

Deaths: Final Data for 2016

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Abstract

Objectives—This report presents final 2016 data on U.S. deaths, death rates, life expectancy, infant mortality, and trends, by selected characteristics such as age, sex, Hispanic origin and race, state of residence, and cause of death.

Methods—Information reported on death certificates, which are completed by funeral directors, attending physicians, medical examiners, and coroners, is presented in descriptive tabulations. The original records are filed in state registration offices. Statistical information is compiled in a national database through the Vital Statistics Cooperative Program of the National Center for Health Statistics. Causes of death are processed in accordance with the *International Classification of Diseases, Tenth Revision*.

Results—In 2016, a total of 2,744,248 deaths were reported in the United States. The age-adjusted death rate was 728.8 deaths per 100,000 U.S. standard population, a decrease of 0.6% from the 2015 rate. Life expectancy at birth was 78.6 years, a decrease of 0.1 year from 2015. Life expectancy decreased from 2015 to 2016 for non-Hispanic white males (0.2 year), non-Hispanic black males (0.4), non-Hispanic black females (0.2), Hispanic males (0.2), and Hispanic females (0.1). Age-specific death rates increased in 2016 from 2015 for age groups 15–24, 25–34, 35–44, and 55–64, and decreased for age groups 65–74, 75–84, and 85 and over. The 15 leading causes of death in 2016 remained the same as in 2015, although Accidents (unintentional injuries) and Chronic lower respiratory diseases exchanged ranks. The infant mortality rate, 5.87 infant deaths per 1,000 live births in 2016, did not change significantly from the rate of 5.90 in 2015.

Conclusions—Although the age-adjusted death rate for the total population decreased from 2015 to 2016, life expectancy at birth decreased for the second consecutive year in 2016, mainly due to increases in mortality from unintentional injuries, homicide, Alzheimer's disease, suicide, and Parkinson's disease.

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

Highlights

Mortality experience in 2016

- In 2016, a total of 2,744,248 resident deaths were registered in the United States, yielding a crude death rate of 849.3 per 100,000 population.
- The age-adjusted death rate, which accounts for the aging of the population, was 728.8 deaths per 100,000 U.S. standard population.
- Life expectancy at birth was 78.6 years.
- The 15 leading causes of death in 2016 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's disease
 7. Diabetes mellitus (diabetes)
 8. Influenza and pneumonia
 9. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
 10. Intentional self-harm (suicide)
 11. Septicemia
 12. Chronic liver disease and cirrhosis
 13. Essential hypertension and hypertensive renal disease (hypertension)
 14. Parkinson's disease
 15. Pneumonitis due to solids and liquids
- In 2016, the infant mortality rate was 5.87 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. Sudden infant death syndrome (SIDS)
4. Newborn affected by maternal complications of pregnancy (maternal complications)
5. Accidents (unintentional injuries)
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. Neonatal hemorrhage

Trends

- The age-adjusted death rate decreased 0.6% in 2016 after an increase in 2015.
- Differences in mortality persisted between the non-Hispanic black and non-Hispanic white populations. The age-adjusted death rate has been 1.2 times greater for the non-Hispanic black population than for the non-Hispanic white population since 2008.
- The age-adjusted death rate for the non-Hispanic white population was 1.4 times greater than for the Hispanic population. This difference has remained unchanged since 2010.
- Life expectancy for the total population decreased 0.1 year from 78.7 in 2015 to 78.6 in 2016.
- Life expectancy for females was 5.0 years higher than for males. The difference in life expectancy between the sexes has narrowed since 1979, when it was 7.8 years, but it increased 0.2 year in 2016 from 2015, the first increase since 1990.
- In 2016 compared with 2015, life expectancy decreased for non-Hispanic white males (0.2 year), non-Hispanic black males (0.4), non-Hispanic black females (0.2), Hispanic males (0.2), and Hispanic females (0.1). Life expectancy for non-Hispanic white females remained unchanged.
- The difference in life expectancy between the Hispanic and non-Hispanic white populations was 3.3 years in 2016, which was unchanged from 2015.
- The 15 leading causes of death in 2016 were the same as in 2015, although unintentional injuries and Chronic lower respiratory diseases exchanged ranks.
- Age-adjusted death rates decreased significantly in 2016 from 2015 for 8 of the 15 leading causes of death, including heart disease, cancer, Chronic lower respiratory diseases, stroke, diabetes, Influenza and pneumonia, kidney disease, and Septicemia. Significant increases occurred in 2016 from 2015 for 4 of the 15 leading causes of death, including unintentional injuries, Alzheimer's disease, suicide, and Parkinson's disease.
- Age-adjusted death rates increased in 2016 from 2015 for drug-induced causes (20.9%), alcohol-induced causes (4.4%), and firearm-related injuries (6.3%).
- The decrease in life expectancy at birth for the total population in 2016 was mainly due to increases in mortality

from unintentional injuries, homicide, Alzheimer's disease, suicide, and Parkinson's disease, with unintentional injuries making the largest contribution.

- The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations increased by 0.1 year, from 3.6 years in 2015 to 3.7 years in 2016.
- Among external causes of injury death, unintentional poisoning has been the leading mechanism of injury mortality since 2011, followed by unintentional motor vehicle traffic-related injuries.
- The difference in the infant mortality rate of 5.87 infant deaths per 1,000 live births in 2016 from 5.90 in 2015 was not statistically significant.
- The 10 leading causes of infant death in 2016 remained the same as in 2015.

Introduction

This report presents detailed 2016 data on deaths and death rates according to a number of demographic and medical characteristics. These data provide information on mortality patterns among residents of the United States by such variables as age, sex, Hispanic origin and race, state of residence, and cause of death. Information on these mortality patterns is key to understanding changes in the health and well-being of the U.S. population (1). Companion reports present additional details on leading causes of death and life expectancy in the United States (2,3).

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

Methods

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

Mortality data on specific demographic and medical characteristics cover all 50 states and the District of Columbia. Measures of mortality in this report include the number of deaths; crude, age-specific, and age-adjusted death rates; infant, neonatal, and postneonatal mortality rates; life expectancy; and

rate ratios. Changes in death rates in 2016 compared with 2015 and differences in death rates across demographic groups in 2016 were tested for statistical significance. Unless otherwise specified, reported differences are statistically significant. Additional information on these statistical methods, random variation and relative standard error, the computation of derived statistics and rates, population denominators, and the definition of terms is presented in the [Technical Notes](#).

The populations used to calculate death rates shown in this report for 1991–2016 were produced under a collaborative arrangement with the U.S. Census Bureau. Populations for 2010–2016 and the intercensal period 2001–2009 are consistent with the 2010 census (8–15). Reflecting the latest guidelines issued in 1997 by the Office of Management and Budget (OMB), the 2000 and 2010 censuses included an option for persons to report more than one race as appropriate for themselves and household members (16); see the [Technical Notes](#) for details on the 2016 multiple-race reporting area and methods used to bridge responses for those who report more than one race. Beginning with deaths occurring in 2003, some states allowed for multiple-race reporting on the death certificate. Multiple-race data for these states are bridged to single-race categories; see [Technical Notes](#). Once all states are collecting data on race according to 1997 OMB guidelines, use of the bridged-race process is expected to be discontinued. This report presents mortality statistics for Hispanic, non-Hispanic white, non-Hispanic black, non-Hispanic American Indian or Alaska Native (AIAN), and non-Hispanic Asian or Pacific Islander (API) persons.

The population data used to compute death rates by race and Hispanic origin in this report are based on special estimation procedures and are not true counts (see [Technical Notes](#), “Race and Hispanic origin”). This is the case even for the 2000 and 2010 populations. The estimation procedures used to develop these populations contain some error. Smaller population groups are affected much more than larger population groups (17). Data presented in this report and other mortality tabulations are available from the National Center for Health Statistics (NCHS), National Vital Statistics System website: <https://www.cdc.gov/nchs/deaths.htm>. Availability of mortality microdata is described in the [Technical Notes](#).

This report was redesigned beginning with the 2015 data year. For a summary of changes in report design, see “Deaths: Final Data for 2015,” available from: https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_06.pdf.

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

Results and Discussion

Deaths and death rates

In 2016, a total of 2,744,248 resident deaths were registered in the United States—31,618 more deaths than in 2015. The crude death rate for 2016 (849.3 deaths per 100,000 population) was 0.6% higher than the 2015 rate (844.0) ([Tables A, 1, 2, 7, and 9](#)).

The age-adjusted death rate in 2016 was 728.8 deaths per 100,000 U.S. standard population—0.6% lower than the rate of 733.1 in 2015 ([Tables A and 1](#)). Age-adjusted death rates should be viewed as relative indexes rather than as actual measures of mortality risk. They are constructs that show what the level of mortality would be if no changes occurred in the age composition of the population from year to year. (For a discussion of age-adjusted death rates, see the [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, 2008, 2013, and 2015 ([Figure 1](#)) (18).

Death rates by race and Hispanic origin

In 2016, age-adjusted death rates for the major race and ethnicity groups ([Table 1](#)) were:

- Non-Hispanic white population: 749.0 deaths per 100,000 U.S. standard population
- Non-Hispanic black population: 882.8
- Hispanic population: 525.8

In 2016, the age-adjusted death rate for the non-Hispanic black population was 1.2 times that for the non-Hispanic white population. The rate for the non-Hispanic white population was 1.4 times that for the Hispanic population ([Table B](#)). In 2016, the difference in rates between the non-Hispanic white and non-Hispanic black populations widened for the first time since 1999 ([Table 1, Figure 2](#)). From 2015 to 2016, the age-adjusted rate for the non-Hispanic white population decreased 0.6%, while the rate for the non-Hispanic black population increased 0.8%. From 1999 to 2015, the difference between the two populations narrowed each year. During this time, the age-adjusted rate for the non-Hispanic white population decreased 12.4%, while the rate for the non-Hispanic black population decreased 23.8%. The difference between the Hispanic and non-Hispanic white populations has generally been widening since 2006, with the exception of 2009, 2012, and 2016 ([Table 1, Figure 2](#)) (18).

From 2015 to 2016, the age-adjusted death rate decreased for non-Hispanic white females (1.1%) and increased for non-Hispanic black males (1.0%) ([Tables A and 1](#)). Observed changes in age-adjusted rates for non-Hispanic white male, non-Hispanic black female, Hispanic male, and Hispanic female populations were not statistically significant.

