18,306	11,115	7,968	3,147	785	465	320	713	530	183	66	48	18	7,837	6,106	1,731
Drug overdose deaths <sup>5</sup> . . . . .	70,630	47,881	22,749	50,044	32,798	17,246	10,517	7,532	2,985	723	426	297	679	505	174	58	42	16	7,473	5,830	1,643
Alcohol-induced deaths <sup>5</sup> . . . . .	39,043	27,921	11,122	27,951	19,588	8,363	3,391	2,409	982	1,315	785	530	467	368	99	26	20	6	5,458	4,442	1,016
Injury by firearms <sup>5</sup> . . . . .	39,707	34,041	5,666	23,964	20,173	3,791	10,288	9,198	1,090	336	272	64	513	424	89	54	45	9	4,058	3,503	555

... Category not applicable.

– Quantity zero.

<sup>1</sup>Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes.

<sup>2</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>3</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

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

<sup>5</sup>Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

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, 2019**

[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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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.....	869.7	911.7	829.0	1,106.8	1,146.6	1,068.1	842.5	921.8	769.9	741.6	812.1	673.3	373.1	398.7	349.8	585.8	646.5	524.4	350.7	384.9	315.7
Enterocolitis due to <i>Clostridium</i> <i>difficile</i> ..... (A04.7)	1.4	1.2	1.6	1.8	1.5	2.1	1.1	0.8	1.3	1.7	*	2.0	0.4	0.4	0.5	*	*	*	0.6	0.5	0.6
Septicemia..... (A40–A41)	11.7	11.7	11.7	14.3	14.2	14.3	15.4	15.3	15.5	10.7	10.9	10.5	3.8	3.7	3.8	8.2	7.3	9.1	4.5	4.7	4.2
Viral hepatitis..... (B15–B19)	1.3	1.7	0.9	1.4	1.8	0.9	1.5	2.1	1.0	2.3	2.5	2.0	1.0	1.3	0.7	*	*	*	1.1	1.3	0.8
Human immunodeficiency virus (HIV) disease..... (B20–B24)	1.5	2.3	0.8	0.8	1.4	0.3	6.2	8.7	3.9	1.3	1.8	*	0.3	0.5	*	*	*	*	1.2	1.9	0.5
Malignant neoplasms..... (C00–C97)	182.7	195.4	170.3	233.6	252.2	215.6	171.4	180.1	163.4	122.3	128.2	116.7	93.6	98.7	89.0	126.2	125.1	127.3	71.1	73.0	69.2
Malignant neoplasms of lip, oral cavity and pharynx..... (C00–C14)	3.2	4.6	1.9	4.2	5.9	2.5	2.6	3.9	1.3	1.8	2.5	*	2.2	3.1	1.4	*	*	*	1.0	1.4	0.6
Malignant neoplasm of esophagus..... (C15)	4.9	7.9	1.9	6.8	11.3	2.5	3.0	4.4	1.7	3.4	4.8	2.1	1.5	2.4	0.7	*	*	*	1.3	2.1	0.5
Malignant neoplasm of stomach..... (C16)	3.4	4.1	2.7	3.1	4.0	2.3	4.6	5.7	3.6	4.0	5.2	2.9	4.5	5.1	3.9	5.0	*	*	3.2	3.5	2.9
Malignant neoplasms of colon, rectum and anus..... (C18–C21)	16.1	17.4	14.9	19.8	21.2	18.5	17.1	19.1	15.2	12.1	12.2	12.0	9.4	10.2	8.5	9.7	11.3	8.1	7.2	8.0	6.4
Malignant neoplasms of liver and intrahepatic bile ducts..... (C22)	8.5	11.6	5.6	9.4	12.6	6.2	8.8	12.8	5.2	9.9	13.4	6.5	8.6	11.9	5.6	10.1	15.3	*	6.1	8.0	4.2
Malignant neoplasm of pancreas..... (C25)	14.0	14.7	13.3	17.6	18.8	16.5	13.8	13.8	13.9	7.8	7.8	7.8	7.5	7.7	7.3	7.2	7.0	7.4	5.8	5.9	5.7
Malignant neoplasms of trachea, bronchus and lung..... (C33–C34)	42.6	46.3	38.9	57.7	61.9	53.5	36.2	42.8	30.1	28.9	29.0	28.7	19.3	22.1	16.7	24.2	27.7	20.6	9.4	10.9	7.8
Malignant melanoma of skin..... (C43)	2.5	3.3	1.7	3.9	5.2	2.6	0.3	0.3	0.2	*	*	*	0.2	0.2	0.3	*	*	*	0.4	0.5	0.4
Malignant neoplasm of breast..... (C50)	13.0	0.3	25.4	15.7	0.4	30.6	16.1	0.4	30.5	8.7	*	16.9	6.7	*	12.7	10.7	*	21.6	5.5	*	11.0
Malignant neoplasm of cervix uteri..... (C53)	1.3	...	2.5	1.3	...	2.5	1.9	...	3.6	1.3	...	2.5	0.8	...	1.6	*	...	*	1.0	...	2.0
Malignant neoplasm of ovary..... (C56)	4.1	...	8.1	5.2	...	10.3	3.4	...	6.5	2.0	...	4.0	2.6	...	4.9	*	...	*	1.8	...	3.7
Malignant neoplasm of prostate..... (C61)	9.6	19.6	...	11.8	23.9	...	12.9	27.0	...	5.4	11.0	...	3.0	6.3	...	5.2	10.3	...	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, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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	2.9	5.6	7.4	3.7	3.2	4.3	2.1	4.2	5.5	3.0	1.5	2.1	1.0	*	*	*	2.1	2.7	1.5
Malignant neoplasm of bladder . . . . . (C67)	5.1	7.5	2.8	7.2	10.7	3.9	3.0	3.9	2.3	1.7	2.6	*	1.7	2.4	1.0	*	*	*	1.4	1.9	0.9
Malignant neoplasms of meninges, brain and other parts of central nervous system . . . . . (C70–C72)	5.3	6.1	4.5	7.1	8.2	6.0	3.0	3.5	2.5	2.0	2.7	*	2.1	2.4	1.9	*	*	*	2.4	2.6	2.2
Non-Hodgkin lymphoma . . . . . (C82–C85)	6.2	7.1	5.3	8.2	9.4	7.0	3.7	4.2	3.3	3.5	4.2	2.8	3.6	4.5	2.8	4.9	*	*	2.8	3.1	2.4
Multiple myeloma and immunoproliferative neoplasms . . . . . (C88,C90)	3.9	4.5	3.4	4.7	5.4	3.9	5.8	6.0	5.5	1.9	2.3	*	1.5	1.7	1.2	*	*	*	1.6	1.8	1.5
Leukemia . . . . . (C91–C95)	7.1	8.4	5.8	9.4	11.3	7.5	4.8	5.3	4.5	3.5	3.7	3.3	3.3	4.1	2.6	6.4	*	*	2.9	3.2	2.6
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	4.7	5.2	4.3	6.4	7.1	5.7	3.5	3.4	3.6	2.4	2.0	2.7	2.4	2.7	2.2	3.4	*	*	1.5	1.7	1.4
Anemias . . . . . (D50–D64)	1.6	1.5	1.7	1.8	1.7	2.0	2.6	2.5	2.7	1.1	*	*	0.6	0.6	0.6	*	*	*	0.6	0.5	0.6
Diabetes mellitus . . . . . (E10–E14)	26.7	30.6	22.9	29.0	34.3	23.8	37.5	40.0	35.1	41.3	43.7	39.0	15.9	17.3	14.5	37.6	38.0	37.1	16.8	18.4	15.2
Nutritional deficiencies . . . . . (E40–E64)	3.5	2.7	4.3	4.6	3.4	5.8	3.2	2.7	3.6	2.7	2.3	3.1	1.3	1.0	1.5	*	*	*	1.2	1.0	1.4
Obesity . . . . . (E66)	2.6	2.7	2.4	3.0	3.3	2.7	3.8	3.5	4.1	2.5	2.6	2.4	0.2	*	0.2	3.5	*	*	1.1	1.3	0.9
Parkinson disease . . . . . (G20–G21)	10.8	13.4	8.2	15.3	19.2	11.6	4.0	5.0	3.1	4.5	5.5	3.6	5.4	6.6	4.3	*	*	*	3.5	4.0	3.0
Alzheimer disease . . . . . (G30)	37.0	23.5	50.1	50.9	32.5	68.8	22.4	13.4	30.6	12.2	7.6	16.7	15.3	9.8	20.2	10.4	7.3	13.5	13.6	8.5	18.8
Major cardiovascular diseases . . . . . (I00–I78)	265.0	279.2	251.2	338.1	354.2	322.4	269.7	290.4	250.7	171.8	194.3	149.9	119.1	128.8	110.2	200.7	232.2	168.8	96.3	103.6	88.9
Diseases of heart . . . . . (I00–I09, I11,I13,I20–I51)	200.8	221.3	180.9	259.8	284.9	235.3	197.6	221.2	176.0	131.8	157.1	107.2	78.9	90.6	68.3	146.0	181.5	110.1	69.0	77.6	60.3
Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	11.1	10.3	12.0	12.7	11.5	13.8	16.1	15.6	16.4	7.6	7.3	8.0	7.7	7.3	8.1	9.4	9.0	9.8	5.0	4.8	5.2
Cerebrovascular diseases . . . . . (I60–I69)	45.7	39.8	51.4	56.2	47.8	64.3	48.6	45.6	51.4	28.2	25.8	30.5	29.1	27.3	30.7	40.6	36.7	44.6	19.7	18.5	21.0
Atherosclerosis . . . . . (I70)	1.3	1.3	1.4	1.8	1.7	1.9	1.0	1.0	1.1	*	*	*	0.6	0.5	0.6	*	*	*	0.5	0.5	0.6
Aortic aneurysm and dissection . . . . . (I71)	3.0	3.6	2.5	3.9	4.6	3.2	2.9	3.6	2.2	1.5	1.8	*	1.7	2.0	1.5	*	*	*	0.9	1.3	0.6

See footnotes at end of table.

**Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	15.2	15.2	15.1	19.3	19.2	19.4	13.0	13.4	12.7	15.1	14.3	15.9	9.4	10.0	8.9	13.3	12.7	13.8	6.3	6.6	5.9
Chronic lower respiratory diseases . . . . . (J40–J47)	47.8	45.6	50.0	69.0	64.7	73.1	27.8	29.5	26.3	32.0	30.0	33.8	9.8	12.0	7.9	12.8	12.7	12.8	9.4	9.6	9.3
Pneumonitis due to solids and liquids . . . . . (J69)	5.8	6.7	5.0	7.7	8.9	6.6	4.8	5.4	4.2	5.0	5.9	4.0	3.1	3.8	2.6	*	*	*	1.9	2.2	1.6
Chronic liver disease and cirrhosis . . . . . (K70,K73–K74)	13.5	17.4	9.8	16.2	20.5	11.9	8.3	10.7	6.1	44.3	46.0	42.7	3.6	4.8	2.5	5.4	7.3	*	11.4	15.6	7.0
Alcoholic liver disease . . . . . (K70)	7.3	10.3	4.5	8.6	11.8	5.5	4.4	6.0	3.0	33.0	34.2	31.8	1.5	2.4	0.7	*	*	*	6.4	10.3	2.5
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	1.2	1.2	1.2	1.5	1.5	1.5	0.8	0.8	0.9	1.4	*	*	0.7	0.8	0.7	*	*	*	0.6	0.5	0.6
Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07, N17–N19, N25–N27)	15.7	16.5	14.9	17.8	18.9	16.7	23.7	24.4	23.0	15.3	14.9	15.7	8.1	8.7	7.5	14.8	15.7	13.8	7.4	7.7	7.1
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	0.3	...	0.7	0.2	...	0.5	0.9	...	1.7	0.9	...	1.8	0.2	...	0.4	*	...	*	0.3	...	0.6
Certain conditions originating in the perinatal period . . . . . (P00–P96)	3.2	3.6	2.7	1.9	2.2	1.7	8.1	9.3	6.9	3.3	3.3	3.3	1.9	2.2	1.6	5.4	6.7	*	3.8	4.3	3.3
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	3.0	3.1	2.8	3.0	3.2	2.8	3.6	4.0	3.3	3.0	3.2	2.9	1.3	1.5	1.1	4.5	*	*	2.9	2.9	2.8
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	9.9	9.7	10.0	12.3	11.5	13.1	11.0	12.3	9.9	10.4	12.0	8.8	2.9	3.0	2.8	7.0	7.7	*	3.8	4.6	3.0

See footnotes at end of table.

**Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	52.7	69.7	36.2	63.4	80.8	46.5	52.5	77.0	30.1	84.0	108.7	60.1	16.4	22.0	11.3	31.7	47.7	15.5	31.2	46.3	15.8
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)	11.9	17.2	6.8	12.6	18.0	7.3	15.1	22.8	8.0	26.0	32.1	20.1	4.4	5.7	3.1	10.9	18.0	*	10.2	15.0	5.3
Falls . . . . . (W00–W19)	12.0	12.4	11.6	17.1	17.2	17.0	4.3	5.1	3.7	8.3	9.8	6.8	5.4	6.4	4.5	5.2	6.7	*	4.0	4.9	3.1
Accidental discharge of firearms . . . . . (W32–W34)	0.1	0.3	0.0	0.1	0.3	0.0	0.3	0.5	*	*	*	*	*	*	*	*	*	*	0.1	0.2	*
Accidental drowning and submersion . . . (W65–W74)	1.1	1.7	0.5	1.2	1.7	0.6	1.4	2.3	0.5	2.8	4.8	*	0.9	1.4	0.5	*	*	*	0.9	1.4	0.3
Accidental hanging, strangulation, and suffocation . . . (W75–W84)	2.2	2.6	1.8	2.6	3.1	2.1	2.6	3.1	2.1	2.9	3.8	2.1	0.9	1.1	0.7	*	*	*	0.9	1.1	0.7
Accidental exposure to smoke, fire and flames . . . . . (X00–X09)	0.8	1.0	0.6	1.0	1.1	0.8	1.2	1.5	0.9	1.4	1.8	*	0.2	0.2	*	*	*	*	0.3	0.4	0.2
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	20.0	28.6	11.8	23.3	32.2	14.6	23.6	35.8	12.4	33.8	42.6	25.2	3.1	5.2	1.2	9.4	14.0	*	12.5	19.7	5.0
Intentional self-harm (suicide) . . . . . (*U03, X60–X84, Y87.0) <sup>4</sup>	14.5	23.0	6.2	19.0	30.2	8.0	7.6	12.7	2.9	22.4	33.5	11.7	7.1	10.5	4.0	15.1	24.0	*	7.2	11.3	3.0
Intentional self-harm (suicide) by poisoning . . . . . (X60–X69)	1.9	1.9	1.8	2.6	2.6	2.6	0.8	0.8	0.8	1.8	1.7	2.0	1.0	1.2	0.8	*	*	*	0.7	0.7	0.7
Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70)	4.1	6.6	1.8	4.9	7.8	2.0	2.1	3.4	0.9	12.4	18.4	6.6	3.2	4.5	2.0	9.1	14.7	*	3.1	5.0	1.3
Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74)	7.3	12.8	1.9	10.2	17.8	2.8	3.8	7.0	0.8	6.3	10.7	2.1	1.7	3.1	0.4	3.5	*	*	2.5	4.4	0.6

See footnotes at end of table.

**Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2019—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 specified categories other than non-Hispanic, single-race white and non-Hispanic, single-race black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys; see Technical Notes]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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) <sup>4</sup>	5.8	9.4	2.3	2.6	3.6	1.7	24.2	43.8	6.2	12.0	17.7	6.5	1.5	2.1	1.0	6.5	9.7	*	5.2	8.3	2.0
Assault (homicide) by discharge of firearms . . . . . (*U01.4, X93–X95) <sup>4</sup>	4.4	7.5	1.4	1.6	2.3	0.9	20.5	38.4	4.1	6.3	9.8	2.9	0.9	1.4	0.5	4.9	7.3	*	3.8	6.4	1.2
Legal intervention . . . . . (Y35, Y89.0)	0.2	0.4	0.0	0.2	0.3	0.0	0.4	0.8	*	0.9	1.8	*	*	*	*	*	*	*	0.2	0.4	*
Complications of medical and surgical care . . . . . (Y40–Y84, Y88)	1.6	1.8	1.5	2.0	2.2	1.8	1.9	2.0	1.9	1.6	*	*	0.5	0.6	0.4	*	*	*	0.8	0.8	0.7
Dementia-related causes <sup>5</sup> . . . . .	82.8	56.0	108.9	115.0	77.6	151.4	52.6	35.9	67.8	30.1	21.2	38.7	31.4	21.4	40.4	24.7	21.3	28.0	25.4	17.2	33.9
Drug-induced deaths <sup>5</sup> . . . . .	22.7	31.2	14.5	26.8	35.4	18.3	27.0	40.5	14.7	32.2	38.8	25.9	3.8	5.9	1.8	11.1	16.0	*	12.9	20.0	5.8
Drug overdose deaths <sup>5</sup> . . . . .	21.5	29.6	13.7	25.4	33.7	17.2	25.6	38.3	13.9	29.7	35.5	24.0	3.6	5.6	1.8	9.7	14.0	*	12.3	19.1	5.5
Alcohol-induced deaths <sup>5</sup> . . . . .	11.9	17.3	6.7	14.2	20.1	8.4	8.2	12.2	4.6	54.0	65.5	42.9	2.5	4.1	1.0	4.4	6.7	*	9.0	14.5	3.4
Injury by firearms <sup>5</sup> . . . . .	12.1	21.1	3.4	12.1	20.7	3.8	25.0	46.8	5.1	13.8	22.7	5.2	2.7	4.7	0.9	9.1	15.0	*	6.7	11.5	1.8

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes.

. . . Category not applicable.

0.0 Quantity more than zero but less than 0.05.

<sup>1</sup>Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes.

<sup>2</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>3</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

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

<sup>5</sup>Included in selected categories above. For the list of ICD-10 codes included, see Technical Notes.

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, 2019**

[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]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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 . . . . .	715.2	846.7	602.7	739.9	868.8	627.4	884.0	1,092.8	724.9	782.5	901.9	673.3	372.8	442.4	317.2	679.0	769.0	589.5	523.8	633.2	430.7
Enterocolitis due to <i>Clostridium</i> <i>difficile</i> . . . . . (A04.7)	1.1	1.1	1.1	1.1	1.2	1.2	1.1	1.0	1.2	2.0	*	2.1	0.4	0.4	0.4	*	*	*	1.0	1.0	0.9
Septicemia . . . . . (A40–A41)	9.5	10.7	8.6	9.4	10.5	8.5	16.1	18.8	14.4	11.1	12.3	10.0	3.8	4.2	3.5	9.0	8.2	9.7	6.8	8.1	5.8
Viral hepatitis . . . . . (B15–B19)	1.0	1.4	0.7	1.0	1.3	0.6	1.4	2.0	0.8	2.0	2.3	1.7	0.9	1.3	0.6	*	*	*	1.3	1.7	1.0
Human immunodeficiency virus (HIV) disease . . . . . (B20–B24)	1.4	2.1	0.7	0.6	1.1	0.2	5.9	8.6	3.7	1.2	1.8	*	0.3	0.5	*	*	*	*	1.4	2.3	0.6
Malignant neoplasms . . . . . (C00–C97)	146.2	172.9	126.2	152.0	179.2	131.2	173.1	212.2	148.6	122.9	138.5	110.7	90.4	105.3	79.5	141.2	146.4	136.7	105.6	125.7	91.4
Malignant neoplasms of lip, oral cavity and pharynx . . . . . (C00–C14)	2.5	3.9	1.4	2.7	4.1	1.5	2.5	4.2	1.2	1.7	2.5	*	2.0	3.1	1.2	*	*	*	1.5	2.3	0.8
Malignant neoplasm of esophagus . . . . . (C15)	3.8	6.8	1.4	4.4	7.8	1.5	2.9	4.7	1.6	3.3	4.8	2.1	1.4	2.5	0.6	*	*	*	1.9	3.5	0.7
Malignant neoplasm of stomach . . . . . (C16)	2.8	3.7	2.0	2.1	2.8	1.4	4.8	6.9	3.4	4.1	5.6	2.9	4.4	5.5	3.5	5.3	*	*	4.6	5.7	3.8
Malignant neoplasms of colon, rectum and anus . . . . . (C18–C21)	13.1	15.5	11.1	13.2	15.4	11.3	17.4	22.1	14.0	12.4	13.1	11.7	9.0	10.8	7.6	10.6	12.3	8.9	10.5	12.9	8.5
Malignant neoplasms of liver and intrahepatic bile ducts . . . . . (C22)	6.6	9.6	4.1	5.9	8.5	3.7	8.2	13.1	4.6	9.2	13.2	5.9	8.2	12.3	5.1	10.4	16.6	*	8.9	12.8	5.8
Malignant neoplasm of pancreas . . . . . (C25)	11.0	12.7	9.6	11.3	13.0	9.7	13.8	15.4	12.6	7.8	8.4	7.3	7.3	8.2	6.6	8.3	7.6	8.6	8.8	9.8	7.9
Malignant neoplasms of trachea, bronchus and lung . . . . . (C33–C34)	33.4	40.1	28.2	36.6	42.8	31.8	36.1	49.3	27.0	28.7	31.6	26.4	18.7	23.7	15.0	27.8	33.6	22.7	14.9	20.3	10.8
Malignant melanoma of skin . . . . . (C43)	2.0	3.0	1.3	2.6	3.8	1.7	0.3	0.4	0.2	*	*	*	0.2	0.2	0.2	*	*	*	0.6	0.8	0.4
Malignant neoplasm of breast . . . . . (C50)	10.7	0.2	19.4	10.6	0.3	19.5	16.4	0.5	28.1	8.9	*	16.3	6.2	*	11.1	11.3	*	21.8	7.6	*	13.8
Malignant neoplasm of cervix uteri . . . . . (C53)	1.1	...	2.1	1.0	...	2.0	1.9	...	3.4	1.2	...	2.4	0.8	...	1.4	*	...	*	1.2	...	2.3
Malignant neoplasm of ovary . . . . . (C56)	3.3	...	6.0	3.4	...	6.4	3.3	...	5.7	2.1	...	3.8	2.4	...	4.3	*	...	*	2.6	...	4.8
Malignant neoplasm of prostate . . . . . (C61)	7.7	18.3	...	7.4	17.5	...	13.9	36.7	...	5.9	13.8	...	3.0	7.3	...	6.8	15.0	...	6.0	14.7	...

See footnotes at end of table.

**Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2019—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]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	3.4	5.0	2.1	3.6	5.3	2.2	3.2	4.9	1.9	4.3	5.8	2.9	1.5	2.2	0.9	*	*	*	3.2	4.6	2.1
Malignant neoplasm of bladder . . . . . (C67)	4.1	7.0	2.0	4.6	7.8	2.2	3.3	5.2	2.1	1.8	3.0	*	1.7	2.8	0.9	*	*	*	2.3	3.9	1.2
Malignant neoplasms of meninges, brain and other parts of central nervous system . . . . . (C70–C72)	4.3	5.3	3.5	5.0	6.1	4.0	2.9	3.7	2.4	1.9	2.6	*	2.0	2.4	1.7	*	*	*	3.2	3.7	2.7
Non-Hodgkin lymphoma . . . . . (C82–C85)	5.0	6.5	3.8	5.3	6.9	4.1	3.8	5.0	3.1	3.5	4.4	2.8	3.5	4.9	2.5	5.9	*	*	4.3	5.5	3.3
Multiple myeloma and immunoproliferative neoplasms . . . . . (C88,C90)	3.1	4.0	2.5	3.0	3.9	2.2	6.0	7.5	5.1	2.1	2.8	*	1.4	1.8	1.1	*	*	*	2.5	3.2	2.1
Leukemia . . . . . (C91–C95)	5.8	7.7	4.3	6.2	8.4	4.5	5.0	6.3	4.1	3.7	4.1	3.3	3.3	4.4	2.4	7.2	*	*	4.1	4.9	3.4
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	3.9	4.9	3.1	4.1	5.3	3.3	3.8	4.4	3.4	2.5	2.4	2.6	2.5	3.1	2.1	3.7	*	*	2.4	3.1	1.9
Anemias . . . . . (D50–D64)	1.3	1.4	1.3	1.2	1.3	1.1	2.7	3.0	2.6	1.2	*	*	0.6	0.7	0.6	*	*	*	0.9	1.0	0.8
Diabetes mellitus . . . . . (E10–E14)	21.6	27.3	16.9	19.1	24.9	14.3	38.8	47.1	32.6	43.0	48.4	38.2	15.7	18.8	13.2	41.9	43.3	40.4	25.6	31.2	21.0
Nutritional deficiencies . . . . . (E40–E64)	2.8	2.6	2.9	2.9	2.6	3.1	3.7	4.0	3.5	3.2	3.1	3.2	1.3	1.2	1.4	*	*	*	2.0	2.1	2.0
Obesity . . . . . (E66)	2.2	2.5	2.0	2.3	2.6	2.0	3.8	3.5	3.8	2.5	2.7	2.4	0.2	*	0.2	3.4	*	*	1.3	1.5	1.1
Parkinson disease . . . . . (G20–G21)	8.8	13.1	5.8	9.8	14.4	6.4	4.8	7.7	3.1	5.7	8.4	3.8	5.7	8.1	3.9	*	*	*	6.5	9.1	4.7
Alzheimer disease . . . . . (G30)	29.8	23.9	33.6	31.5	25.1	35.7	27.7	22.8	30.0	16.1	11.9	18.8	15.9	12.4	17.9	16.3	13.0	18.7	25.3	20.5	28.3
Major cardiovascular diseases . . . . . (I00–I78)	213.4	259.1	175.3	216.3	262.1	177.2	286.9	354.8	235.8	186.1	224.6	152.1	119.7	145.1	99.3	236.5	281.3	193.1	156.4	191.5	127.7
Diseases of heart . . . . . (I00–I09, I11, I13, I20–I51)	161.5	204.8	126.2	166.4	210.7	129.6	208.6	267.5	165.0	141.6	180.3	107.9	79.2	101.6	61.6	168.5	213.8	124.7	111.3	141.9	86.4
Essential hypertension and hypertensive renal disease . . . . . (I10, I12, I15)	8.9	9.5	8.3	8.0	8.4	7.4	17.3	19.4	15.5	8.6	8.7	8.3	7.8	8.5	7.3	12.1	12.3	11.6	8.3	9.2	7.6
Cerebrovascular diseases . . . . . (I60–I69)	37.0	37.6	35.8	35.7	35.7	35.2	53.1	58.1	48.8	31.4	30.8	31.5	29.3	31.1	27.7	50.9	49.2	52.6	32.8	35.3	30.3
Atherosclerosis . . . . . (I70)	1.1	1.2	0.9	1.1	1.2	1.0	1.2	1.4	1.0	*	*	*	0.6	0.6	0.6	*	*	*	0.9	1.0	0.8
Aortic aneurysm and dissection . . . . . (I71)	2.5	3.3	1.8	2.6	3.4	1.9	3.0	4.1	2.1	1.6	1.9	*	1.7	2.1	1.3	*	*	*	1.4	2.1	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, 2019—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]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	12.3	14.4	10.7	12.5	14.4	11.0	13.9	17.0	11.9	16.3	17.3	15.5	9.6	11.8	8.0	16.4	17.0	15.8	9.9	12.1	8.3
Chronic lower respiratory diseases . . . . . (J40–J47)	38.2	41.6	35.7	43.7	46.3	41.8	29.2	37.2	24.2	33.9	35.4	32.6	10.2	14.4	7.2	16.7	17.8	15.7	16.1	19.8	13.4
Pneumonitis due to solids and liquids . . . . . (J69)	4.7	6.5	3.5	4.9	6.7	3.7	5.2	7.2	4.0	5.4	7.3	3.9	3.2	4.6	2.3	*	*	*	3.2	4.4	2.3
Chronic liver disease and cirrhosis . . . . . (K70,K73–K74)	11.3	15.1	8.0	11.9	15.4	8.7	7.7	10.4	5.5	44.7	46.9	42.8	3.4	4.7	2.3	5.9	8.0	*	14.6	20.8	8.8
Alcoholic liver disease . . . . . (K70)	6.4	9.0	3.9	6.8	9.2	4.5	4.0	5.7	2.7	33.5	35.1	32.1	1.4	2.3	0.6	*	*	*	7.7	12.9	2.8
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	0.9	1.1	0.8	1.0	1.1	0.8	0.9	1.0	0.8	1.4	*	*	0.8	0.9	0.7	*	*	*	0.9	1.0	0.8
Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07, N17–N19, N25–N27)	12.7	15.4	10.7	11.4	14.0	9.5	25.4	30.6	21.8	16.7	17.6	16.0	8.1	9.9	6.8	18.0	20.4	16.0	11.8	14.0	10.1
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	0.4	...	0.7	0.3	...	0.6	0.9	...	1.7	0.9	...	1.8	0.2	...	0.4	*	...	*	0.3	...	0.6
Certain conditions originating in the perinatal period . . . . . (P00–P96)	3.8	4.2	3.4	2.8	3.1	2.5	8.8	9.6	8.0	3.6	3.4	3.7	2.9	3.1	2.6	5.7	7.0	*	3.2	3.6	2.8
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	3.1	3.3	2.9	3.2	3.3	3.0	3.8	4.1	3.6	3.3	3.3	3.2	1.6	1.8	1.4	4.6	*	*	2.6	2.7	2.5
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	8.5	9.3	7.6	8.8	9.4	8.0	11.7	13.8	9.8	11.0	12.6	9.2	2.9	3.3	2.6	7.9	8.8	*	4.8	5.9	3.6

See footnotes at end of table.

**Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2019—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]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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)	49.3	68.3	31.3	55.0	74.3	36.4	52.2	78.8	29.4	87.0	114.2	61.6	16.0	22.6	10.5	33.1	48.4	17.2	35.1	52.6	18.0
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)	11.5	16.7	6.5	11.7	16.8	6.7	14.8	22.7	7.9	26.4	32.5	20.6	4.2	5.5	3.0	10.6	17.2	*	10.6	15.8	5.5
Falls . . . . . (W00–W19)	9.8	12.0	8.0	11.0	13.1	9.2	4.7	6.6	3.5	9.5	12.3	7.2	5.5	7.5	4.1	7.3	9.3	*	6.3	8.6	4.5
Accidental discharge of firearms . . . . . (W32–W34)	0.2	0.3	0.0	0.2	0.3	0.0	0.3	0.5	*	*	*	*	*	*	*	*	*	*	0.1	0.2	*
Accidental drowning and submersion . . . (W65–W74)	1.1	1.7	0.5	1.1	1.6	0.6	1.4	2.3	0.5	2.9	4.9	*	0.9	1.4	0.5	*	*	*	0.9	1.4	0.3
Accidental hanging, strangulation, and suffocation . . . (W75–W84)	1.9	2.5	1.5	2.0	2.6	1.5	2.8	3.5	2.2	3.1	4.1	2.2	0.9	1.3	0.7	*	*	*	1.1	1.5	0.8
Accidental exposure to smoke, fire and flames. . . . . (X00–X09)	0.7	0.9	0.5	0.7	0.9	0.6	1.2	1.6	0.9	1.4	1.8	*	0.2	0.2	*	*	*	*	0.4	0.6	0.2
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	20.2	28.6	11.9	24.2	33.1	15.2	22.9	35.3	12.0	34.3	43.3	25.5	2.9	4.8	1.1	9.1	13.4	*	12.9	20.3	5.3
Intentional self-harm (suicide) . . . . . (*U03, X60–X84,Y87.0) <sup>4</sup>	13.9	22.4	6.0	17.7	28.0	7.7	7.5	12.5	2.9	22.5	33.0	12.1	6.7	10.1	3.7	14.4	22.1	*	7.3	11.6	3.0
Intentional self-harm (suicide) by poisoning . . . . . (X60–X69)	1.8	1.8	1.7	2.3	2.4	2.3	0.8	0.7	0.8	1.9	1.7	2.2	0.9	1.1	0.7	*	*	*	0.7	0.8	0.7
Intentional self-harm (suicide) by hanging, strangulation and suffocation . . . . . (X70)	4.2	6.6	1.8	5.0	7.9	2.2	2.1	3.3	1.0	12.5	18.1	6.9	3.0	4.3	1.9	8.7	13.5	*	3.1	5.0	1.2
Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74)	6.8	12.3	1.8	9.0	15.9	2.6	3.7	7.0	0.8	6.3	10.6	2.1	1.6	2.9	0.4	3.3	*	*	2.6	4.6	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, 2019—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]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i> )	Non-Hispanic, single race																				
	Total <sup>1</sup>			White <sup>2</sup>			Black <sup>2</sup>			American Indian or Alaska Native <sup>2</sup>			Asian <sup>2</sup>			Native Hawaiian or Other Pacific Islander <sup>2</sup>			Hispanic <sup>3</sup>		
	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) <sup>4</sup>	6.0	9.6	2.4	2.7	3.7	1.7	23.7	41.8	6.3	12.2	17.7	6.6	1.5	2.0	1.0	6.5	9.5	*	5.0	7.9	2.0
Assault (homicide) by discharge of firearms . . . . . (*U01.4, X93–X95) <sup>4</sup>	4.6	7.7	1.4	1.7	2.4	0.9	20.0	36.4	4.2	6.4	9.8	3.0	0.9	1.3	0.5	4.6	6.9	*	3.6	6.0	1.1
Legal intervention . . . . . (Y35,Y89.0)	0.2	0.4	0.0	0.2	0.3	0.0	0.4	0.7	*	0.9	1.8	*	*	*	*	*	*	*	0.2	0.4	*
Complications of medical and surgical care . . . . . (Y40–Y84,Y88)	1.3	1.6	1.1	1.4	1.6	1.1	2.0	2.3	1.7	1.5	*	*	0.5	0.7	0.4	*	*	*	1.1	1.2	1.0
Dementia-related causes <sup>5</sup> . . . . .	66.6	56.6	72.6	71.2	59.9	78.1	64.5	59.6	66.3	39.2	32.3	43.3	32.6	27.0	35.9	38.1	36.9	38.7	47.3	41.2	50.9
Drug-induced deaths <sup>5</sup> . . . . .	22.8	31.1	14.5	27.4	36.1	18.7	26.1	39.9	14.2	33.0	40.0	26.2	3.5	5.5	1.7	10.8	15.4	*	13.4	20.5	6.0
Drug overdose deaths <sup>5</sup> . . . . .	21.6	29.6	13.7	26.2	34.5	17.6	24.8	37.7	13.4	30.5	36.6	24.5	3.3	5.2	1.6	9.5	13.4	*	12.7	19.5	5.7
Alcohol-induced deaths <sup>5</sup> . . . . .	10.4	15.2	5.9	11.2	15.8	6.8	7.6	11.9	4.2	54.0	65.7	43.3	2.3	3.9	0.9	4.3	7.0	*	10.6	17.8	3.8
Injury by firearms <sup>5</sup> . . . . .	11.9	20.7	3.4	11.1	19.0	3.6	24.5	44.8	5.1	13.8	22.5	5.3	2.5	4.4	0.8	8.6	14.0	*	6.6	11.2	1.9

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes.

. . . Category not applicable.

<sup>1</sup>Includes deaths with origin not stated, origin not classifiable, and two or more races reported; see Technical Notes.

<sup>2</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>3</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

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

<sup>5</sup>Included in selected categories above. For the list of ICD–10 codes included, see Technical Notes.

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, 2019**

[Totals for selected causes of death may differ from those shown in other tables that use standard mortality tabulation lists; see Technical Notes in this report. Rates are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes. Populations used for computing death rates are postcensal estimates based on the 2010 census estimated as of July 1, 2019; see Technical Notes. Numbers in brackets [ ] apply to the code or range of codes preceding them. Asterisks (\*) preceding cause-of-death codes indicate they are not part of the *International Classification of Diseases, 10th Revision (ICD-10)*; see Technical Notes]

Mechanism and intent of death (based on ICD-10)	Number	Rate	Age-adjusted rate <sup>1</sup>
All injury . . . . . (*U01–*U03,V01–Y36,Y85–Y87,Y89)	246,041	75.0	71.2
Unintentional . . . . . (V01–X59,Y85–Y86)	173,040	52.7	49.3
Suicide . . . . . (*U03,X60–X84,Y87.0)	47,511	14.5	13.9
Homicide . . . . . (*U01–*U02,X85–Y09,Y87.1)	19,141	5.8	6.0
Undetermined . . . . . (Y10–Y34,Y87.2,Y89.9)	5,683	1.7	1.7
Legal intervention/war . . . . . (Y35–Y36,Y89[.0,.1])	666	0.2	0.2
Poisoning . . . . . (*U01[.6–.7],X40–X49,X60–X69,X85–X90,Y10–Y19,Y35.2)	75,795	23.1	23.2
Unintentional . . . . . (X40–X49)	65,773	20.0	20.2
Suicide . . . . . (X60–X69)	6,125	1.9	1.8
Homicide . . . . . (*U01[.6–.7],X85–X90)	159	0.0	0.0
Undetermined . . . . . (Y10–Y19)	3,736	1.1	1.1
Legal intervention/war . . . . . (Y35.2)	2	*	*
Motor vehicle traffic . . . . . (V02–V04[.1,.9],V09.2,V12–V14[.3–.9],V19[.4–.6],V20–V28[.3–.9],V29–V79[.4–.9],V80[.3–.5],V81.1,V82.1,V83–V86[.0–.3],V87[.0–.8],V89.2) <sup>2</sup>	37,595	11.5	11.1
Occupant . . . . . (V30–V79[.4–.9],V83–V86[.0–.3]) <sup>2</sup>	8,760	2.7	2.6
Motorcyclist . . . . . (V20–V28[.3–.9],V29[.4–.9]) <sup>2</sup>	4,576	1.4	1.4
Pedal cyclist . . . . . (V12–V14[.3–.9],V19[.4–.6]) <sup>2</sup>	712	0.2	0.2
Pedestrian . . . . . (V02–V04[.1,.9],V09.2) <sup>2</sup>	6,681	2.0	2.0
Other . . . . . (V80[.3–.5],V81.1,V82.1) <sup>2</sup>	10	*	*
Unspecified . . . . . (V87[.0–.8],V89.2) <sup>2</sup>	16,856	5.1	5.0
Firearm . . . . . (*U01.4,W32–W34,X72–X74,X93–X95,Y22–Y24,Y35.0)	39,707	12.1	11.9
Unintentional . . . . . (W32–W34)	486	0.1	0.2
Suicide . . . . . (X72–X74)	23,941	7.3	6.8
Homicide . . . . . (*U01.4,X93–X95)	14,414	4.4	4.6
Undetermined . . . . . (Y22–Y24)	346	0.1	0.1
Legal intervention/war . . . . . (Y35.0)	520	0.2	0.2
Fall . . . . . (W00–W19,X80,Y01,Y30)	40,727	12.4	10.2
Unintentional . . . . . (W00–W19)	39,443	12.0	9.8
Suicide . . . . . (X80)	1,183	0.4	0.3
Homicide . . . . . (Y01)	12	*	*
Undetermined . . . . . (Y30)	89	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.