Mortality for Hispanic persons may be somewhat understated because of net underreporting of Hispanic origin on the death certificate (by an estimated 3%), while data for the non-Hispanic white and non-Hispanic black populations are not affected by problems of underreporting (19,20); see [Technical Notes](#). Misclassification of Hispanic origin on the death certificate is relatively stable across age groups (19). Rates for the non-Hispanic AIAN population should be interpreted with caution

Table A. Percent change in death rates and age-adjusted death rates in 2016 from 2015, 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. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards. Data for specified race or Hispanic-origin groups other than non-Hispanic white and non-Hispanic black should be interpreted with caution because of inconsistencies in reporting these items on death certificates and surveys, although misclassification is very minor for the Hispanic and non-Hispanic Asian or Pacific Islander populations; see Technical Notes]

Age group (years)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	Percent change																	
Crude	0.6	1.4	-0.2	0.4	1.2	-0.4	2.8	3.3	2.2	2.3	3.4	0.9	2.6	2.7	2.4	3.3	4.0	2.5
Age adjusted . . .	-0.6	-0.3	-1.1	-0.6	-0.2	-1.1	0.8	1.0	0.4	-0.7	0.4	-1.7	-0.5	-0.5	-0.6	0.1	0.5	-0.4
Under 1 year ⁵	-1.1	-0.9	-1.3	-1.8	-1.9	-1.6	0.2	-0.9	1.5	5.8	15.4	-5.2	0.8	2.7	-1.6	0.1	2.2	-2.4
1-4	1.6	-1.1	6.0	4.4	2.7	6.5	-0.2	-5.5	7.6	0.2	-15.2	18.9	11.1	8.5	13.6	-2.0	-4.1	0.6
5-14	1.5	0.0	5.4	-0.8	0.0	-2.7	4.2	0.0	10.1	-7.1	-3.7	-10.2	2.2	-5.7	13.2	7.6	0.0	19.8
15-24	7.8	8.2	6.0	7.3	9.0	3.2	10.0	9.0	13.1	14.0	13.2	16.2	10.0	9.3	12.0	6.0	6.2	6.7
25-34	10.5	11.0	9.0	11.0	11.5	9.8	8.3	8.2	7.6	7.7	6.7	9.1	2.9	3.5	1.1	13.1	14.2	10.3
35-44	6.7	8.1	4.6	7.0	8.3	4.9	6.2	8.0	3.3	4.1	2.0	7.9	11.7	16.7	4.3	7.2	7.7	6.3
45-54	0.4	0.5	0.2	0.4	0.6	-0.1	1.9	1.7	2.1	-1.8	-3.0	0.0	1.6	3.4	-0.8	1.1	0.7	1.7
55-64	1.0	0.7	1.3	1.0	0.7	1.4	1.0	0.7	1.3	0.6	2.0	-1.2	4.2	3.3	5.6	1.9	2.0	1.6
65-74	-0.5	-0.2	-0.8	-0.6	-0.4	-0.9	1.4	1.5	1.2	-1.3	2.2	-5.3	-0.2	0.2	-0.6	-1.4	-0.3	-2.9
75-84	-2.3	-2.2	-2.5	-2.4	-2.1	-2.7	-0.6	-1.1	-0.2	-2.5	-4.4	-0.9	-2.4	-2.0	-3.0	-1.0	-1.8	-0.2
85 and over	-2.1	-1.8	-2.3	-1.8	-1.6	-2.0	-1.6	-0.2	-2.3	-3.5	2.0	-6.9	-2.0	-3.7	-0.9	-1.1	-0.1	-1.7

¹Includes deaths for origin not stated.

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

³Includes Aleut and Eskimo persons.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

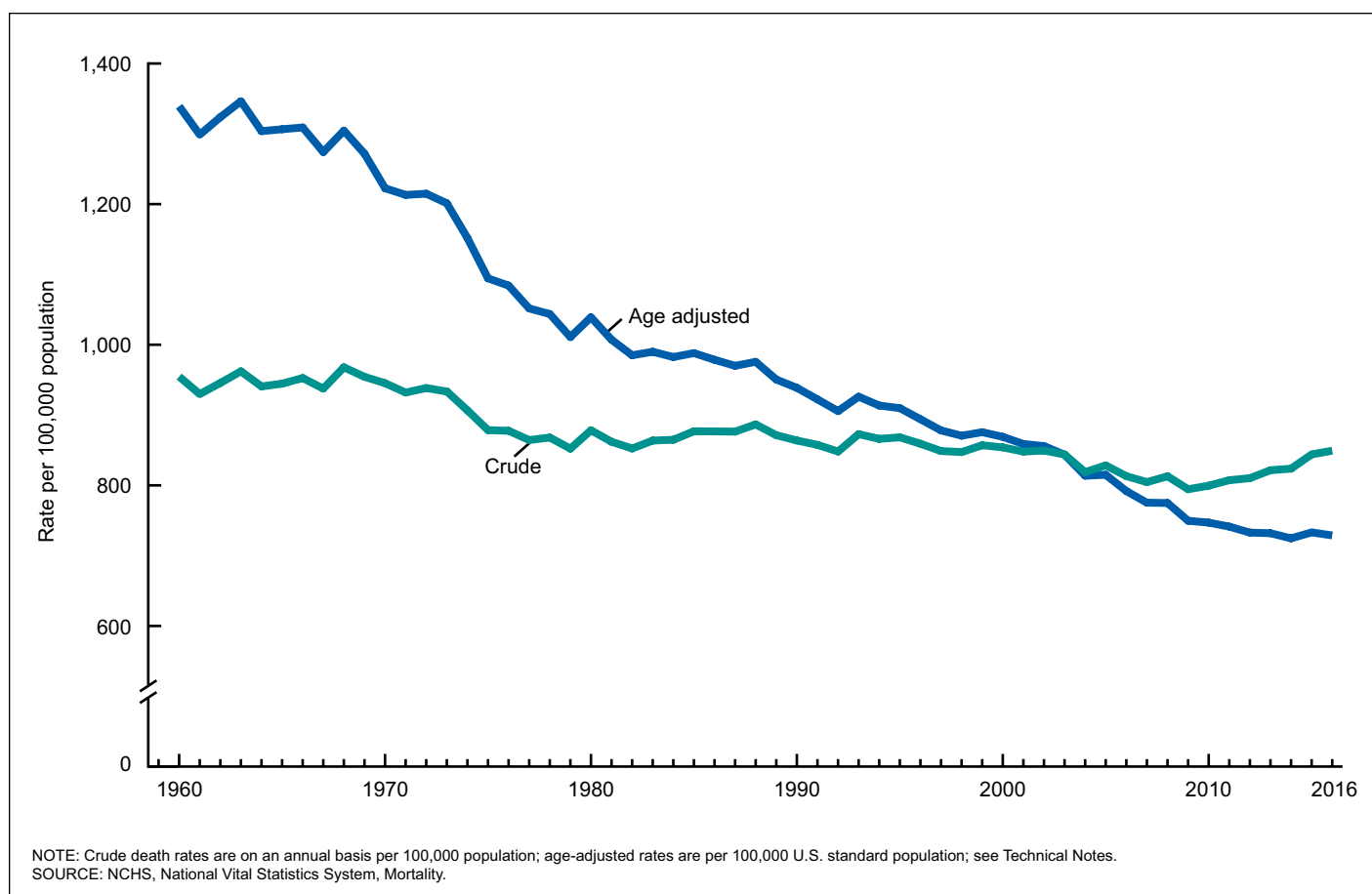


Figure 1. Crude and age-adjusted death rates: United States, 1960–2016

because of the high percentage of racial misclassification on death certificates (33%). Rates for non-Hispanic API are affected much less by underreporting on the death certificate (3%) (19).

Death rates by age and sex

For the total population, age-specific death rates increased significantly from 2015 to 2016 for age groups 15–24, 25–34, 35–44, and 55–64. Rates decreased significantly for age groups 65–74, 75–84, and 85 and over. Changes in rates for other age groups were not significant (Tables A, 5, and 7; Figure 3).

The age-adjusted death rate for males was 1.4 times the rate for females in 2016 (Table B). The male-to-female death rate ratio was unchanged from the ratio in 2015.

Death rates for males increased significantly for age groups 15–24, 25–34, 35–44, and 55–64. Rates decreased significantly for age groups 75–84 and 85 and over. Changes in rates for males in other age groups were not statistically significant. Death rates for females increased significantly for age groups 15–24, 25–34, 35–44, and 55–64. Rates decreased significantly for age groups 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 in 2016 compared with 2015, age-specific death rates increased significantly for age groups 15–24, 25–34, 35–44, and 55–64. Rates decreased significantly for age groups 65–74,

75–84, and 85 and over (Tables A and 2). Rates for non-Hispanic white males increased for age groups 15–24, 25–34, and 35–44. The rates decreased for age groups 75–84 and 85 and over. Rates for non-Hispanic white females increased for age groups 25–34, 35–44, and 55–64. The rates decreased for age groups 65–74, 75–84, and 85 and over.

For the total non-Hispanic black population in 2016 compared with 2015, age-specific death rates increased for age groups 15–24, 25–34, 35–44, 45–54, and 65–74. The only significant decrease in the age-specific death rate was for age group 85 and over. Rates for non-Hispanic black males increased for age groups 15–24, 25–34, 35–44, and 65–74. For non-Hispanic black females, rates increased for age groups 15–24 and 25–34, and decreased for age group 85 and over.

For the total non-Hispanic AIAN population, the only significant increase from 2015 to 2016 was for age group 15–24.

For the total non-Hispanic API population, age-specific rates increased from 2015 to 2016 for age groups 15–24, 35–44, and 55–64, and decreased for age groups 75–84 and 85 and over. For non-Hispanic API males, rates increased for age group 35–44 and decreased for age group 85 and over. For non-Hispanic API females, the age-specific death rate increased only for age group 55–64.

For the total Hispanic population in 2016 compared with 2015, age-specific death rates increased for age groups 15–24, 25–34, 35–44, and 55–64. Rates for Hispanic males increased

Table B. Number of deaths, percentage of total deaths, death rates, and age-adjusted death rates for 2016, percent change in age-adjusted death rates in 2016 from 2015, 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 2016: United States

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

Rank ¹	Cause of death (ICD-10)	Number	Percent of total deaths, 2016	Crude death rate, 2016	Age-adjusted death rate				
					2016	Percent change to 2015	Ratio		
							Male to female	Non-Hispanic black ² to Non-Hispanic white	Non-Hispanic white ² to Hispanic
...	All causes	2,744,248	100.0	849.3	728.8	-0.6	1.4	1.2	1.4
1	Diseases of heart (I00-I09,I11,I13,I20-I51)	635,260	23.1	196.6	165.5	-1.8	1.6	1.2	1.5
2	Malignant neoplasms (C00-C97)	598,038	21.8	185.1	155.8	-1.7	1.4	1.1	1.5
3	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	161,374	5.9	49.9	47.4	9.7	2.1	0.8	1.7
4	Chronic lower respiratory diseases (J40-J47)	154,596	5.6	47.8	40.6	-2.4	1.2	0.7	2.7
5	Cerebrovascular diseases (I60-I69)	142,142	5.2	44.0	37.3	-0.8	1.0	1.4	1.1
6	Alzheimer's disease (G30)	116,103	4.2	35.9	30.3	3.1	0.7	0.9	1.3
7	Diabetes mellitus (E10-E14)	80,058	2.9	24.8	21.0	-1.4	1.5	2.0	0.8
8	Influenza and pneumonia (J09-J18)	51,537	1.9	15.9	13.5	-11.2	1.3	1.1	1.2
9	Nephritis, nephrotic syndrome and nephrosis (N00-N07, N17-N19,N25-N27)	50,046	1.8	15.5	13.1	-2.2	1.4	2.2	1.0
10	Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	44,965	1.6	13.9	13.5	1.5	3.6	0.4	2.5
11	Septicemia (A40-A41)	40,613	1.5	12.6	10.7	-2.7	1.2	1.8	1.3
12	Chronic liver disease and cirrhosis (K70,K73-K74)	40,545	1.5	12.5	10.7	-0.9	1.9	0.7	0.7
13	Essential hypertension and hypertensive renal disease (I10,I12,I15)	33,246	1.2	10.3	8.6	1.2	1.1	2.2	1.0
14	Parkinson's disease (G20-G21)	29,697	1.1	9.2	8.0	3.9	2.3	0.5	1.5
15	Pneumonitis due to solids and liquids (J69)	19,715	0.7	6.1	5.2	-1.9	1.8	1.0	1.7
...	All other causes (residual)	546,313	19.9	169.1	...	...	...	...	...