<sup>1</sup>For method of computation, see Technical Notes.

<sup>2</sup>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, 2019**[Rates are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population; see Technical Notes in the report. Codes in parentheses after causes of death are categories of the *International Classification of Diseases, 10th Revision* (ICD–10). Asterisks (\*) preceding cause-of-death codes indicate they are not part of ICD–10; see Technical Notes]

Area	All causes			Malignant neoplasms (C00–C97)			Diseases of heart (I00–I09,I11,I13,I20–I51)			Cerebrovascular diseases (I60–I69)		
	Number	Rate	Age- adjusted rate <sup>1</sup>	Number	Rate	Age- adjusted rate <sup>1</sup>	Number	Rate	Age- adjusted rate <sup>1</sup>	Number	Rate	Age- adjusted rate <sup>1</sup>
United States <sup>2</sup>	2,854,838	869.7	715.2	599,601	182.7	146.2	659,041	200.8	161.5	150,005	45.7	37.0
Alabama	54,108	1,103.5	897.8	10,266	209.4	160.8	13,448	274.3	219.6	3,141	64.1	51.5
Alaska	4,613	630.6	700.9	1,021	139.6	146.9	843	115.2	129.7	210	28.7	34.9
Arizona	60,236	827.6	660.5	12,503	171.8	131.1	12,587	172.9	134.0	2,851	39.2	30.2
Arkansas	32,888	1,089.8	876.1	6,482	214.8	165.7	8,669	287.3	226.5	1,561	51.7	40.7
California	269,831	682.9	601.8	59,512	150.6	131.6	62,394	157.9	136.9	16,851	42.6	37.3
Colorado	39,390	684.0	647.8	7,986	138.7	125.9	7,762	134.8	127.7	1,990	34.6	33.7
Connecticut	31,745	890.4	648.7	6,496	182.2	131.9	7,354	206.3	143.1	1,375	38.6	26.7
Delaware	9,302	955.3	728.6	2,074	213.0	151.9	2,053	210.8	154.3	594	61.0	45.1
District of Columbia	4,927	698.1	703.2	1,025	145.2	148.0	1,187	168.2	169.5	271	38.4	39.0
Florida	207,002	963.8	649.4	45,583	212.2	139.1	47,144	219.5	140.1	13,902	64.7	40.4
Georgia	85,814	808.2	772.1	17,756	167.2	151.4	19,543	184.1	175.5	4,539	42.8	41.9
Hawaii	11,559	816.4	573.3	2,500	176.6	127.3	2,503	176.8	120.3	807	57.0	37.1
Idaho	14,430	807.5	714.4	2,928	163.8	138.1	3,061	171.3	150.7	683	38.2	34.0
Illinois	109,096	860.9	704.4	23,902	188.6	151.9	25,690	202.7	162.0	6,153	48.6	38.8
Indiana	66,001	980.4	824.6	13,515	200.8	163.4	14,555	216.2	178.8	3,361	49.9	41.4
Iowa	30,867	978.3	732.2	6,335	200.8	150.9	7,505	237.9	172.9	1,412	44.8	32.1
Kansas	27,682	950.2	765.9	5,619	192.9	153.8	6,140	210.8	166.0	1,303	44.7	34.8
Kentucky	48,990	1,096.5	911.2	9,975	223.3	176.4	10,742	240.4	196.4	2,296	51.4	42.5
Louisiana	45,938	988.2	857.0	9,485	204.0	168.1	11,302	243.1	207.8	2,386	51.3	44.1
Maine	15,065	1,120.7	759.7	3,413	253.9	164.2	2,940	218.7	142.4	643	47.8	31.4
Maryland	50,800	840.3	704.7	10,743	177.7	144.4	11,770	194.7	159.3	3,049	50.4	41.8
Massachusetts	58,630	850.6	656.1	12,582	182.5	139.9	11,761	170.6	127.2	2,464	35.7	26.7
Michigan	99,084	992.1	772.0	20,923	209.5	157.1	25,547	255.8	193.8	5,178	51.8	39.3
Minnesota	45,514	807.0	649.2	10,042	178.1	142.2	8,401	149.0	116.7	2,365	41.9	33.0
Mississippi	32,964	1,107.6	945.1	6,587	221.3	179.1	7,997	268.7	226.7	1,851	62.2	52.1
Missouri	62,401	1,016.7	801.1	12,873	209.7	159.7	15,018	244.7	187.0	3,031	49.4	37.7
Montana	10,402	973.3	739.2	2,099	196.4	140.9	2,290	214.3	157.1	413	38.6	28.8
Nebraska	16,970	877.3	714.2	3,482	180.0	147.4	3,540	183.0	144.9	769	39.8	31.5
Nevada	25,586	830.7	740.5	5,434	176.4	149.0	6,864	222.8	198.1	1,284	41.7	37.9
New Hampshire	12,744	937.3	700.0	2,819	207.3	147.4	2,707	199.1	143.4	526	38.7	28.5
New Jersey	75,010	844.5	657.3	15,698	176.7	136.5	18,716	210.7	158.0	3,550	40.0	30.3
New Mexico	19,512	930.5	761.8	3,614	172.4	131.9	4,245	202.4	158.2	886	42.3	33.3
New York	156,375	803.8	616.2	33,655	173.0	132.9	43,806	225.2	166.6	6,192	31.8	23.8
North Carolina	95,881	914.2	767.3	19,951	190.2	152.0	19,617	187.0	154.7	5,202	49.6	41.5
North Dakota	6,702	879.5	709.5	1,316	172.7	140.7	1,448	190.0	147.7	308	40.4	31.7
Ohio	123,717	1,058.4	827.1	25,170	215.3	163.0	29,160	249.5	188.8	6,504	55.6	42.2
Oklahoma	40,930	1,034.4	880.4	8,309	210.0	173.0	10,960	277.0	231.4	1,803	45.6	38.4
Oregon	37,370	886.0	697.6	8,080	191.6	145.0	7,128	169.0	131.0	2,134	50.6	39.5
Pennsylvania	133,983	1,046.6	750.7	27,746	216.7	153.5	32,299	252.3	172.9	6,658	52.0	35.3
Rhode Island	10,256	968.1	709.9	2,210	208.6	153.6	2,404	226.9	159.3	407	38.4	26.9
South Carolina	50,962	989.8	804.0	10,487	203.7	154.0	10,579	205.5	164.0	2,703	52.5	42.2
South Dakota	8,270	934.8	739.5	1,737	196.3	153.4	1,840	208.0	158.1	372	42.1	32.2
Tennessee	71,935	1,053.3	882.7	14,382	210.6	167.0	16,814	246.2	202.8	3,435	50.3	41.8
Texas	203,362	701.3	717.8	41,489	143.1	141.4	46,139	159.1	163.4	10,807	37.3	39.0
Utah	18,736	584.4	686.6	3,289	102.6	117.2	3,882	121.1	146.5	912	28.4	34.7
Vermont	5,956	954.5	680.2	1,378	220.8	150.4	1,368	219.2	151.6	269	43.1	29.7
Virginia	70,325	823.9	703.3	15,045	176.3	144.9	15,062	176.5	149.1	3,828	44.8	38.3
Washington	58,263	765.1	667.3	12,960	170.2	143.4	11,862	155.8	134.8	3,032	39.8	35.0
West Virginia	23,404	1,305.9	945.4	4,604	256.9	175.0	5,087	283.8	197.4	1,035	57.8	40.2
Wisconsin	54,189	930.7	721.6	11,505	197.6	149.6	12,241	210.2	158.8	2,488	42.7	32.3
Wyoming	5,121	884.8	739.2	1,016	175.5	138.9	1,067	184.4	150.4	221	38.2	31.7
Puerto Rico	29,362	919.4	612.1	5,038	157.7	103.1	5,306	166.1	104.0	1,143	35.8	22.3
U.S. Virgin Islands	---	---	---	---	---	---	---	---	---	---	---	---
Guam	1,002	595.9	835.5	167	99.3	124.5	335	199.2	288.7	76	45.2	59.8
American Samoa	---	---	---	---	---	---	---	---	---	---	---	---
Northern Marianas	209	401.6	723.8	35	67.2	123.0	49	94.1	182.7	15	*	*

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, 2019—Con.**

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

Area	Motor vehicle accidents <sup>3</sup>			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 <sup>1</sup>	Number	Rate	Age-adjusted rate <sup>1</sup>	Number	Rate	Age-adjusted rate <sup>1</sup>	Number	Rate	Age-adjusted rate <sup>1</sup>
United States <sup>2</sup> . . . . .	39,107	11.9	11.5	70,630	21.5	21.6	47,511	14.5	13.9	19,141	5.8	6.0
Alabama . . . . .	1,012	20.6	20.4	768	15.7	16.3	804	16.4	16.3	587	12.0	12.8
Alaska . . . . .	93	12.7	12.6	132	18.0	17.8	210	28.7	28.5	78	10.7	10.8
Arizona . . . . .	977	13.4	13.0	1,907	26.2	26.8	1,419	19.5	18.7	414	5.7	5.9
Arkansas . . . . .	556	18.4	18.2	388	12.9	13.5	548	18.2	18.0	270	8.9	9.4
California . . . . .	4,013	10.2	9.7	6,198	15.7	15.0	4,436	11.2	10.7	1,794	4.5	4.5
Colorado . . . . .	642	11.1	10.7	1,079	18.7	18.0	1,312	22.8	22.1	250	4.3	4.3
Connecticut . . . . .	268	7.5	6.9	1,214	34.1	34.7	435	12.2	11.4	106	3.0	3.1
Delaware . . . . .	133	13.7	13.4	435	44.7	48.0	111	11.4	11.3	53	5.4	6.1
District of Columbia . . . . .	44	6.2	6.1	311	44.1	43.2	44	6.2	6.2	162	23.0	21.3
Florida . . . . .	3,301	15.4	14.7	5,268	24.5	25.5	3,465	16.1	14.5	1,334	6.2	6.7
Georgia . . . . .	1,537	14.5	14.2	1,408	13.3	13.1	1,585	14.9	14.6	849	8.0	8.1
Hawaii . . . . .	121	8.5	8.4	242	17.1	15.9	224	15.8	15.5	35	2.5	2.5
Idaho . . . . .	256	14.3	14.3	265	14.8	15.1	365	20.4	20.4	27	1.5	1.7
Illinois . . . . .	1,150	9.1	8.7	2,790	22.0	21.9	1,439	11.4	10.9	979	7.7	8.1
Indiana . . . . .	872	13.0	12.5	1,699	25.2	26.6	972	14.4	14.2	466	6.9	7.2
Iowa . . . . .	367	11.6	11.0	352	11.2	11.5	528	16.7	16.7	80	2.5	2.7
Kansas . . . . .	404	13.9	13.5	403	13.8	14.3	523	18.0	18.2	137	4.7	4.9
Kentucky . . . . .	766	17.1	16.7	1,380	30.9	32.5	756	16.9	16.5	250	5.6	5.9
Louisiana . . . . .	763	16.4	16.6	1,267	27.3	28.3	704	15.1	15.0	650	14.0	14.7
Maine . . . . .	171	12.7	11.9	371	27.6	29.9	276	20.5	19.4	23	1.7	1.8
Maryland . . . . .	554	9.2	8.9	2,369	39.2	38.2	657	10.9	10.3	578	9.6	10.0
Massachusetts . . . . .	395	5.7	5.1	2,210	32.1	32.1	647	9.4	8.7	157	2.3	2.3
Michigan . . . . .	1,073	10.7	10.3	2,385	23.9	24.4	1,472	14.7	14.3	612	6.1	6.5
Minnesota . . . . .	450	8.0	7.7	792	14.0	14.2	830	14.7	14.4	154	2.7	2.8
Mississippi . . . . .	750	25.2	25.0	394	13.2	13.6	436	14.6	14.4	434	14.6	15.4
Missouri . . . . .	963	15.7	15.4	1,583	25.8	26.9	1,141	18.6	18.2	628	10.2	10.8
Montana . . . . .	193	18.1	17.4	143	13.4	14.1	289	27.0	26.2	39	3.6	3.7
Nebraska . . . . .	263	13.6	13.2	161	8.3	8.7	309	16.0	16.1	58	3.0	3.1
Nevada . . . . .	306	9.9	9.5	647	21.0	20.1	642	20.8	19.8	166	5.4	5.5
New Hampshire . . . . .	107	7.9	7.3	407	29.9	32.0	255	18.8	17.5	38	2.8	2.8
New Jersey . . . . .	599	6.7	6.4	2,805	31.6	31.7	762	8.6	8.0	287	3.2	3.4
New Mexico . . . . .	401	19.1	19.4	599	28.6	30.2	513	24.5	24.0	230	11.0	11.8
New York . . . . .	1,119	5.8	5.3	3,617	18.6	18.2	1,705	8.8	8.3	601	3.1	3.2
North Carolina . . . . .	1,602	15.3	14.7	2,266	21.6	22.3	1,358	12.9	12.5	707	6.7	7.0
North Dakota . . . . .	102	13.4	13.6	82	10.8	11.4	136	17.8	18.1	21	2.8	3.1
Ohio . . . . .	1,282	11.0	10.6	4,251	36.4	38.3	1,806	15.5	15.1	724	6.2	6.6
Oklahoma . . . . .	690	17.4	17.0	645	16.3	16.7	816	20.6	20.5	333	8.4	8.8
Oregon . . . . .	534	12.7	11.8	615	14.6	14.0	906	21.5	20.4	126	3.0	3.0
Pennsylvania . . . . .	1,130	8.8	8.3	4,377	34.2	35.6	1,896	14.8	14.1	722	5.6	6.1
Rhode Island . . . . .	74	7.0	6.4	307	29.0	29.5	123	11.6	10.7	23	2.2	2.5
South Carolina . . . . .	1,016	19.7	19.6	1,127	21.9	22.7	852	16.5	16.2	527	10.2	11.0
South Dakota . . . . .	134	15.1	15.2	86	9.7	10.5	182	20.6	20.9	29	3.3	3.6
Tennessee . . . . .	1,179	17.3	16.6	2,089	30.6	31.2	1,219	17.8	17.2	596	8.7	9.2
Texas . . . . .	3,858	13.3	13.2	3,136	10.8	10.8	3,891	13.4	13.4	1,694	5.8	5.9
Utah . . . . .	248	7.7	8.2	571	17.8	18.9	654	20.4	21.2	82	2.6	2.6
Vermont . . . . .	57	9.1	8.5	133	21.3	23.8	110	17.6	16.0	11	*	*
Virginia . . . . .	894	10.5	9.9	1,547	18.1	18.3	1,140	13.4	12.8	436	5.1	5.3
Washington . . . . .	630	8.3	7.9	1,259	16.5	15.8	1,263	16.6	15.9	241	3.2	3.2
West Virginia . . . . .	330	18.4	17.4	870	48.5	52.8	330	18.4	18.5	92	5.1	5.7
Wisconsin . . . . .	616	10.6	10.1	1,201	20.6	21.1	845	14.5	14.0	226	3.9	4.2
Wyoming . . . . .	112	19.4	19.5	79	13.6	14.1	170	29.4	29.3	25	4.3	4.4

**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, 2019—Con.**

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

Area	Motor vehicle accidents <sup>3</sup>			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 <sup>1</sup>	Number	Rate	Age-adjusted rate <sup>1</sup>	Number	Rate	Age-adjusted rate <sup>1</sup>	Number	Rate	Age-adjusted rate <sup>1</sup>
Puerto Rico . . . . .	319	10.0	9.4	166	5.2	5.5	203	6.4	5.9	593	18.6	20.4
U.S. Virgin Islands . . . . .	---	---	---	---	---	---	---	---	---	---	---	---
Guam . . . . .	17	*	*	2	*	*	29	17.2	19.7	6	*	*
American Samoa . . . . .	---	---	---	---	---	---	---	---	---	---	---	---
Northern Marianas . . . . .	2	*	*	-	*	*	9	*	*	2	*	*

--- Data not available.

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes.

- Quantity zero.

<sup>1</sup>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.

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

<sup>3</sup>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.

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, 2010–2019**

[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
<b>All races and origins<sup>1</sup></b>									
2019.....	5.58	6.09	5.05	3.68	4.01	3.34	1.90	2.08	1.71
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
<b>Non-Hispanic, single-race white<sup>2,3</sup></b>									
2019.....	4.37	4.81	3.90	2.88	3.14	2.61	1.48	1.66	1.29
2018.....	4.55	4.98	4.09	3.02	3.27	2.76	1.53	1.71	1.34
<b>Non-Hispanic, bridged-race white<sup>2,4</sup></b>									
2019.....	4.44	4.90	3.97	2.93	3.19	2.66	1.52	1.71	1.32
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
<b>Non-Hispanic, single-race black<sup>2,3</sup></b>									
2019.....	11.12	12.00	10.20	7.03	7.62	6.43	4.08	4.38	3.77
2018.....	11.10	12.35	9.81	7.13	7.93	6.31	3.97	4.42	3.50
<b>Non-Hispanic, bridged-race black<sup>2,4</sup></b>									
2019.....	11.04	11.87	10.18	6.98	7.51	6.43	4.06	4.36	3.75
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



**Table 13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 2010–2019—Con.**

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

Race and Hispanic origin and year	Infant mortality rate			Neonatal mortality rate			Postneonatal mortality rate		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Hispanic <sup>2,5</sup>									
2019.....	5.20	5.68	4.69	3.59	3.96	3.20	1.61	1.73	1.49
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

<sup>1</sup>Includes race and origin groups not shown separately; see Technical Notes in this report.<sup>2</sup>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.<sup>3</sup>Only one race was reported on the birth and death certificates; see Technical Notes. Race and Hispanic-origin categories are consistent with 1997 Office of Management and Budget (OMB) standards.<sup>4</sup>Multiple-race data reported according to 1997 OMB standards were bridged to single-race categories of 1977 OMB standards. Race and Hispanic-origin categories are consistent with 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.<sup>5</sup>Includes persons of Hispanic origin of any race. The Hispanic-origin category is consistent with 1997 OMB standards; see Technical Notes.

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, 2019**

[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 <i>International Classification of Diseases, 10th Revision</i> )	Number <sup>1</sup>				Rate			
	Total <sup>2</sup>	Non-Hispanic, single-race white <sup>3</sup>	Non-Hispanic, single-race black <sup>3</sup>	Hispanic <sup>4</sup>	Total <sup>2</sup>	Non-Hispanic, single-race white <sup>3</sup>	Non-Hispanic, single-race black <sup>3</sup>	Hispanic <sup>4</sup>
All causes . . . . .	20,921	8,366	6,092	4,607	558.3	436.7	1,111.5	519.7
Certain intestinal infectious diseases . . . . . (A00–A08)	10	2	6	2	*	*	*	*
Diarrhea and gastroenteritis of infectious origin . . . . . (A09)	184	58	72	38	4.9	3.0	13.1	4.3
Tuberculosis . . . . . (A16–A19)	1	–	–	1	*	*	*	*
Tetanus . . . . . (A33,A35)	–	–	–	–	*	*	*	*
Diphtheria . . . . . (A36)	–	–	–	–	*	*	*	*
Whooping cough . . . . . (A37)	4	1	–	3	*	*	*	*
Meningococcal infection . . . . . (A39)	5	2	–	2	*	*	*	*
Septicemia . . . . . (A40–A41)	133	39	62	23	3.5	2.0	11.3	2.6
Congenital syphilis . . . . . (A50)	5	1	3	1	*	*	*	*
Gonococcal infection . . . . . (A54)	–	–	–	–	*	*	*	*
Acute poliomyelitis . . . . . (A80)	–	–	–	–	*	*	*	*
Varicella (chickenpox) . . . . . (B01)	–	–	–	–	*	*	*	*
Measles . . . . . (B05)	–	–	–	–	*	*	*	*
Human immunodeficiency virus (HIV) disease . . . . . (B20–B24)	1	–	1	–	*	*	*	*
Mumps . . . . . (B26)	–	–	–	–	*	*	*	*
Candidiasis . . . . . (B37)	5	1	4	–	*	*	*	*
Malaria . . . . . (B50–B54)	–	–	–	–	*	*	*	*
Pneumocystosis . . . . . (B59)	–	–	–	–	*	*	*	*
Malignant neoplasms . . . . . (C00–C97)	55	35	7	7	1.5	1.8	*	*
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	42	25	9	6	1.1	1.3	*	*
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism . . . . . (D50–D89)	88	28	29	22	2.3	1.5	5.3	2.5
Short stature, not elsewhere classified . . . . . (E34.3)	3	1	–	2	*	*	*	*
Nutritional deficiencies . . . . . (E40–E64)	13	1	3	6	*	*	*	*
Cystic fibrosis . . . . . (E84)	2	2	–	–	*	*	*	*
Volume depletion, disorders of fluid, electrolyte and acid-base balance . . . . . (E86–E87)	39	16	12	10	1.0	*	*	*
Meningitis . . . . . (G00,G03)	40	19	6	9	1.1	*	*	*
Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) . . . . . (G12.0)	3	1	1	–	*	*	*	*
Infantile cerebral palsy . . . . . (G80)	4	1	2	–	*	*	*	*
Anoxic brain damage, not elsewhere classified . . . . . (G93.1)	24	12	6	4	0.6	*	*	*
Diseases of the ear and mastoid process . . . . . (H60–H93)	3	–	1	2	*	*	*	*
Diseases of the circulatory system . . . . . (I00–I99)	406	177	111	81	10.8	9.2	20.3	9.1
Acute upper respiratory infections . . . . . (J00–J06)	10	3	2	3	*	*	*	*
Influenza and pneumonia . . . . . (J09–J18)	156	53	55	29	4.2	2.8	10.0	3.3
Acute bronchitis and acute bronchiolitis . . . . . (J20–J21)	42	9	20	8	1.1	*	3.6	*
Bronchitis, chronic and unspecified . . . . . (J40–J42)	10	4	4	1	*	*	*	*
Asthma . . . . . (J45–J46)	1	1	–	–	*	*	*	*
Pneumonitis due to solids and liquids . . . . . (J69)	8	4	3	1	*	*	*	*
Gastritis, duodenitis, and noninfective enteritis and colitis . . . . . (K29,K50–K55)	36	19	6	7	1.0	*	*	*
Hernia of abdominal cavity and intestinal obstruction without hernia . . . . . (K40–K46,K56)	38	20	9	3	1.0	1.0	*	*
Renal failure and other disorders of kidney . . . . . (N17–N19,N25,N27)	57	22	21	12	1.5	1.1	3.8	*
Newborn affected by maternal hypertensive disorders . . . . . (P00.0)	67	27	23	10	1.8	1.4	4.2	*
Newborn affected by other maternal conditions which may be unrelated to present pregnancy . . . . . (P00.1–P00.9)	72	28	20	16	1.9	1.5	3.6	*

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, 2019—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 <i>International Classification of Diseases, 10th Revision</i> )	Number <sup>1</sup>				Rate			
	Total <sup>2</sup>	Non-Hispanic, single-race white <sup>3</sup>	Non-Hispanic, single-race black <sup>3</sup>	Hispanic <sup>4</sup>	Total <sup>2</sup>	Non-Hispanic, single-race white <sup>3</sup>	Non-Hispanic, single-race black <sup>3</sup>	Hispanic <sup>4</sup>
Newborn affected by maternal complications of pregnancy . . . . . (P01)	1,245	404	380	320	33.2	21.1	69.3	36.1
Newborn affected by complications of placenta, cord and membranes . . . . . (P02)	742	284	208	167	19.8	14.8	38.0	18.8
Newborn affected by other complications of labor and delivery . . . . . (P03)	79	40	21	10	2.1	2.1	3.8	*
Newborn affected by noxious influences transmitted via placenta or breast milk . . . . . (P04)	36	17	5	6	1.0	*	*	*
Slow fetal growth and fetal malnutrition . . . . . (P05)	110	40	38	25	2.9	2.1	6.9	2.8
Disorders related to short gestation and low birth weight, not elsewhere classified . . . . . (P07)	3,445	1,102	1,289	702	91.9	57.5	235.2	79.2
Disorders related to long gestation and high birth weight . . . . . (P08)	—	—	—	—	*	*	*	*
Birth trauma . . . . . (P10–P15)	13	5	3	2	*	*	*	*
Intrauterine hypoxia and birth asphyxia . . . . . (P20–P21)	336	153	95	62	9.0	8.0	17.3	7.0
Respiratory distress of newborn . . . . . (P22)	424	181	118	100	11.3	9.4	21.5	11.3
Other respiratory conditions originating in the perinatal period . . . . . (P23–P28)	787	325	238	176	21.0	17.0	43.4	19.9
Congenital pneumonia . . . . . (P23)	47	14	17	10	1.3	*	*	*
Neonatal aspiration syndromes . . . . . (P24)	38	21	10	3	1.0	1.1	*	*
Interstitial emphysema and related conditions originating in the perinatal period . . . . . (P25)	90	42	20	26	2.4	2.2	3.6	2.9
Pulmonary hemorrhage originating in the perinatal period . . . . . (P26)	136	47	50	30	3.6	2.5	9.1	3.4
Chronic respiratory disease originating in the perinatal period . . . . . (P27)	157	56	61	32	4.2	2.9	11.1	3.6
Atelectasis . . . . . (P28.0–P28.1)	248	116	63	54	6.6	6.1	11.5	6.1
Bacterial sepsis of newborn . . . . . (P36)	603	237	189	135	16.1	12.4	34.5	15.2
Omphalitis of newborn with or without mild hemorrhage . . . . . (P38)	1	—	—	1	*	*	*	*
Neonatal hemorrhage . . . . . (P50–P52,P54)	348	150	91	84	9.3	7.8	16.6	9.5
Hemorrhagic disease of newborn . . . . . (P53)	1	1	—	—	*	*	*	*
Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice . . . . . (P55–P59)	17	6	7	2	*	*	*	*
Hematological disorders . . . . . (P60–P61)	94	38	22	27	2.5	2.0	4.0	3.0
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus . . . . . (P70.0–P70.2)	12	1	6	5	*	*	*	*
Necrotizing enterocolitis of newborn . . . . . (P77)	354	122	119	83	9.4	6.4	21.7	9.4
Hydrops fetalis not due to hemolytic disease. . . . . (P83.2)	174	93	27	35	4.6	4.9	4.9	3.9
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	4,301	2,015	801	1,138	114.8	105.2	146.1	128.4
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	2,453	938	864	450	65.5	49.0	157.6	50.8
Sudden infant death syndrome . . . . . (R95)	1,248	495	434	217	33.3	25.8	79.2	24.5
Accidents (unintentional injuries). . . . . (V01–X59)	1,266	589	369	184	33.8	30.7	67.3	20.8
Assault (homicide) . . . . . (*U01,X85–Y09) <sup>5</sup>	263	96	98	52	7.0	5.0	17.9	5.9
Complications of medical and surgical care . . . . . (Y40–Y84)	29	9	7	11	0.8	*	*	*

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes in this report.