... Category not applicable.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

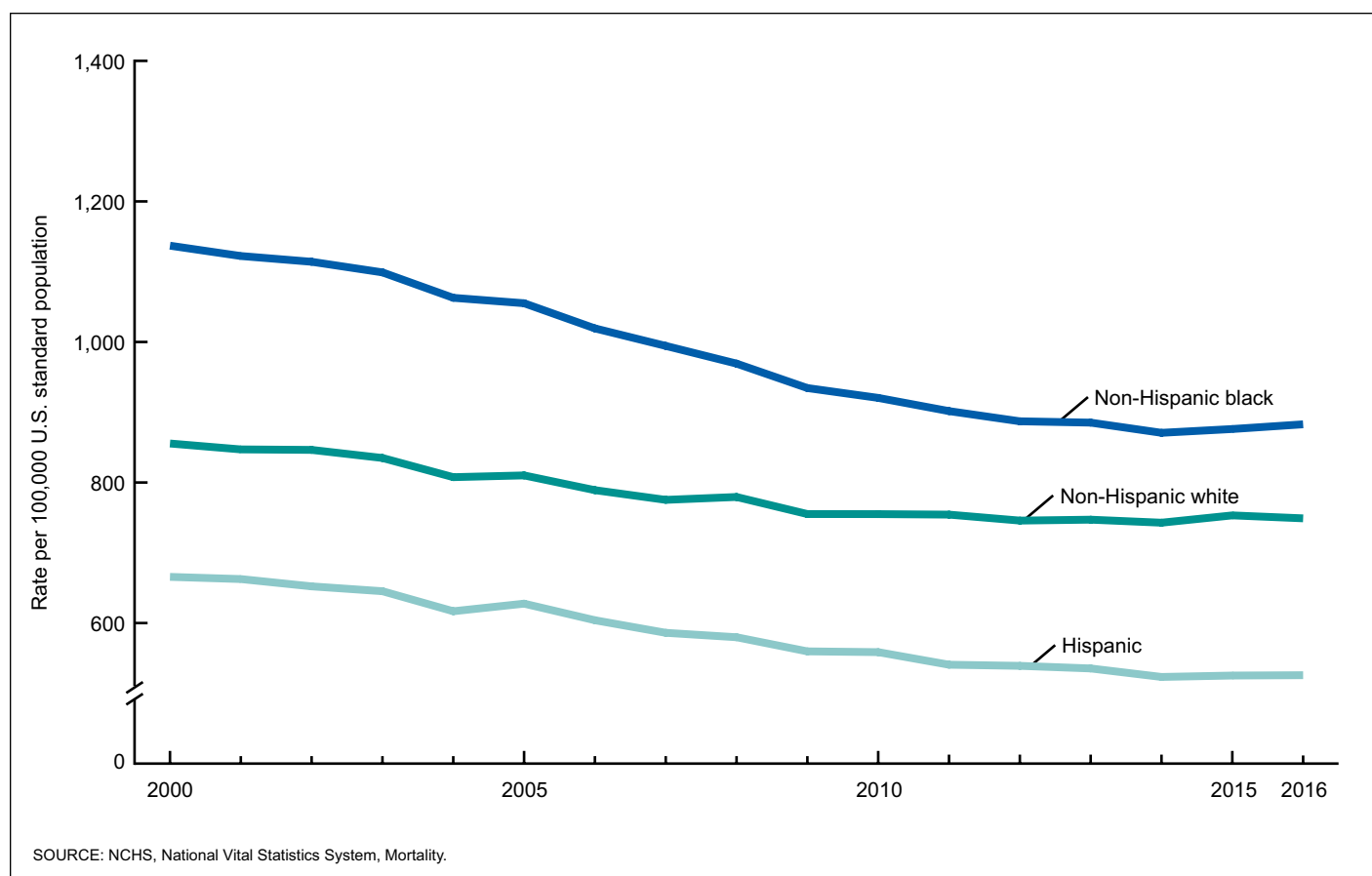


Figure 2. Age-adjusted death rates, by race and Hispanic origin: United States, 2000–2016

for age groups 15–24, 25–34, and 35–44. For Hispanic females, rates increased for age groups 5–14, 25–34, and 35–44, and decreased for age group 65–74.

Other observed changes from 2015 to 2016 in age-specific rates by race and ethnicity and sex were not statistically significant.

Death rates for the non-Hispanic AIAN population are not adjusted for misclassification of race and ethnicity. Given that the rates for the non-Hispanic AIAN population are underestimated by about 33% (19), disparities in age-adjusted death rates should be interpreted with caution when making comparisons across racial and ethnic groups. For the non-Hispanic API population, death rates also are not adjusted for misclassification and are underestimated by about 3% due to underreporting on death certificates (19). Although the level of underestimation for this population is not as great as for the non-Hispanic AIAN population, caution should be exercised when interpreting rate disparities involving the non-Hispanic API population and other groups.

Death rates for the Hispanic population are not adjusted for misclassification ([Technical Notes](#)). Because these rates are both unadjusted for misclassification and underestimated by about 3.0% (19), caution should be exercised when interpreting rate disparities between Hispanic and non-Hispanic populations.

Expectation of life at birth and at specified ages

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

Life table data shown in this report for 2001–2016 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

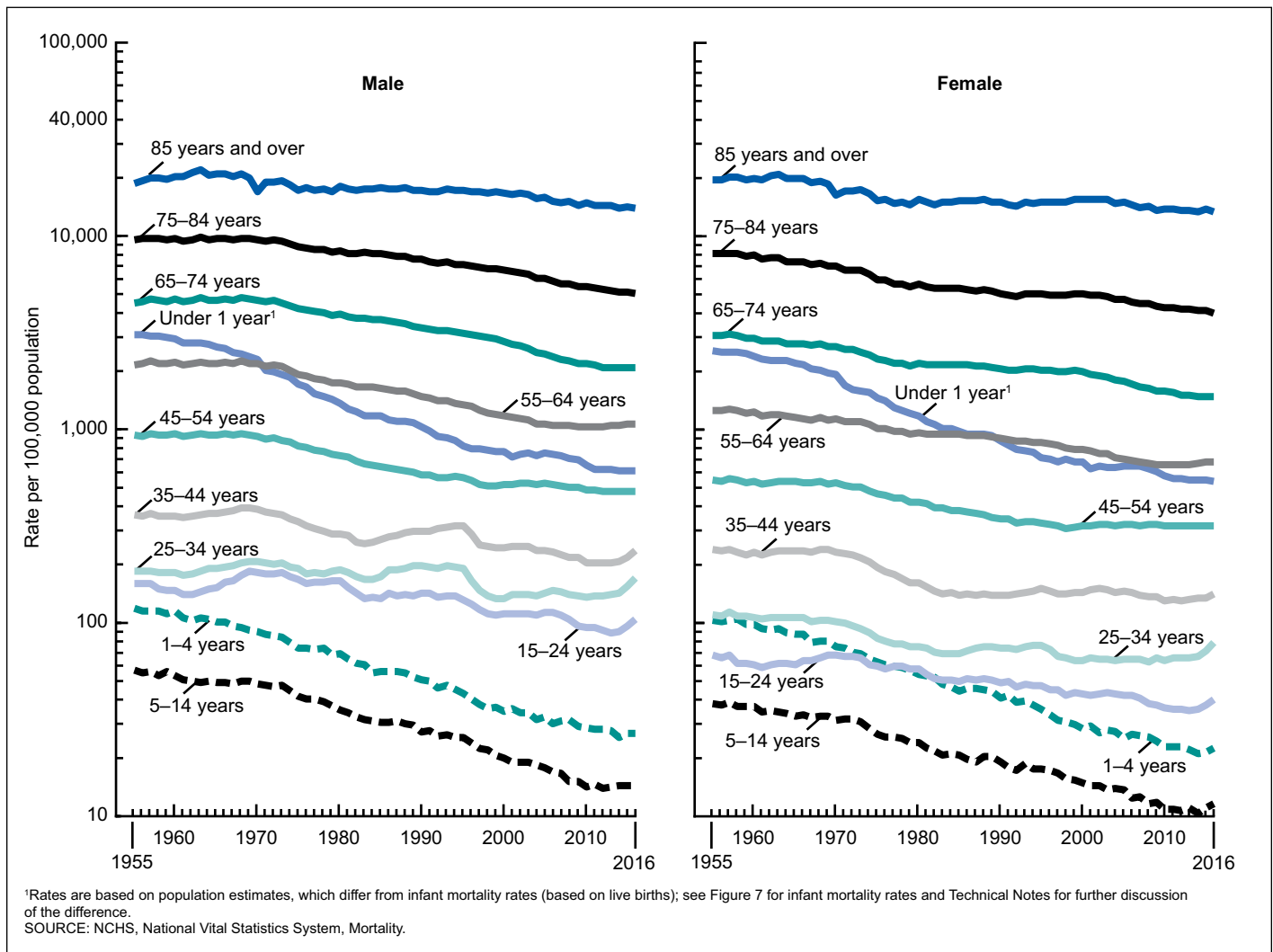


Figure 3. Death rates, by age and sex: United States, 1955–2016

In 2016, life expectancy at birth for the U.S. population was 78.6 years, 0.1 year lower than 2015 (Tables 3 and 4). The general trend in U.S. life expectancy since 1900 has been one of improvement. However, decreases in life expectancy occurred in 2015 and 2016, and these were the only decreases in the last 20 years and the first consecutive 2-year decline since 1964. In 2016, life expectancy for males (76.1 years) was 0.2 year lower than in 2015. Life expectancy for females (81.1 years) was the same as in 2015. From 1900 through the late 1970s, the gap in life expectancy between the sexes widened (3) from 2.0 to 7.8 years. The gap between sexes has narrowed since its peak in the 1970s. In 2016, the difference in life expectancy between the sexes increased for the first time since 1990 to 5.0 years, a 0.2-year increase from 4.8 years in 2015.