— Quantity zero.

<sup>1</sup>Only selected causes of death are shown; therefore, subcategories do not add to totals; see Technical Notes.

<sup>2</sup>Includes race and origin groups not shown separately; see Technical Notes.

<sup>3</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>4</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

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

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, 2019**

[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]

Area and sex	Total <sup>1</sup>		Non-Hispanic, single-race white <sup>2</sup>		Non-Hispanic, single-race black <sup>2</sup>		Hispanic <sup>3</sup>	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
United States <sup>4</sup> .....	20,921	5.58	8,366	4.37	6,092	11.12	4,607	5.20
Male .....	11,674	6.09	4,719	4.81	3,342	12.00	2,571	5.68
Female .....	9,247	5.05	3,647	3.90	2,750	10.20	2,036	4.69
Alabama .....	449	7.66	186	5.57	219	12.03	36	7.33
Alaska .....	48	4.89	13	*	2	*	4	*
Arizona .....	429	5.40	124	3.88	49	10.79	192	5.71
Arkansas .....	251	6.86	137	5.94	79	11.29	23	5.63
California .....	1,879	4.21	410	3.39	212	9.48	994	4.87
Colorado .....	306	4.87	120	3.33	32	10.51	122	6.70
Connecticut .....	153	4.47	62	3.38	38	9.00	46	5.27
Delaware .....	66	6.25	16	*	32	11.41	8	*
District of Columbia .....	44	4.85	4	*	37	8.96	3	*
Florida .....	1,330	6.05	420	4.49	499	10.45	333	4.88
Georgia .....	888	7.03	282	5.14	471	10.78	100	5.43
Hawaii .....	85	5.06	13	*	6	*	25	9.66
Idaho .....	97	4.40	69	4.07	2	*	19	*
Illinois .....	794	5.67	299	4.02	258	11.09	160	5.32
Indiana .....	525	6.49	338	5.81	114	11.12	53	6.29
Iowa .....	189	5.02	126	4.34	29	10.26	19	*
Kansas .....	201	5.68	113	4.60	28	11.39	39	6.42
Kentucky .....	266	5.01	186	4.41	49	9.73	17	*
Louisiana .....	468	7.94	160	5.40	260	11.76	38	7.61
Maine .....	63	5.35	51	4.90	5	*	2	*
Maryland .....	413	5.89	116	4.02	199	9.26	66	5.13
Massachusetts .....	254	3.67	111	2.83	47	6.86	67	4.74
Michigan .....	690	6.40	321	4.40	246	12.08	57	8.01
Minnesota .....	302	4.57	144	3.23	65	7.88	32	6.24
Mississippi .....	322	8.79	118	6.47	186	11.84	11	*
Missouri .....	433	6.00	259	4.93	124	11.81	22	5.02
Montana .....	54	4.87	35	3.98	—	*	4	*
Nebraska .....	125	5.05	70	4.13	20	12.09	26	5.98
Nevada .....	201	5.73	55	4.41	49	10.86	73	5.51
New Hampshire .....	37	3.13	31	3.08	1	*	1	*
New Jersey .....	428	4.30	146	3.22	126	9.41	116	4.23
New Mexico .....	129	5.62	24	3.86	8	*	76	5.88
New York .....	955	4.31	355	3.25	295	9.20	188	3.74
North Carolina .....	808	6.81	287	4.61	353	12.73	107	5.60
North Dakota .....	77	7.37	49	6.48	6	*	4	*
Ohio .....	930	6.92	493	5.16	337	14.94	46	5.95
Oklahoma .....	343	6.98	156	5.69	66	16.09	43	5.58
Oregon .....	203	4.85	120	4.34	8	*	51	6.23
Pennsylvania .....	788	5.87	392	4.42	235	13.36	97	5.80
Rhode Island .....	61	6.00	24	4.31	12	*	16	*
South Carolina .....	391	6.86	136	4.30	211	12.56	28	4.88
South Dakota .....	80	6.99	50	6.13	5	*	4	*
Tennessee .....	563	7.00	266	5.10	215	13.46	61	7.23
Texas .....	2,075	5.50	570	4.57	505	10.67	908	5.05
Utah .....	249	5.32	159	4.77	2	*	62	7.62
Vermont .....	15	*	14	*	—	*	1	*
Virginia .....	570	5.85	221	4.17	205	10.08	77	5.33
Washington .....	365	4.30	178	3.75	44	11.54	78	4.83
West Virginia .....	112	6.18	96	5.83	12	*	2	*
Wisconsin .....	371	5.86	200	4.47	89	12.98	46	7.12
Wyoming .....	46	7.01	41	7.95	—	*	4	*

**Table 15. Number of infant deaths and mortality rates, by race and Hispanic origin for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, and by sex for the United States, 2019—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]

Area and sex	Total <sup>1</sup>		Non-Hispanic, single-race white <sup>2</sup>		Non-Hispanic, single-race black <sup>2</sup>		Hispanic <sup>3</sup>	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Puerto Rico . . . . .	133	6.53	—	*	—	*	133	6.69
U.S. Virgin Islands . . . . .	---	---	---	---	---	---	---	---
Guam . . . . .	30	9.87	1	*	-	*	-	*
American Samoa . . . . .	---	---	---	---	---	---	---	---
Northern Marianas . . . . .	4	*	—	*	—	*	—	*

\* Estimate does not meet National Center for Health Statistics standards of reliability; see Technical Notes.

— Quantity zero.

--- Data not available.

<sup>1</sup>Includes race and origin groups not shown separately; see Technical Notes.

<sup>2</sup>Only one race was reported on the death certificate; see Technical Notes.

<sup>3</sup>Includes persons of Hispanic origin of any race; see Technical Notes.

<sup>4</sup>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, 2019**

[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 <i>International Classification of Diseases, 10th Revision</i> )	Total <sup>1</sup>	Non-Hispanic, single race					
		White <sup>2</sup>	Black <sup>2</sup>	American Indian or Alaska Native <sup>2</sup>	Asian <sup>2</sup>	Native Hawaiian or Other Pacific Islander <sup>2</sup>	Hispanic <sup>3</sup>
				Number			
Maternal causes . . . . . (A34,000–095,098–099)	754	343	241	14	33	5	112
Direct obstetric causes . . . . . (A34,000–095)	530	229	172	13	26	5	79
Pregnancy with abortive outcome . . . . . (000–007)	26	6	9	1	1	–	9
Ectopic pregnancy . . . . . (000)	13	2	5	–	1	–	5
Spontaneous abortion . . . . . (003)	6	1	2	–	–	–	3
Medical abortion . . . . . (004)	–	–	–	–	–	–	–
Other abortion . . . . . (005)	3	2	1	–	–	–	–
Other and unspecified pregnancy with abortive outcome . . . . . (001–002,006–007)	4	1	1	1	–	–	1
Other direct obstetric causes . . . . . (A34,010–092)	474	209	151	12	25	5	67
Eclampsia and pre-eclampsia . . . . . (011,013–016)	46	13	24	1	1	–	7
Hemorrhage of pregnancy and childbirth and placenta previa . . . . . (020,044–046,067,072)	32	15	7	1	3	1	4
Complications predominantly related to the puerperium . . . . . (A34,085–092)	76	30	30	1	7	1	7
Obstetrical tetanus . . . . . (A34)	–	–	–	–	–	–	–
Obstetric embolism . . . . . (088)	37	14	12	1	6	–	4
Other complications predominantly related to the puerperium . . . . . (085–087,089–092)	39	16	18	–	1	1	3
All other direct obstetric causes . . . . . (010,012,021–043,047–066,068–071,073–075)	320	151	90	9	14	3	49
Obstetric death of unspecified cause . . . . . (095)	30	14	12	–	–	–	3
Indirect obstetric causes . . . . . (098–099)	224	114	69	1	7	–	33
Death from any obstetric cause occurring more than 42 days but less than 1 year after delivery . . . . . (096) <sup>4</sup>	322	132	111	6	9	2	57



## 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 2019 are based on records of deaths that occurred during 2019 and were received as of July 27, 2020. Data for earlier years can be obtained via CDC WONDER (10).

The U.S. Standard Certificate of Death, which the states use as a model, was revised in 2003 (4). Prior to 2003, the standard certificate of death had not been revised since 1989 (15). 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 standard certificates were used. For this transitional period, 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 and the 1997 OMB guidelines (2003 certificate) which allowed the reporting of more than one race and provided five categories (6,7).

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 2019 data year were not available at the time of file closing and, therefore, are not included in this report. In 2019, 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 NCHS through the Vital Statistics Cooperative Program. For the 2019 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 data 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 nonresidents 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 in accordance with World Health Organization (WHO) regulations, which specify that member countries classify and code causes of death in accordance with the current revision of

the *International Classification of Diseases* (ICD). ICD provides the basic guidance used in virtually all countries to code and classify causes of death. Effective with deaths occurring in 1999, the United States began using the 10th revision of this classification (ICD–10) (39). For earlier years, causes of death were classified according to the revisions then in use: 1979–1998, Ninth Revision; 1968–1978, Eighth Revision, adapted for use in the United States; 1958–1967, Seventh Revision; and 1949–1957, Sixth Revision.

Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Consequently, cause-of-death comparisons among revisions require consideration of comparability ratios and, where available, estimates of their standard errors. Comparability ratios between the Ninth and Tenth revisions, Eighth and Ninth revisions, Seventh and Eighth revisions, and Sixth and Seventh revisions may be found in other NCHS reports and independent tabulations (40–45).

ICD not only details disease classification but also provides definitions, tabulation lists, the format of the death certificate, and the rules for coding cause of death. Cause-of-death data presented in this publication were coded by procedures outlined in annual issues of the NCHS Instruction Manual (12,46,47). 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) (48), multiple-cause codes are inputted into 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) (49,50) 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 (51), an enhancement of the MICAR system, was introduced, allowing for literal entry of the multiple cause-of-death text as reported by the certifier. This information is then automatically processed by the MICAR and ACME computer systems. Records that cannot be automatically processed by MICAR are manually multiple-cause coded and then further processed through ACME to determine the underlying cause of death. In 2019, 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” (12). 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 (52–54).

## Tabulation lists and cause-of-death ranking

Tabulation lists for ICD–10 are published in NCHS Instruction Manual, Part 9, “ICD–10 Cause-of-Death Lists for Tabulating Mortality Statistics” (updated September 2020 to include WHO updates to ICD–10 for data year 2019) (55). 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 (55). 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 only presented for select causes of death. The select causes include all rankable causes as well as other select causes based on public health impact and future planning. Data for all causes on the “List of 113 Selected Causes of Death” and “List of 130 Selected Causes of Infant Death” are available from the NCHS website at: <https://www.cdc.gov/nchs/data/nvsr/nvsr70/nvsr70-08-tables-508.pdf> and through CDC’s 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 2019” (2).

Leading cause-of-death trends discussed in this report are based on cause-of-death data according to ICD–10 for 1999–2019 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” (42) and “Deaths: Final Data for 1999” (56).

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 (40–42). 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 2019

Effective with data year 2019, ICD–10 code U07.0, Vaping related disorder was added as a new, valid underlying cause-of-death code. No other codes were added or deleted from the list of valid underlying cause-of-death codes in 2019. Information on the addition of U07.0 as well as codes added or deleted in previous years is available from: <https://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2019-508.pdf> (55).