Life expectancy figures by Hispanic origin have been available starting with data for 2006 (21). Life expectancy for major race-ethnicity groups decreased for the second consecutive year in 2016. Life expectancy decreased by 0.2 year for the non-Hispanic white population (from 78.7 years in 2015 to 78.5 in 2016) and by 0.3 year for the non-Hispanic black population (from 75.1 to 74.8). The difference in life expectancy between the non-Hispanic

white and non-Hispanic black populations increased by 0.1 year, from 3.6 years in 2015 to 3.7 years in 2016 (Table 4). The non-Hispanic white–non-Hispanic black gap generally narrowed from 2006 to 2014, but widened in 2015 and 2016.

Life expectancy for the Hispanic population decreased by 0.2 year, from 82.0 years in 2015 to 81.8 years in 2016 (Tables 3 and 4). Life expectancy was 1.5 years higher in 2016 compared with 2006. The difference in life expectancy between the Hispanic and non-Hispanic white populations was 3.3 years in 2016, which was unchanged since 2014 (Table 4). Prior to 2014, the non-Hispanic white–Hispanic gap was gradually widening (Table 4; Figure 4).

Among the six Hispanic origin–race–sex groups in 2016, Hispanic females had the highest life expectancy at birth (84.2 years), followed by non-Hispanic white females (81.0), Hispanic males (79.1), non-Hispanic black females (77.9), non-Hispanic white males (76.1), and non-Hispanic black males (71.5) (Tables 3 and 4; Figure 5).

Life expectancy for five of the six Hispanic origin–race–sex groups decreased in 2016 from 2015. Life expectancy decreased 0.2 year for non-Hispanic white males, 0.4 year for non-Hispanic

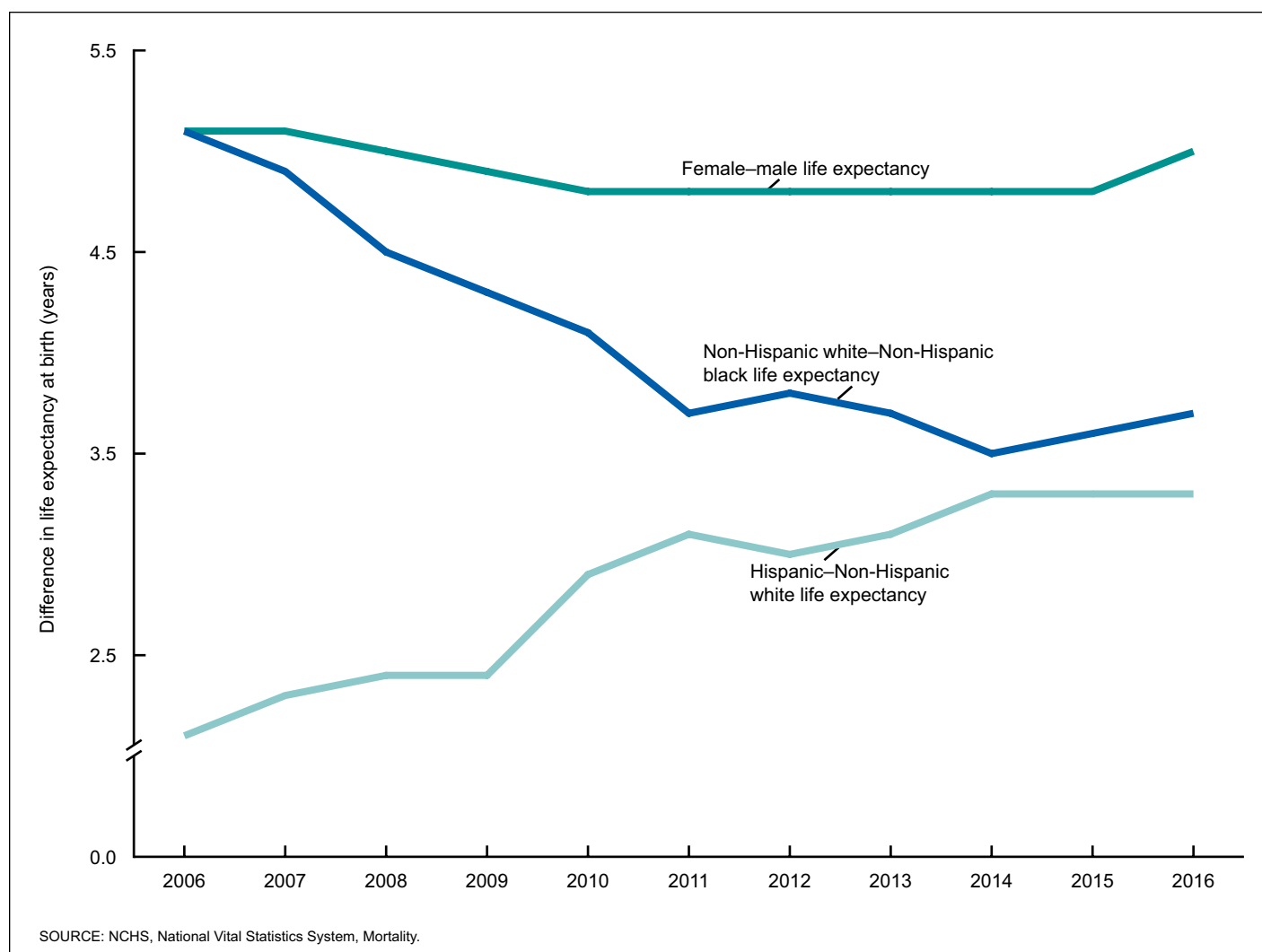


Figure 4. Differences in female-male, non-Hispanic white-non-Hispanic black, and Hispanic-non-Hispanic white life expectancy: United States, 2006-2016

black males, 0.2 year for non-Hispanic black females, 0.2 year for Hispanic males, and 0.1 year for Hispanic females (Table 4). Life expectancy for non-Hispanic white females was unchanged.

Life expectancy for both males and females was higher by 3 years or more for the Hispanic population than for the non-Hispanic white and non-Hispanic black populations. Various hypotheses have been proposed to explain favorable mortality outcomes among Hispanic persons. The most prevalent hypotheses are the healthy migrant effect, which argues that Hispanic immigrants are selected for their good health and robustness; the “salmon bias” effect, which posits that U.S. residents of Hispanic origin may return to their country of origin to die or when ill; and the “cultural effect,” which argues that culturally influenced family structure, lifestyle behaviors, and social networks may confer a protective barrier against the negative effects of low socioeconomic and minority status (22,23).

Life tables shown in this report may be used to compare life expectancies at selected ages from birth to 100 years. For example, on the basis of mortality experienced in 2016, a person

aged 50 could expect to live an average of 31.6 more years, for a total of 81.6 years. A person aged 65 could expect to live an average of 19.4 more years, for a total of 84.4 years, and a person aged 85 could expect to live an average of 6.6 more years, for a total of 91.6 years (Table 3). While life expectancy at some ages decreased from 2015 to 2016, especially at ages 25 and under, life expectancy increased at some older ages (at ages 60, 65, 70, and 80) (Table 3) (3,24).

Leading causes of death

The 15 leading causes of death in 2016 accounted for 80.1% of all deaths in the United States (Table B). The leading causes of death in 2016 remained the same as in 2015, although unintentional injuries, the fourth leading cause of death in 2015, became the third leading cause in 2016, and Chronic lower respiratory diseases, the third leading cause of death in 2015, became the fourth leading cause in 2016. Causes of death are ranked according to the number of deaths; for ranking

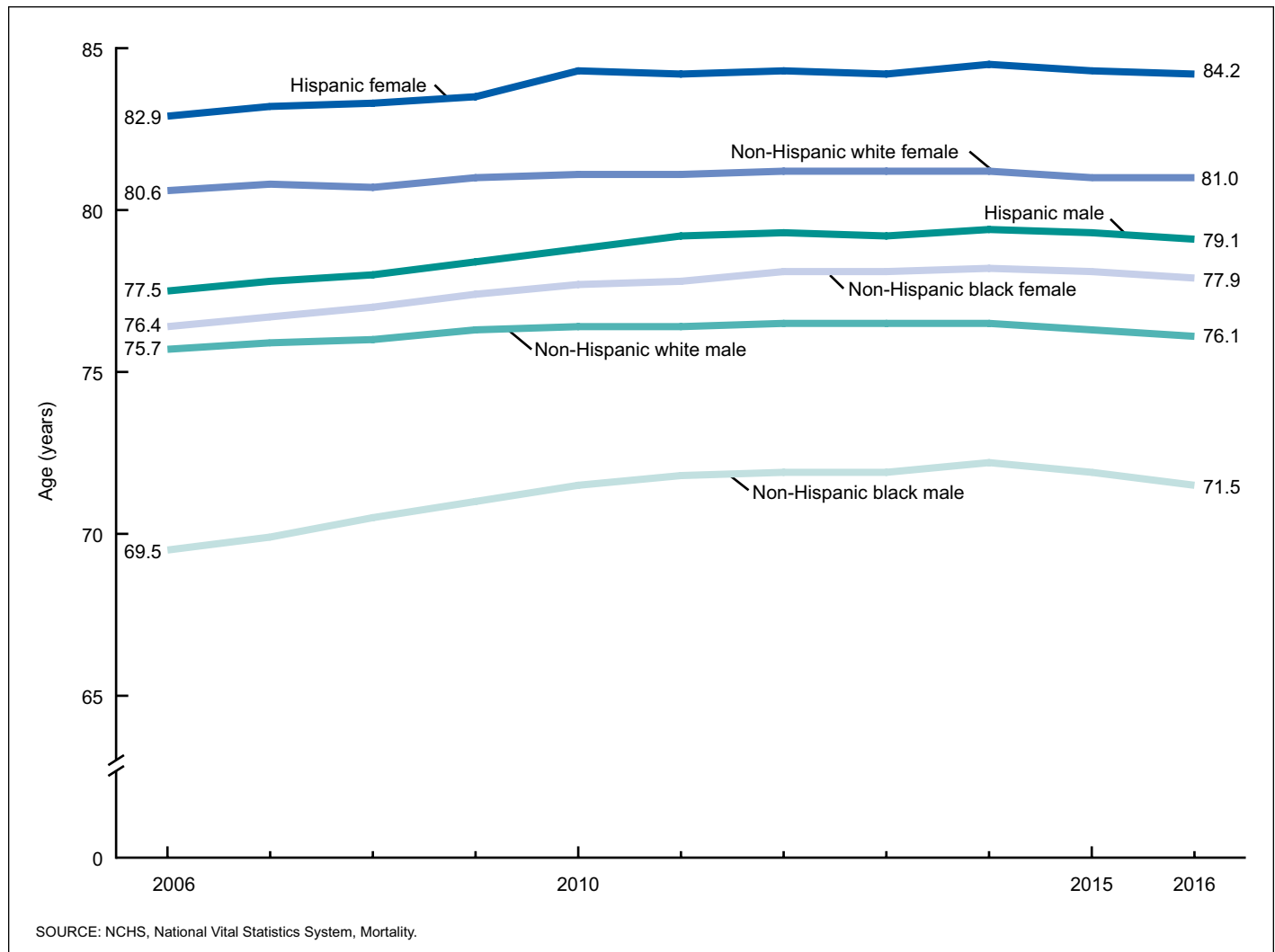


Figure 5. Life expectancy, by race and Hispanic origin and sex: United States, 2006–2016

procedures, see [Technical Notes](#). By rank, the 15 leading causes of death in 2016 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's disease
7. Diabetes mellitus (diabetes)
8. Influenza and pneumonia
9. Nephritis, nephrotic syndrome and nephrosis (kidney disease)
10. Intentional self-harm (suicide)
11. Septicemia
12. Chronic liver disease and cirrhosis
13. Essential hypertension and hypertensive renal disease (hypertension)
14. Parkinson's 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. Therefore, whereas causes of death are ranked according to the number of deaths, age-adjusted death rates are used to depict trends for leading causes of death in this report because they are better than crude rates for showing changes in mortality over time and among causes of death ([Tables B and 5](#); [Figure 6](#)).

From 2015 to 2016, age-adjusted death rates decreased significantly for 8 of the 15 leading causes of death and increased for 4 of the 15 leading causes ([Table B](#)). The rate for the top leading cause of death, heart disease, decreased 1.8% in 2016 from 2015 ([Tables B and 5](#); [Figure 6](#)) (18). The rate for the second leading cause of death, cancer, decreased 1.7%, continuing a gradual but consistent downward trend since 1993. Deaths from these two diseases combined accounted for 44.9% of deaths in the United States in 2016.

Other leading causes of death that showed significant decreases in 2016 from 2015 were Chronic lower respiratory

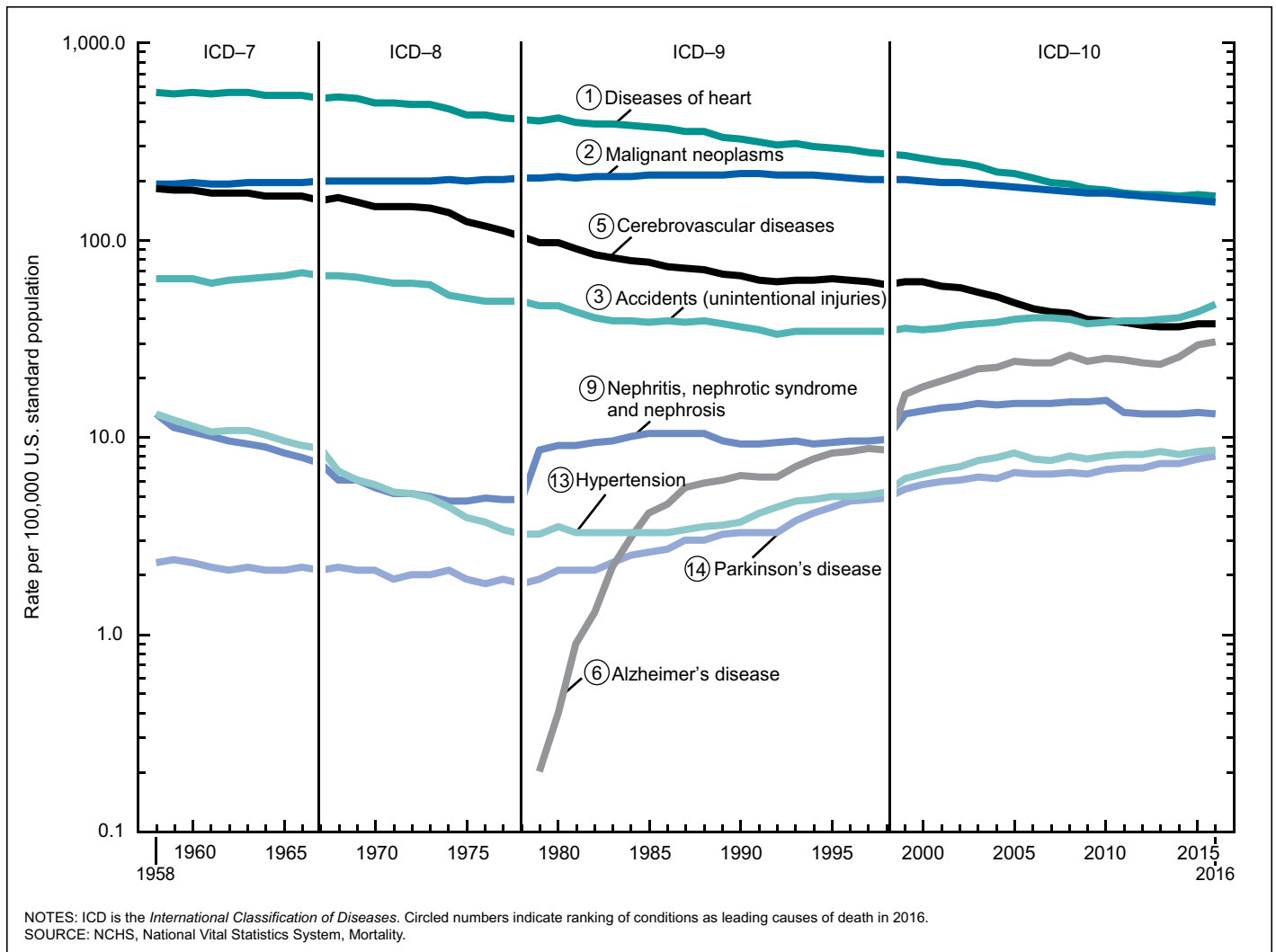


Figure 6. Age-adjusted death rates for selected leading causes of death: United States, 1958–2016

disease (2.4%), stroke (0.8%), diabetes (1.4%), Influenza and pneumonia (11.2%), kidney disease (2.2%), and Septicemia (2.7%).

The age-adjusted death rates increased significantly in 2016 relative to 2015 for unintentional injuries (9.7%), Alzheimer's disease (3.1%), suicide (1.5%), and Parkinson's disease (3.9%).

The observed changes from 2015 to 2016 in the age-adjusted death rates for Chronic liver disease and cirrhosis, hypertension, and Pneumonitis due to solids and liquids were not significant.

Assault (homicide), the 16th leading cause of death in 2016, dropped from among the 15 leading causes of death in 2010, but is still a major issue for some age groups. In 2016, the age-adjusted rate for homicide increased for the second consecutive year. Homicide was among the 15 leading causes of death in 2016 for age groups under 1 year (13th), 1–4 (4th), 5–14 (5th), 15–24 (3rd), 25–34 (3rd), 35–44 (5th), and 45–54 (10th) (18).

Although Human immunodeficiency virus (HIV) disease has not been among the 15 leading causes of death since 1997 (25), it is still considered a major public health problem for some age groups. Historically, for all ages combined, HIV disease mortality

reached its highest level in 1995 after a period of increase from 1987 through 1994. Subsequently, the rate for this disease decreased an average of 33.0% per year from 1995 through 1998, and 6.2% per year from 1999 through 2016 (18,26). In 2016, HIV disease remained among the 15 leading causes of death for age groups 25–34 (9th), 35–44 (9th), 45–54 (13th), and 55–64 (14th).

Enterocolitis due to *Clostridium difficile* (*C. difficile*)—a predominantly antibiotic-associated inflammation of the intestines caused by *C. difficile*, a gram-positive, anaerobic, spore-forming bacillus—is of growing concern. The disease is often acquired in hospitals or other health care facilities with long-term patients or residents (27,28). The number of deaths from *C. difficile* climbed from 793 deaths in 1999 to a high of 8,085 deaths in 2011 (18,26). In 2016, the number of deaths from *C. difficile* was 6,768. In 2016, the age-adjusted death rate for this cause was 1.8 deaths per 100,000 U.S. standard population, a decrease of 10.0% from the rate in 2015 (2.0). In 2016, *C. difficile* ranked as the 18th leading cause of death for the population aged 65 and over. Approximately 87% of deaths from *C. difficile* occurred among people aged 65 and over (Table 6).

The relative risk of death in one population group compared with another can be expressed as a ratio. Ratios based on age-adjusted death rates show that males have higher rates than females for 13 of the 15 leading causes of death (Table B), with rates for males being at least twice as great as those for females for 3 of these leading causes. The largest ratio was for suicide (3.6). Other large ratios were evident for Parkinson's disease (2.3), unintentional injuries (2.1), Chronic liver disease and cirrhosis (1.9), Pneumonitis due to solids and liquids (1.8), heart disease (1.6), diabetes (1.5), cancer and kidney disease (1.4 each), Influenza and pneumonia (1.3), Chronic lower respiratory diseases and Septicemia (1.2 each), and hypertension (1.1). Age-adjusted rates were lower for males than for females for one leading cause, Alzheimer's disease (0.7).

Age-adjusted death rates for the non-Hispanic black population were higher than for the non-Hispanic white population for 8 of the 15 leading causes of death (Table B). The largest ratios were for kidney disease and hypertension (2.2 each). Other causes for which the ratio was high include diabetes (2.0), Septicemia (1.8), stroke (1.4), heart disease (1.2), and cancer and Influenza and pneumonia (1.1 each). For six of the leading causes, age-adjusted rates were lower for the non-Hispanic black population than for the non-Hispanic white population. The smallest non-Hispanic black-to-non-Hispanic white ratio was for suicide (0.4); that is, the risk of dying from suicide was more than two times greater for the non-Hispanic white population than for the non-Hispanic black population. Other conditions with a low non-Hispanic black-to-non-Hispanic white ratio were Parkinson's disease (0.5), Chronic lower respiratory diseases and Chronic liver disease and cirrhosis (0.7 each), unintentional injuries (0.8), and Alzheimer's disease (0.9).

Leading causes of death in 2016 for the total population and for specific subpopulations are further detailed in a companion *National Vital Statistics Report* on leading causes by age, race, Hispanic origin, and sex (2).