## 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](https://www.cdc.gov/nchs/icd/terrorism_code.htm). In 2019, deaths resulting from a mass shooting in El Paso, Texas and deaths from a separate mass shooting incident at the Naval Air Station in Pensacola, Florida were assigned code U01.4, Terrorism involving firearms. This report includes 20 deaths assigned to a terrorism code in 2019. Only deaths to residents of the United States are included in this report.

In any given year, it is possible that deaths resulting from acts of terrorism may not be identified as such if: a) information identifying an incident as an act of terrorism is not available to the certifier at the time of certification; b) the certificate is not updated with the information if it later becomes available; or c) official results of the investigation declaring the incident to be an act of terrorism have not yet been made public.

## Enterocolitis due to *Clostridium difficile*

The number of deaths from Enterocolitis due to *Clostridium difficile* (*C. difficile*) (ICD–10 code A04.7) was 4,533 in 2019. Deaths from this cause increased dramatically from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (10). Because of the increasing importance of this cause of death (28,29), beginning with data year 2006, *C. difficile* was added to the list of rankable causes.

## Quality of reporting and processing cause of death

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 1.15% in 2018 to 1.14% in 2019.

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 NCHS Instruction Manual, Part 2, available from: [https://www.cdc.gov/nchs/nvss/instruction\\_manuals.htm](https://www.cdc.gov/nchs/nvss/instruction_manuals.htm) (46–48). For example, Part 2c, “ICD–10 ACME Decision Tables for Classifying Underlying Causes of Death,” documents that the code assignment for the term “sarcopenia” changed in 2019 from R29.8, Other and unspecified symptoms and signs involving the nervous and musculoskeletal system, to M62.5, Muscle wasting and atrophy, not elsewhere classified (48). Deaths coded to M62.5 increased from 126 deaths in 2018 to 553 deaths in 2019 and deaths coded to R29.8 decreased from 215 in 2018 to 168 in 2019. Although coding rule changes can impact the number of deaths assigned to a given code, other factors, such as increased use of a term by certifiers, can also influence changes from year to year. Trend data for causes of death affected by coding rule changes should be interpreted with caution.

## Rare causes of death

Selected causes of death considered to be of public health concern are supposed to be routinely confirmed by states according to agreed-upon procedures between state vital statistics programs and NCHS. These causes, termed “infrequent and rare causes of death,” are listed in the NCHS Instruction Manual, Parts 2a, 11, and 20 (46,57,58). In 2019, 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, specifically, F11.1–F11.5, F11.7–F11.9, F12.1–F12.5, F12.7–F12.9, F13.1–F13.5, F13.7–F13.9, F14.1–F14.5, F14.7–F14.9, F15.1–F15.5, F15.7–F15.9, F16.1–F16.5, F16.7–F16.9, F17.3–F17.5, F17.7–F17.9, F18.1–F18.5, F18.7–F18.9, F19.1–F19.5, and F19.7–F19.9; G21.1, Other drug-induced secondary parkinsonism; G24.0, Drug-induced dystonia; G25.1, Drug-induced tremor; G25.4, Drug-induced chorea; G25.6, Drug-induced tics and other tics of organic origin; G44.4, Drug-induced headache, not elsewhere classified; G62.0, Drug-induced polyneuropathy; G72.0, Drug-induced myopathy; I95.2, Hypotension due to drugs; J70.2, Acute drug-induced interstitial lung disorders; J70.3, Chronic drug-induced interstitial lung disorders; J70.4, Drug-induced interstitial lung disorder, unspecified; K85.3, Drug-induced acute pancreatitis; L10.5, Drug-induced pemphigus; L27.0, Generalized skin eruption due to drugs and medicaments; L27.1, Localized skin eruption due to drugs and medicaments; M10.2, Drug-induced gout; M32.0, Drug-induced systemic lupus erythematosus; M80.4, Drug-induced osteoporosis with pathological fracture; M81.4, Drug-induced osteoporosis; M83.5, Other drug-induced osteomalacia in adults; M87.1, Osteonecrosis due to drugs; R50.2, Drug-induced fever; R78.1, Finding of opiate drug in blood; R78.2, Finding of cocaine in blood; R78.3, Finding of hallucinogen in blood; R78.4, Finding of other drugs of addictive potential in blood; R78.5, Finding of psychotropic drug in blood; X40–X44, Accidental poisoning by and exposure to drugs, medicaments and biological substances; X60–X64, Intentional self-poisoning (suicide) by and exposure to drugs, medicaments and biological substances; X85, Assault (homicide) by drugs, medicaments and biological substances; and Y10–Y14, Poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent. Drug-induced causes exclude unintentional injuries, homicide, and other causes indirectly related to drug use, as well as newborn deaths associated with the mother’s drug use.

*Codes for drug-overdose causes*—Causes of death attributable to drug overdose are a subcategory of drug-induced causes. Drug-overdose mortality includes ICD–10 codes X40–X44, X60–X64, X85, and Y10–Y14.

## 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 (16). 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 increased, from 7 states in 2003 to all 50 states and the District of Columbia by 2018 (Table I). In 2019, 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 2019, no more than four races were reported for any decedent.

During 2003–2017, both the 1989 and the 2003 standard death certificates were used. For this transitional period, states using the 1989 death certificate reported the race and Hispanic ethnicity of decedents based on the OMB 1977 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 (15,16). States using the 2003 death certificate reported the race and Hispanic ethnicity of decedents based on the OMB 1997 guidelines, which allowed the reporting of more than one race and provided five categories (4,5). These guidelines provide for the reporting of Asian persons separately from NHOPI persons (5).

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 (20,21). Multiracial decedents were imputed to a single race (white, black, AIAN, or API) according to their combination of races, Hispanic origin, sex, 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](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 (59). Beginning with the 2018 data year, 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 single-race data had a relatively minor impact on age-adjusted death rates in 2019. Table A presents age-adjusted rates for 2019 based on 1977 bridged-race categories and 1997 race categories. Age-adjusted rates based on single-race 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.

**Table I. Year state started reporting multiple race and year state began using the revised standard certificate of death: Each state, 2003–2019**

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

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

<sup>2</sup>Began reporting multiple race in March.

<sup>3</sup>Began implementing revised certificate in March.

<sup>4</sup>Began reporting multiple race in July.

<sup>5</sup>Began implementing revised certificate in July.

<sup>6</sup>Began implementing revised certificate in June.

<sup>7</sup>Began implementing revised certificate in September.

<sup>8</sup>Began reporting multiple race in September.

<sup>9</sup>Began reporting multiple race in mid-April.

<sup>10</sup>Began implementing revised certificate in mid-April.

<sup>11</sup>Began reporting multiple race in November.

<sup>12</sup>Began implementing revised certificate in November.

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

*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 (22,23,60,61).

A number of studies have been conducted on the reliability of race and Hispanic origin reported on the death certificate by comparing it with race and Hispanic origin reported on another data collection instrument, such as the census or a survey (22,23,60,61). Inconsistencies may arise because of differences in who provides race and ethnicity information on the compared records. Race and Hispanic-origin information on the death certificate is reported by a funeral director as provided by an informant or, in the absence of an informant,

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

Using the National Longitudinal Mortality Study, Arias et al. examined the reliability of race and Hispanic origin reported on more than 559,000 death certificates compared with that reported on a total of 38 Current Population Surveys (CPSs) conducted by the Census Bureau for 1979–2011 (22,23). 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

**Table II. Deaths, by origin and race: United States, 2019**

[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 in this report]

Origin and race	Deaths	Percent of non-Hispanic deaths	Origin and race	Deaths	Percent of Hispanic deaths
Non-Hispanic	2,635,498	100.0	Hispanic	212,397	100.0
One race	2,622,601	99.5	One race	210,392	99.1
White	2,183,844	82.9	White	204,524	96.3
Black	346,677	13.2	Black	3,852	1.8
AIAN	18,057	0.7	AIAN	1,109	0.5
Asian	70,532	2.7	Asian	627	0.3
NHOPI	3,491	0.1	NHOPI	280	0.1
Two or more races	12,897	0.5	Two or more races	2,005	0.9
Two races	12,110	0.5	Two races	1,819	0.9
Black and White	2,032	0.1	Black and White	459	0.2
Black and AIAN	698	0.0	Black and AIAN	27	0.0
Black and Asian	316	0.0	Black and Asian	15	0.0
Black and NHOPI	108	0.0	Black and NHOPI	5	0.0
AIAN and White	4,580	0.2	AIAN and White	711	0.3
AIAN and Asian	134	0.0	AIAN and Asian	25	0.0
AIAN and NHOPI	25	0.0	AIAN and NHOPI	2	0.0
Asian and White	2,392	0.1	Asian and White	448	0.2
Asian and NHOPI	1,016	0.0	Asian and NHOPI	27	0.0
NHOPI and White	809	0.0	NHOPI and White	100	0.0
Three races	773	0.0	Three races	180	0.1
Black, AIAN and White	167	0.0	Black, AIAN and White	32	0.0
Black, AIAN and Asian	15	0.0	Black, AIAN and Asian	2	0.0
Black, AIAN and NHOPI	3	0.0	Black, AIAN and NHOPI	0	0.0
Black, Asian and White	33	0.0	Black, Asian and White	10	0.0
Black, Asian and NHOPI	4	0.0	Black, Asian and NHOPI	4	0.0
Black, NHOPI and White	7	0.0	Black, NHOPI and White	1	0.0
AIAN, Asian and White	21	0.0	AIAN, Asian and White	19	0.0
AIAN, NHOPI and White	6	0.0	AIAN, NHOPI and White	6	0.0
AIAN, Asian and NHOPI	9	0.0	AIAN, Asian and NHOPI	1	0.0
Asian, NHOPI and White	508	0.0	Asian, NHOPI and White	105	0.0
Four races	14	0.0	Four races	6	0.0
Black, AIAN, Asian and White	3	0.0	Black, AIAN, Asian and White	3	0.0
Black, AIAN, Asian and NHOPI	—	0.0	Black, AIAN, Asian and NHOPI	—	0.0
Black, AIAN, NHOPI and White	1	0.0	Black, AIAN, NHOPI and White	—	0.0
Black, Asian, NHOPI and White	3	0.0	Black, Asian, NHOPI and White	—	0.0
AIAN, Asian, NHOPI and White	7	0.0	AIAN, Asian, NHOPI and White	3	0.0
Five races	—	0.0	Five races	—	0.0
Black, AIAN, Asian, NHOPI and White	—	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.

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 (22,23,60–63). Unlike the 1990 census, coverage error in the 2000 census was found

to be statistically significant only for the non-Hispanic white population (overcounted by approximately 1.13%) and non-Hispanic black population (undercounted by approximately 1.84%) (62). 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 (64).

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 2019, death records with race not stated or not classifiable (1.0% 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 0.2% 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 2019, 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 (65).

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 2019, the percentage of infant deaths of unknown origin was 1.0%, and the percentage of live births to mothers of unknown origin was 1.0%.

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 (37). 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 (37,60).

## 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 (66). 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 (67), using a methodology similar to that of the 1989–1991 decennial life tables (68). The methodology was again revised for data years 2000–2007 using a methodology similar to that of the 1999–2001 decennial life tables (69).

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 (70), 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 (71). Life table data shown in this report for data years 2001–2019 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 (19), 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) (24), 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 (22,23). 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 and 2019 presented in this report are based on the new standard and show estimates for single-race groups. These estimates are the official life expectancies for these years and 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 2010–2019 (Table 4) and in supplemental internet Table I–21 for 2006–2019. Estimates for bridged-race categories will continue to be calculated through data year 2020. The category “Hispanic” is consistent with previous reports, and trend data for the Hispanic population are not affected by the race category changes.

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 (72–74).

## 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](https://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_10.pdf) (75). Data for later years are available through CDC WONDER (<https://wonder.cdc.gov/>) or through 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 2019. 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](https://www.cdc.gov/nchs/injury/injury_tools.htm).

## Infant mortality

Infant mortality rates are the most commonly used index for measuring the risk of dying during the first year of life. The rates presented in this report are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period and are presented as rates per 1,000 or per 100,000 live births. For final birth figures used in the denominator for infant mortality rates, see the report “Births: Final Data for 2019” (65). 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, 2019, 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 (37), 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. Since 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” (12). Included in these deaths are ICD–10 codes A34, 000–095, and 098–099.

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 after the 2007 data year until all states adopted use of the revised certificate (38).

Beginning in 2018, all 50 states and D.C. 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 one year before death) (38). Because maternal mortality data among states became comparable, NCHS resumed publication of maternal mortality statistics in 2018.

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 (38). The 2018 method further restricts application of the pregnancy checkbox to decedents aged 10–44 years (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/nvsr70/nvsr70-08-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/nvsr70/nvsr70-08-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/nvsr70/nvsr70-08-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/nvsr70/nvsr70-08-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 2019 are shown for 5-year age groups by race and Hispanic origin in [Table III](#) (17).

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, 2019 (17). Rates for Puerto Rico also are based on population estimates from the 2010 census as of July 1, 2019, and are provided by the Census Bureau (76). Rates for Guam and Northern Marianas are based on population estimates provided by the Census Bureau's International Data Base (77). 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 2011–2019 are based on postcensal population estimates consistent with the 2010 census, estimated as of July 1 (17–19). Rates for 2010 are based on populations enumerated as

of April 1, 2010 (19). 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 (19). Death rates for 2000 are based on populations enumerated as of April 1, 2000 (78). Rates for 1991–1999 are based on intercensal population estimates consistent with the 2000 census levels (79).