Age-adjusted death rates for the non-Hispanic white population were higher than for the Hispanic population for 11 of the 15 leading causes of death (Table B). The largest ratio was for Chronic lower respiratory diseases (2.7). Other causes for which the ratio was high include suicide (2.5); unintentional injuries and Pneumonitis due to solids and liquids (1.7 each); heart disease, cancer, and Parkinson's disease (1.5 each); Alzheimer's disease and Septicemia (1.3 each); Influenza and pneumonia (1.2); and stroke (1.1). Age-adjusted rates were lower for the non-Hispanic white population than for the Hispanic population for Chronic liver disease and cirrhosis (0.7) and diabetes (0.8).

Other select causes

Drug-induced mortality

In 2016, a total of 67,265 persons died of drug-induced causes in the United States (Tables 5, 6, 8, and I-1). This category includes deaths from poisoning and medical conditions caused by use of legal or illegal drugs, as well as deaths from poisoning due to medically prescribed and other drugs. It excludes deaths indirectly related to drug use, as well as newborn deaths due to the mother's drug use. (For a list of drug-induced causes, see [Technical Notes](#).)

In 2016, the age-adjusted death rate for drug-induced causes for the total population increased significantly, by 20.9% from 17.2 in 2015 to 20.8 in 2016 (Tables 5, 10, and I-1). For males in 2016, the age-adjusted death rate for drug-induced causes was 1.9 times the rate for females. The rate for drug-induced causes increased 26.0% for males and 13.6% for females in 2016 from 2015. The age-adjusted death rate for non-Hispanic white males was 28.9% higher than for non-Hispanic black males and 131.8% higher than for Hispanic males. The rate for non-Hispanic white females was 71.6% higher than for non-Hispanic black females and 252.8% higher than for Hispanic females.

Among the major race-ethnicity-sex groups, the age-adjusted death rates for drug-induced causes increased significantly in 2016 from 2015 for non-Hispanic white males (24.7%), non-Hispanic white females (12.0%), non-Hispanic black males (42.2%), non-Hispanic black females (29.8%), Hispanic males (26.5%), and Hispanic females (12.8%).

Alcohol-induced mortality

In 2016, a total of 34,865 persons died of alcohol-induced causes in the United States (Tables 5, 6, 8, and I-2). This category includes deaths from dependent and nondependent use of alcohol, as well as deaths from accidental poisoning by alcohol. It excludes unintentional injuries, homicides, and other causes indirectly related to alcohol use, as well as deaths due to fetal alcohol syndrome. For a list of alcohol-induced causes, see [Technical Notes](#).

The age-adjusted death rate for alcohol-induced causes for the total population increased significantly, by 4.4% from 9.1 in 2015 to 9.5 in 2016 (Tables 5, 10, and I-2). For males, the age-adjusted death rate for alcohol-induced causes in 2016 was 2.7 times the rate for females. The rate for alcohol-induced causes increased 3.7% for males and 4.0% for females in 2016 from 2015. The age-adjusted death rate for non-Hispanic white males was 32.1% higher than for non-Hispanic black males and 16.3% lower than for Hispanic males. The rate for non-Hispanic white females was 66.7% higher than for non-Hispanic black females and 62.2% higher than for Hispanic females.

Among the major race-ethnicity-sex groups, the age-adjusted rate for alcohol-induced death increased significantly in 2016 from 2015 for non-Hispanic white males (4.3%) and non-Hispanic white females (7.1%). The rates for non-Hispanic black males, non-Hispanic black females, Hispanic males, and Hispanic females did not change significantly.

Firearm mortality

In 2016, 38,658 persons died from firearm-related injuries in the United States (Tables 5, 6, 8, and I-3). In 2016, the age-adjusted death rate for firearm-related injuries for the total population increased significantly, by 6.3% from 11.1 in 2015 to 11.8 in 2016 (Tables 5, 10, and I-3). For males in 2016, the age-adjusted death rate for firearm-related injuries was 6.0 times the rate for females. The rate for firearm-related mortality increased 5.7% for males and 6.3% for females in 2016 from 2015. The age-adjusted death rate for non-Hispanic white males was 55.7% lower than for non-Hispanic black males and 67.0% higher than for Hispanic males. The rate for non-Hispanic white

females was 20.8% lower than for non-Hispanic black females and 137.5% higher than for Hispanic females.

Among the major race–ethnicity–sex groups, the age-adjusted death rates for firearm-related injuries increased significantly in 2016 from 2015 for non-Hispanic white males (3.9%), non-Hispanic white females (5.6%), non-Hispanic black males (9.3%), non-Hispanic black females (26.3%), and Hispanic males (10.9%). The rate for Hispanic females did not change significantly.

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

Changes in mortality by age and cause of death can have a major effect on life expectancy. In other words, year-to-year changes in life expectancy may be influenced by changes in age-specific rates for certain causes, particularly for younger age groups. Life expectancy at birth for the total population decreased by 0.1 year in 2016 from 2015 primarily because of increases in mortality from unintentional injuries, homicide, Alzheimer's disease, suicide, and Parkinson's disease. The decrease in life expectancy for the total population was slightly offset by decreases in mortality from cancer, Influenza and pneumonia, Chronic lower respiratory diseases, heart disease, and Viral hepatitis. Life expectancy at birth for males decreased 0.2 year due to increases in mortality from unintentional injuries, homicide, suicide, Alzheimer's disease, and stroke. These increases were offset somewhat by decreases in mortality from cancer, Viral hepatitis, Influenza and pneumonia, Chronic liver disease and cirrhosis, and Chronic lower respiratory diseases. For the female population, life expectancy remained unchanged due to increases in mortality from unintentional injuries, Alzheimer's disease, homicide, Parkinson's disease, and Nutritional deficiencies, which were offset by decreases in mortality from heart disease, cancer, Influenza and pneumonia, Chronic lower respiratory diseases, and Certain conditions originating in the perinatal period. (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 2016 decreased 0.2 year to 78.5 years ([Table 4](#)). This decrease was due to increases in mortality from unintentional injuries, Alzheimer's disease, homicide, Parkinson's disease, and stroke. These increases in mortality were offset to some extent by decreases for cancer, Influenza and pneumonia, heart disease, Chronic lower respiratory diseases, and Viral hepatitis.

Life expectancy for the non-Hispanic black population in 2016 decreased 0.3 year to 74.8 years. This decrease was due to increases in mortality from unintentional injuries, homicide, heart disease, Congenital malformations, and suicide. These increases in mortality were offset somewhat by decreases for cancer; HIV disease; Viral hepatitis; In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior; and stroke.

Life expectancy for the Hispanic population in 2016 decreased 0.2 year to 81.8 years. This decrease was due to increases in mortality from unintentional injuries, suicide, homicide, Alzheimer's disease, and stroke. These increases in

mortality were offset somewhat by decreases for Viral hepatitis, HIV disease, Chronic liver disease and cirrhosis, Septicemia, and Pneumonitis due to solids and liquids.

The difference in life expectancy between the non-Hispanic white and non-Hispanic black populations increased 0.1 year in 2016 to 3.7 years ([Table 4](#)). The widening in the non-Hispanic black–non-Hispanic white life expectancy gap was due primarily to greater improvements in mortality for the non-Hispanic white population than for the non-Hispanic black population. For example, the non-Hispanic white population experienced greater improvements in mortality from homicide, heart disease, Certain conditions originating in the perinatal period, congenital malformations, and suicide, but this was offset partially by improvements for the non-Hispanic black population in HIV disease, stroke, Viral hepatitis, and In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (data not shown).

Life table partitioning analysis indicates that the difference in 2016 of 3.3 years in life expectancy between the Hispanic and non-Hispanic white populations is mostly explained by lower mortality for the Hispanic population from cancer, heart disease, unintentional injuries, Chronic lower respiratory diseases, and suicide. (For a discussion of the major causes contributing to the difference in life expectancy, see [Technical Notes](#).)

Injury mortality by mechanism and intent

In 2016, a total of 231,991 deaths were classified as injury-related ([Table 11](#)). Injury data are presented using the external cause-of-injury mortality matrix for ICD–10, as jointly conceived by the International Collaborative Effort (ICE) on Injury Statistics and the Injury Control and Emergency Health Services section, known as ICEHS, of the American Public Health Association (29,30). 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 2016—poisoning, motor-vehicle traffic, firearm, and fall—accounted for 78.6% of all injury deaths ([Table 11](#)). A total of 68,995 deaths occurred as the result of poisonings in 2016, accounting for 29.7% of all injury deaths ([Table 11](#)). The age-adjusted death rate for poisoning increased significantly, by 20.2% from 17.8 deaths per 100,000 U.S. standard population in 2015 to 21.4 in 2016. The majority of poisoning deaths were either unintentional (84.5%) or suicides (9.7%). However, 5.5% of poisoning deaths were of undetermined intent. The age-adjusted death rate for unintentional poisoning increased 23.0%, from 14.8 in 2015 to 18.2 in 2016, and has more than quadrupled since 1999 (data prior to 2016 are not shown but are

available through CDC WONDER at: <https://wonder.cdc.gov/>). Motor vehicle traffic-related injuries in 2016 resulted in 38,748 deaths, accounting for 16.7% of all injury deaths (Table 11). The age-adjusted death rate for these injuries increased 7.3%, from 10.9 in 2015 to 11.7 in 2016. In 2016, 38,658 persons died from firearm injuries in the United States (Table 11), accounting for 16.7% of all injury deaths that year. The age-adjusted death rate from firearm injuries (all intents) increased 6.3%, from 11.1 in 2015 to 11.8 in 2016. The two major component causes of firearm injury deaths in 2016 were suicide (59.3%) and homicide (37.3%). The age-adjusted death rate for firearm suicide increased 4.6%, from 6.5 in 2015 to 6.8 in 2016. The age-adjusted death rate for firearm homicide increased 9.5%, from 4.2 in 2015 to 4.6 in 2016. A total of 35,862 persons died as the result of falls in 2016, accounting for 15.5% of all injury deaths (Table 11). The age-adjusted death rate for falls increased 2.2%, from 9.3 in 2015 to 9.5 in 2016. The overwhelming majority of fall-related deaths (96.7%) were unintentional.

State of residence

Mortality patterns vary considerably by state (Tables 12 and 15). The state with the highest age-adjusted death rate in 2016 was Mississippi (948.9 per 100,000 U.S. standard population), with a rate 30.2% above the national rate (728.8). The state with the lowest age-adjusted death rate was Hawaii (572.0 per 100,000 U.S. standard population), with a rate 21.5% below the national rate. The age-adjusted death rate for Mississippi was 65.9% higher than the rate for Hawaii.

Variations in mortality by state are associated with differences in socioeconomic status, race, and ethnicity composition, as well as with differences in risk of specific causes of death (31).

Infant mortality

In 2016, a total of 23,161 deaths occurred in children under age 1 year (Tables C, D, 14, and 15). This number represents

294 fewer infant deaths in 2016 than in 2015. The ratio of male to female infant mortality rates was 1.2, the same as in 2015. The infant mortality rate was 5.87 per 1,000 live births, the neonatal mortality rate (deaths of infants aged 0–27 days per 1,000 live births) was 3.87, and the postneonatal mortality rate (deaths of infants aged 28 days through 11 months per 1,000 live births) was 2.00 in 2016 (Tables C and 13; Figure 7; see Technical Notes for information on alternative data sources). Changes in the infant, neonatal, and postneonatal mortality rates from 2015 to 2016 were not significant.

The 10 leading causes of infant death in 2016 accounted for 67.5% of all infant deaths in the United States (Table D). By rank, the 10 leading causes were:

1. Congenital malformations, deformations and chromosomal abnormalities (congenital malformations)
2. Disorders related to short gestation and low birth weight, not elsewhere classified (low birth weight)
3. Sudden infant death syndrome (SIDS)
4. Newborn affected by maternal complications of pregnancy (maternal complications)
5. Accidents (unintentional injuries)
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. Neonatal hemorrhage

In 2016, the 10 leading causes of infant death remained the same as in 2015 (26). Changes in rates by cause of death among the 10 leading causes were statistically significant for one condition. In 2016, Newborn affected by maternal complications of pregnancy (fourth leading cause of infant death) decreased by 7.3% (Table D).

Table C. Number of infant, neonatal, and postneonatal deaths and mortality rates, by sex: United States, 2015 and 2016

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

Infant age and sex	2016		2015		Percent change ¹ from 2015 to 2016
	Number	Rate	Number	Rate	
Infant					
Total	23,161	5.87	23,455	5.90	–0.5
Male	12,867	6.38	13,008	6.39	–0.2
Female	10,294	5.34	10,447	5.38	–0.7
Neonatal					
Total	15,282	3.87	15,652	3.93	–1.5
Male	8,455	4.19	8,591	4.22	–0.7
Female	6,827	3.54	7,061	3.64	–2.7
Postneonatal					
Total	7,879	2.00	7,803	1.96	2.0
Male	4,412	2.19	4,417	2.17	0.9
Female	3,467	1.80	3,386	1.74	3.4

¹Based on a comparison of 2016 and 2015 mortality rates.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table D. Number of infant deaths, percentage of total infant deaths, and infant mortality rates for 2016, and percent change in infant mortality rates from 2015 to 2016 for the 10 leading causes of infant death in 2016: United States

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

Rank ¹	Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Number	Percent of total deaths	Rate	Percent change ² from 2015 to 2016
...	All causes	23,161	100.0	587.0	-0.4
1	Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	4,816	20.8	122.1	0.7
2	Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	3,927	17.0	99.5	-3.1
3	Sudden infant death syndrome (R95)	1,500	6.5	38.0	-3.6
4	Newborn affected by maternal complications of pregnancy (P01)	1,402	6.1	35.5	-7.3
5	Accidents (unintentional injuries) (V01-X59)	1,219	5.3	30.9	-4.6
6	Newborn affected by complications of placenta, cord and membranes (P02)	841	3.6	21.3	-7.0
7	Bacterial sepsis of newborn (P36)	583	2.5	14.8	-2.0
8	Respiratory distress of newborn (P22)	488	2.1	12.4	6.9
9	Diseases of the circulatory system (I00-I99)	460	2.0	11.7	8.3
10	Neonatal hemorrhage (P50-P52,P54)	398	1.7	10.1	-1.0
...	All other causes (residual)	7,527	32.5	190.8	...

... Category not applicable.

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

²Based on a comparison of the 2016 infant mortality rate with the 2015 infant mortality rate.

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

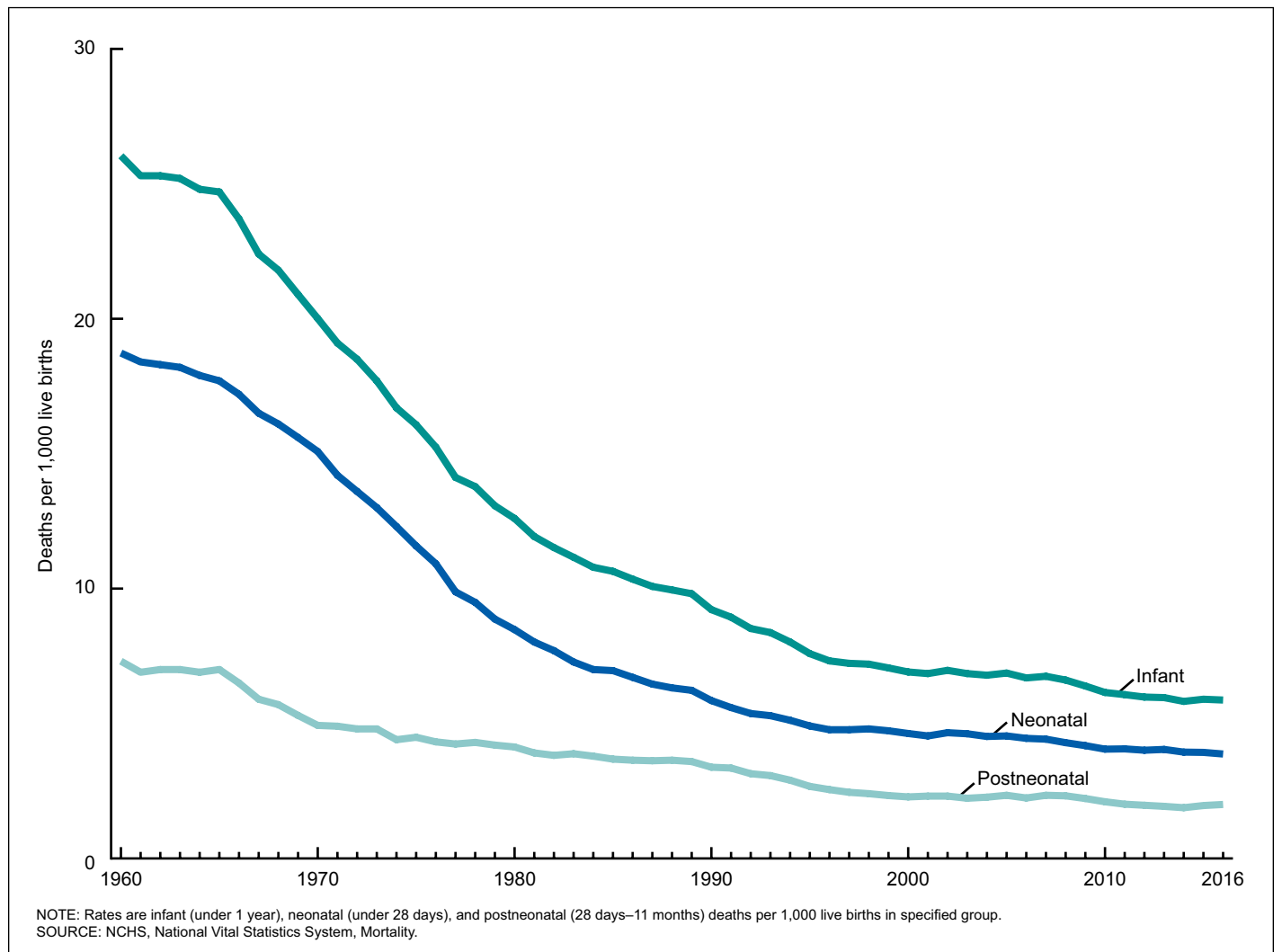


Figure 7. Infant, neonatal, and postneonatal mortality rates: United States, 1960-2016

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 (32); see [Technical Notes](#). Infant mortality data presented in this report use the general mortality file, not the linked file of live births and infant deaths. Infant mortality rates for the population of Hispanic origin are not adjusted for misclassification; see [Technical Notes](#). Because these rates are not adjusted, caution should be exercised when interpreting rate disparities between Hispanic and non-Hispanic populations (19).

In 2016, the infant mortality rate for Hispanic infants was 5.24 deaths per 1,000 live births. By comparison, for non-Hispanic white infants, the infant mortality rate was 4.80, and for non-Hispanic black infants, the rate was 11.76 ([Table 13](#)). The infant mortality rate did not change significantly in 2016 from 2015 for the non-Hispanic white, non-Hispanic black, and Hispanic populations.

Additional supplemental tables

Trend data on drug-induced causes, alcohol-induced causes, and firearm-related injuries by race and Hispanic origin are available as supplemental tables ([Tables I-1, I-2, and I-3](#)) from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05_tables.pdf. Mortality data by specified Hispanic subgroup, marital status, educational attainment, and injury at work are available in supplemental [Tables I-4 through I-9](#). Estimated population and standard errors by specified Hispanic subgroups, marital status, and educational attainment are available as supplemental tables ([Tables I-18 through I-20](#)) as well. See [List of Internet Tables](#) for the complete list of supplemental tables.

References

1. Hoyert DL, Singh GK, Rosenberg HM. Sources of data on socio-economic differential mortality in the United States. *J Off Stat* 11(3):233–60. 1995.
2. Heron M. Deaths: Leading causes for 2016. *National Vital Statistics Reports*; vol 67 no 6. Hyattsville, MD: National Center for Health Statistics. 2018.
3. Arias E. United States life tables, 2016. *National Vital Statistics Reports*. Hyattsville, MD: National Center for Health Statistics [Forthcoming].
4. National Center for Health Statistics. Vital statistics of the United States: Mortality, 1999. Technical appendix. Hyattsville, MD. 2004. Available from: <https://www.cdc.gov/nchs/data/statab/techap99.pdf>.
5. World Health Organization. International statistical classification of diseases and related health problems, tenth revision. 2008 ed. Geneva, Switzerland. 2009.
6. National Center for Health Statistics, National Vital Statistics System. Volume 1. ICD–10, International statistical classification of diseases and related health problems. Tabular list. (Modified by NCHS for use in the classification and analysis of medical mortality data in the U.S.) NCHS Instruction Manual; part 2e, vol 1. Hyattsville, MD. Published annually. Available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm.
7. National Center for Health Statistics, National Vital Statistics System. Volume 1. ICD–10, International statistical classification of diseases and related health problems. Alphabetical index. (Modified by NCHS for use in the classification and analysis of medical mortality data in the U.S.) NCHS Instruction Manual; part 2e, vol 3. Hyattsville, MD. Published annually. Available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm.
8. National Center for Health Statistics. Estimates of the April 1, 2010 resident population of the United States, by county, single-year of age (0, 1, 2, ..., 85 years and over), bridged-race, Hispanic origin, and sex. Prepared under a collaborative agreement with the U.S. Census Bureau. Available from: https://www.cdc.gov/nchs/nvss/bridged_race.htm.
9. National Center for Health Statistics. Vintage 2011 bridged-race postcensal population estimates. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
10. National Center for Health Statistics. Vintage 2012 bridged-race postcensal population estimates. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
11. National Center for Health Statistics. Vintage 2013 bridged-race postcensal population estimates. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
12. National Center for Health Statistics. Vintage 2014 bridged-race postcensal population estimates. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
13. National Center for Health Statistics. Vintage 2015 bridged-race postcensal population estimates. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
14. National Center for Health Statistics. Vintage 2016 bridged-race postcensal population estimates. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
15. National Center for Health Statistics. Revised intercensal estimates of the resident population of the United States for July 1, 2001–July 1, 2009, by year, county, single-year of age (0, 1, 2, ..., 85 years and over), bridged-race, Hispanic origin, and sex. Prepared under a collaborative agreement with the U.S. Census Bureau; released by NCHS on October 26, 2012. Available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm.
16. Office of Management and Budget. Revisions to the standards for the classification of federal data on race and ethnicity. *Fed Regist* 62(210):58782–90. 1997. Available from: <https://federalregister.gov/a/97-28653>.
17. Ingram DD, Parker JD, Schenker N, Weed JA, Hamilton B, Arias E, Madans JH. United States Census 2000 population with bridged race categories. *National Center for Health Statistics. Vital Health Stat* 2(135). 2003. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_135.pdf.
18. Centers for Disease Control and Prevention. Wide-ranging online data for epidemiologic research (WONDER). Underlying cause of death output based on the Detailed Mortality File. Available from: <https://wonder.cdc.gov/>.
19. Arias E, Heron M, Hakes JK. The validity of race and Hispanic-origin reporting on death certificates in the United States: An update. *National Center for Health Statistics. Vital Health Stat* 2(172). 2016. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_172.pdf.
20. Arias E, Eschbach K, Schaubman WS, Backlund EL, Sorlie PD. The Hispanic mortality advantage and ethnic misclassification on US death certificates. *Am J Public Health* 100 Suppl 1:S171–7. 2010. Available from: <http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2008.135863>.
21. Arias E. United States life tables by Hispanic origin. *National Center for Health Statistics. Vital Health Stat* 2(152). 2010. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_152.pdf.