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 (16,80). The modification procedures are described in detail elsewhere (20,21).

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 2019 (7).

## 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 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” (81). 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.



**Table III. Estimated population by 5-year age groups, according to race and Hispanic origin, by sex: United States, 2019**

[Populations are postcensal estimates based on 2010 census estimated as of July 1, 2019; see Technical Notes in this report]

Race and origin and sex <sup>1</sup>	Total	Age group (years)								
		Under 1 year	1–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39
Total <sup>1</sup> . . . . .	328,239,523	3,783,052	15,793,631	20,195,895	20,798,268	21,054,570	21,632,940	23,509,016	22,431,305	21,737,521
Male . . . . .	161,657,324	1,935,117	8,074,090	10,322,762	10,618,261	10,745,607	11,064,752	12,004,570	11,354,610	10,884,941
Female . . . . .	166,582,199	1,847,935	7,719,541	9,873,133	10,180,007	10,308,963	10,568,188	11,504,446	11,076,695	10,852,580
Non-Hispanic, single race <sup>2</sup>										
White . . . . .	197,309,822	1,881,774	7,815,471	10,011,063	10,460,991	11,038,241	11,574,506	12,665,969	12,488,443	12,257,885
Male . . . . .	97,313,073	964,341	4,010,669	5,136,523	5,361,288	5,663,678	5,940,932	6,477,538	6,325,953	6,172,679
Female . . . . .	99,996,749	917,433	3,804,802	4,874,540	5,099,703	5,374,563	5,633,574	6,188,431	6,162,490	6,085,206
Black . . . . .	41,147,488	518,590	2,165,799	2,776,150	2,856,810	2,895,818	3,060,213	3,493,114	3,026,581	2,783,964
Male . . . . .	19,674,412	263,960	1,096,223	1,407,110	1,446,630	1,466,375	1,549,642	1,761,163	1,484,681	1,331,788
Female . . . . .	21,473,076	254,630	1,069,576	1,369,040	1,410,180	1,429,443	1,510,571	1,731,951	1,541,900	1,452,176
American Indian or Alaska Native . . . . .	2,434,908	31,497	130,397	172,598	176,829	177,333	181,686	200,776	175,046	159,155
Male . . . . .	1,198,371	16,120	66,667	87,893	89,486	90,275	92,130	102,495	88,388	78,920
Female . . . . .	1,236,537	15,377	63,730	84,705	87,343	87,058	89,556	98,281	86,658	80,235
Asian . . . . .	18,905,879	175,227	784,029	1,019,975	1,055,572	1,107,305	1,256,369	1,575,091	1,661,341	1,600,457
Male . . . . .	9,008,809	89,989	403,303	523,236	535,036	554,140	633,525	782,670	803,656	756,389
Female . . . . .	9,897,070	85,238	380,726	496,739	520,536	553,165	622,844	792,421	857,685	844,068
Native Hawaiian or Other Pacific Islander . . . . .	595,908	7,621	32,464	40,058	42,183	41,462	43,020	50,839	52,049	49,305
Male . . . . .	299,775	3,902	16,559	20,474	21,398	21,218	22,107	26,090	26,791	25,247
Female . . . . .	296,133	3,719	15,905	19,584	20,785	20,244	20,913	24,749	25,258	24,058
Hispanic <sup>3</sup> . . . . .	60,572,237	983,479	4,110,732	5,243,825	5,323,761	5,040,048	4,844,542	4,939,078	4,586,185	4,509,927
Male . . . . .	30,571,037	502,394	2,095,576	2,671,297	2,716,120	2,568,290	2,485,514	2,564,663	2,413,535	2,342,227
Female . . . . .	30,001,200	481,085	2,015,156	2,572,528	2,607,641	2,471,758	2,359,028	2,374,415	2,172,650	2,167,700
Age group (years)										
	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85 and over
Total <sup>1</sup> . . . . .	19,921,623	20,397,751	20,477,151	21,877,391	20,571,146	17,455,001	14,028,432	9,652,665	6,317,207	6,604,958
Male . . . . .	9,907,139	10,085,355	10,086,611	10,642,489	9,856,730	8,199,773	6,499,806	4,318,499	2,679,724	2,376,488
Female . . . . .	10,014,484	10,312,396	10,390,540	11,234,902	10,714,416	9,255,228	7,528,626	5,334,166	3,637,483	4,228,470
Non-Hispanic, single race <sup>2</sup> :										
White . . . . .	11,304,550	12,149,412	13,007,754	14,872,649	14,624,720	12,863,198	10,706,123	7,480,246	4,889,393	5,217,434
Male . . . . .	5,685,238	6,085,937	6,471,645	7,311,155	7,099,619	6,143,751	5,046,753	3,407,553	2,109,701	1,898,120
Female . . . . .	5,619,312	6,063,475	6,536,109	7,561,494	7,525,101	6,719,447	5,659,370	4,072,693	2,779,692	3,319,314
Black . . . . .	2,533,979	2,566,124	2,537,690	2,612,639	2,340,884	1,814,861	1,285,799	831,780	535,153	511,540
Male . . . . .	1,194,773	1,201,680	1,187,113	1,208,671	1,060,035	788,098	541,415	331,089	198,073	155,893
Female . . . . .	1,339,206	1,364,444	1,350,577	1,403,968	1,280,849	1,026,763	744,384	500,691	337,080	355,647
American Indian or Alaska Native . . . . .	142,290	142,567	145,125	157,082	141,109	110,613	81,240	51,392	31,257	26,916
Male . . . . .	70,414	69,664	70,208	74,803	65,611	51,042	37,631	23,282	13,316	10,026
Female . . . . .	71,876	72,903	74,917	82,279	75,498	59,571	43,609	28,110	17,941	16,890
Asian . . . . .	1,445,094	1,411,300	1,201,079	1,117,164	1,003,002	848,563	643,700	426,489	283,340	290,782
Male . . . . .	672,370	658,574	558,679	512,885	450,307	372,379	282,576	188,019	122,285	108,791
Female . . . . .	772,724	752,726	642,400	604,279	552,695	476,184	361,124	238,470	161,055	181,991
Native Hawaiian or Other Pacific Islander . . . . .	40,787	37,302	35,062	34,337	28,962	22,369	16,508	9,873	6,046	5,661
Male . . . . .	20,753	18,855	17,356	16,743	14,047	10,694	7,930	4,703	2,660	2,248
Female . . . . .	20,034	18,447	17,706	17,594	14,915	11,675	8,578	5,170	3,386	3,413
Hispanic <sup>3</sup> . . . . .	4,146,558	3,815,729	3,312,479	2,848,574	2,228,354	1,640,334	1,181,785	780,314	527,437	509,096
Male . . . . .	2,118,713	1,921,239	1,669,663	1,407,360	1,070,633	761,174	531,272	331,516	214,528	185,323
Female . . . . .	2,027,845	1,894,490	1,642,816	1,441,214	1,157,721	879,160	650,513	448,798	312,909	323,773

<sup>1</sup>Includes origin not stated, origin not classifiable, and two or more races reported; see Technical Notes.<sup>2</sup>Only one race was reported.<sup>3</sup>Includes persons of Hispanic origin of any race.

SOURCE: National Center for Health Statistics, estimates of July 1, 2019, U.S. resident population by age, sex, race and Hispanic origin prepared by U.S. Census Bureau, 2020.

**Table IV. Estimated population for the United States, each state, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Northern Marianas, 2019**

[Populations are postcensal estimates based on 2010 census, estimated as of July 1, 2019]

Area	Total	Area	Total
United States	328,239,523	New Jersey	8,882,190
Alabama	4,903,185	New Mexico	2,096,829
Alaska	731,545	New York	19,453,561
Arizona	7,278,717	North Carolina	10,488,084
Arkansas	3,017,804	North Dakota	762,062
California	39,512,223	Ohio	11,689,100
Colorado	5,758,736	Oklahoma	3,956,971
Connecticut	3,565,287	Oregon	4,217,737
Delaware	973,764	Pennsylvania	12,801,989
District of Columbia	705,749	Rhode Island	1,059,361
Florida	21,477,737	South Carolina	5,148,714
Georgia	10,617,423	South Dakota	884,659
Hawaii	1,415,872	Tennessee	6,829,174
Idaho	1,787,065	Texas	28,995,881
Illinois	12,671,821	Utah	3,205,958
Indiana	6,732,219	Vermont	623,989
Iowa	3,155,070	Virginia	8,535,519
Kansas	2,913,314	Washington	7,614,893
Kentucky	4,467,673	West Virginia	1,792,147
Louisiana	4,648,794	Wisconsin	5,822,434
Maine	1,344,212	Wyoming	578,759
Maryland	6,045,680	Puerto Rico	3,193,694
Massachusetts	6,892,503	U.S. Virgin Islands	106,669
Michigan	9,986,857	Guam	168,149
Minnesota	5,639,632	American Samoa	48,456
Mississippi	2,976,149	Northern Marianas	52,048
Missouri	6,137,428		
Montana	1,068,778		
Nebraska	1,934,408		
Nevada	3,080,156		
New Hampshire	1,359,711		

SOURCES: U.S. Census Bureau. 2019 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, 2019 (NST-EST2019-01). Available from: <https://www2.census.gov/programs-surveys/popest/tables/2010-2019/state/totals/nst-est2019-01.xlsx>; and International data base, 2019 (available from: [https://www.census.gov/data-tools/demo/idb/#/country?YR\\_ANIM=2019&FIPS\\_SINGLE=\\* &dashPages=DASH&COUNTRY\\_YEAR=2019](https://www.census.gov/data-tools/demo/idb/#/country?YR_ANIM=2019&FIPS_SINGLE=* &dashPages=DASH&COUNTRY_YEAR=2019)).

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](#).

**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.

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.

## Random variation

The mortality data presented in this report are not subject to sampling error. 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 (82,83). 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 (82). Using the properties of the Poisson distribution, the standard error (SE) associated with the number of deaths ( $D$ ) is

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

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

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

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

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

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

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

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

For crude and age-specific death rates,

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

Thus,

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

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

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

where:

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

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

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

For tables showing infant 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

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

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

RSE for IMR is

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

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 1–5](#), [1–6](#), and [1–7](#), 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 (10,81,83). Formula 7 is used to calculate 95% confidence limits for the death rate when the normal approximation is appropriate:

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

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

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

and

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

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

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

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

If  $|z| \geq 1.96$ , then the difference between the rates is statistically significant at the 0.05 level. If  $|z| < 1.96$ , then the difference is not statistically significant. Formula 8 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 (81,83). For more information regarding how the gamma method is derived, see “Derivation of gamma method” at the end of this section.

Calculations using the gamma method can be made using commonly available spreadsheet programs or statistical software (e.g., Excel or SAS) that include an inverse gamma function. In Excel, the function “gammainv (probability, alpha, beta)” returns values associated with the inverse gamma function for a given

probability between 0 and 1. For 95% confidence limits, the probability associated with the lower limit is  $0.05/2 = 0.025$ , and with the upper limit,  $1 - (0.05/2) = 0.975$ . Alpha and beta are parameters associated with the gamma distribution. For the number of deaths and crude and age-specific death rates, alpha =  $D$  (the number of deaths) and beta = 1. In Excel, the following formulas can be used to calculate lower and upper 95% confidence limits for the number of deaths and crude and age-specific death rates:

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

and

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

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

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

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

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

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

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

and

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

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 (11,83).

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

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

**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 ( <i>D</i> )	Lower confidence limit ( <i>L</i> )	Upper confidence limit ( <i>U</i> )	Number of deaths ( <i>D</i> )	Lower confidence limit ( <i>L</i> )	Upper confidence limit ( <i>U</i> )
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.

per 100,000 based on 86 deaths. The 95% confidence limits for  $R_1$  and  $R_2$  calculated using Formula 10 would be

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

and

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

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

and

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

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 (84). 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  $G(y,z)$ , where  $y$  and  $z$  are the parameters that determine the shape of the distribution (85),  $E(X) = yz$  and  $\text{Var}(X) = yz^2$ . For the number of deaths,  $D$ ,  $E(D) = D$  and  $\text{Var}(D) = D$ . It follows that  $y = D$  and  $z = 1$ , and thus,

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

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

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

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

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

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

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

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

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

For more detail regarding the derivation of the gamma method and its application to age-adjusted death rates and other mortality statistics, see References (10,82,84).

## Availability of mortality data

Mortality data are available in publications, unpublished tables, and electronic products as described on the NCHS mortality website at: <https://www.cdc.gov/nchs/deaths.htm>. More detailed analysis than this report provides can be obtained from the mortality public-use data set issued each data year. Since 1968, the data set has been available through NCHS in ASCII format and can now be downloaded: [https://www.cdc.gov/nchs/data\\_access/Vitalstatsonline.htm](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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