22. Abraido-Lanza AF, Dohrenwend BP, Ng-Mak DS, Turner JB. The Latino mortality paradox: A test of the "salmon bias" and healthy migrant hypotheses. *Am J Public Health* 89(10):1543–8. 1999. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1508801/pdf/amjph00010-0085.pdf>.
23. Palloni A, Arias E. Paradox lost: Explaining the Hispanic adult mortality advantage. *Demography* 41(3):385–415. 2004.
24. Arias E, Heron M, Xu JQ. United States life tables, 2014. National Vital Statistics Reports; vol 66 no 4. Hyattsville, MD: National Center for Health Statistics. 2017. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_04.pdf.
25. Hoyert DL, Kochanek KD, Murphy SL. Deaths: Final data for 1997. National Vital Statistics Reports; vol 47 no 19. Hyattsville, MD: National Center for Health Statistics. 1999. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr47/nvs47_19.pdf.
26. Murphy SL, Xu JQ, Kochanek KD, Curtin SC, Arias E. Deaths: Final data for 2015. National Vital Statistics Reports; vol 66 no 6. Hyattsville, MD: National Center for Health Statistics. 2017. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_06.pdf.
27. Sunenshine RH, McDonald LC. *Clostridium difficile*-associated disease: New challenges from an established pathogen. *Cleve Clin J Med* 73(2):187–97. 2006.
28. Redelings MD, Sorvillo F, Mascola L. Increase in *Clostridium difficile*-related mortality rates, United States, 1999–2004. *Emerg Infect Dis* 13(9):1417–9. 2007. Available from: https://wwwnc.cdc.gov/eid/article/13/9/06-1116_article.
29. National Center for Health Statistics. Proceedings of the international collaborative effort on injury statistics; vol 1. Hyattsville, MD. 1995. Available from: https://www.cdc.gov/nchs/data/ice/ice95v1/ice_i.pdf.
30. Fingerhut LA, Cox CS, Warner M. International comparative analysis of injury mortality: Findings from the ICE on Injury Statistics. *Advance Data From Vital and Health Statistics*; no 303. Hyattsville, MD: National Center for Health Statistics. 1998. Available from: <https://www.cdc.gov/nchs/data/ad/ad303.pdf>.
31. Pamuk E, Makuc D, Heck K, Reuben C, Lochner K. Socioeconomic status and health chartbook. Health, United States, 1998. Hyattsville, MD: National Center for Health Statistics. 1998. Available from: <https://www.cdc.gov/nchs/data/hs/hs98cht.pdf>.
32. National Center for Health Statistics. User guide to the 2015 period linked birth/infant death public use file. Available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/periodlinked/LinkPE15Guide.pdf.
33. National Center for Health Statistics. 2003 revision of the U.S. Standard Certificate of Death. 2003. Available from: <https://www.cdc.gov/nchs/data/dvs/DEATH11-03final-acc.pdf>.
34. Tolson GC, Barnes JM, Gay GA, Kowaleski JL. The 1989 revision of the U.S. standard certificates and reports. National Center for Health Statistics. *Vital Health Stat* 4(28). 1991. Available from: https://www.cdc.gov/nchs/data/series/sr_04/sr04_028.pdf.
35. World Health Organization. International statistical classification of diseases and related health problems, tenth revision. Geneva, Switzerland. 1992.
36. National Center for Health Statistics, Data Warehouse. Comparability of cause-of-death between ICD revisions. 2008. Available from: https://www.cdc.gov/nchs/nvss/mortality/comparability_icd.htm.
37. National Center for Health Statistics, Data Warehouse. Updated comparability ratios (ICD–10 and ICD–9). 2004. Available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Datasets/Comparability/icd9_icd10/Comparability_Ratio_tables.xls.
38. Anderson RN, Minino AM, Hoyert DL, Rosenberg HM. Comparability of cause of death between ICD–9 and ICD–10: Preliminary estimates. National Vital Statistics Reports; vol 49 no 2. Hyattsville, MD: National Center for Health Statistics. 2001. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_02.pdf.
39. Faust MM, Dolman AB. Comparability of mortality statistics for the sixth and seventh revisions: United States, 1958. *Vital Statistics—Special Reports* 51(4). Washington, DC: National Center for Health Statistics. 1965. Available from: https://www.cdc.gov/nchs/data/spec_rpt51_04.pdf.
40. Klebba AJ, Dolman AB. Comparability of mortality statistics for the seventh and eighth revisions of the International Classification of Diseases, United States. National Center for Health Statistics. *Vital Health Stat* 2(66). 1975. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_066.pdf.
41. Klebba AJ, Scott JH. Estimates of selected comparability ratios based on dual coding of 1976 death certificates by the eighth and ninth revisions of the International Classification of Diseases. National Center for Health Statistics. 1980. Available from: https://www.cdc.gov/nchs/data/mvsvr/supp/mv28_11s.pdf.
42. National Center for Health Statistics, National Vital Statistics System. Instructions for classifying the underlying cause of death. NCHS Instruction Manual; part 2a. Hyattsville, MD. Published annually. Available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm.
43. National Center for Health Statistics, National Vital Statistics System. Instructions for classifying the multiple causes of death. NCHS Instruction Manual; part 2b. Hyattsville, MD. Published annually. Available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm.
44. National Center for Health Statistics, National Vital Statistics System. ICD–10 ACME decision tables for classifying underlying causes of death. NCHS Instruction Manual; part 2c. Hyattsville, MD. Published annually. Available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm.
45. National Center for Health Statistics, National Vital Statistics System. Data entry instructions for the mortality medical indexing, classification, and retrieval system (MICAR), 1996–1997. NCHS Instruction Manual; part 2g. Hyattsville, MD. Available from: <https://www.cdc.gov/nchs/nvss/mmds.htm>.
46. National Center for Health Statistics, National Vital Statistics System. Dictionary of valid terms for the mortality medical indexing, classification, and retrieval system (MICAR). NCHS Instruction Manual; part 2h. Hyattsville, MD. Available from: <https://www.cdc.gov/nchs/nvss/mmds.htm>.
47. National Center for Health Statistics, National Vital Statistics System. SuperMICAR data entry instructions. NCHS Instruction Manual; part 2s. Hyattsville, MD. Available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm.
48. National Center for Health Statistics. Public-use data set documentation; control total Table 1: Mortality data set for ICD–10, 2016. Hyattsville, MD. 2018. Available from: https://www.cdc.gov/nchs/data/dvs/Multiple_Cause_Record_Layout_2016.pdf.
49. Chamblee RF, Evans MC. TRANSAX: The NCHS system for producing multiple cause-of-death statistics, 1968–78. National Center for Health Statistics. *Vital Health Stat* 1(20). 1986. Available from: https://www.cdc.gov/nchs/data/series/sr_01/sr01_020acc.pdf.
50. Israel RA, Rosenberg HM, Curtin LR. Analytical potential for multiple cause-of-death data. *Am J Epidemiol* 124(2):161–79. 1986. Available from: <https://aje.oxfordjournals.org/content/124/2/161.full.pdf>.

51. National Center for Health Statistics. ICD–10 cause-of-death lists for tabulating mortality statistics (updated March 2011 to include WHO updates to ICD–10 for data year 2011). NCHS Instruction Manual; part 9. Hyattsville, MD. 2011. Available from: <https://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2011.pdf>.
52. Hoyert DL, Arias E, Smith BL, Murphy SL, Kochanek KD. Deaths: Final data for 1999. National Vital Statistics Reports; vol 49 no 8. Hyattsville, MD: National Center for Health Statistics. 2001. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_08.pdf.
53. National Center for Health Statistics, National Vital Statistics System. Computer edits for mortality data, including separate section for fetal deaths effective 2014. NCHS Instruction Manual; part 11. Hyattsville, MD. 2014. Available from: https://www.cdc.gov/nchs/data/dvs/2014_PT11_NOV2014.pdf.
54. National Center for Health Statistics. ICD–10 cause-of-death querying, 2013. NCHS Instruction Manual; part 20. Hyattsville, MD. 2013. Available from: https://www.cdc.gov/nchs/data/dvs/Instruction_Manual_revise20_2013.pdf.
55. Office of Management and Budget. Race and ethnic standards for federal statistics and administrative reporting. Statistical Policy Directive 15. Washington, DC. 1977. Available from: <https://wonder.cdc.gov/wonder/help/populations/bridged-race/directive15.html>.
56. Schenker N, Parker JD. From single-race reporting to multiple-race reporting: Using imputation methods to bridge the transition. *Stat Med* 22(9):1571–87. 2003.
57. Rosenberg HM, Maurer JD, Sorlie PD, Johnson NJ, MacDorman MF, Hoyert DL, et al. Quality of death rates by race and Hispanic origin: A summary of current research, 1999. National Center for Health Statistics. *Vital Health Stat* 2(128). 1999. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_128.pdf.
58. Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. *Epidemiology* 3(2):181–4. 1992.
59. Mulry M. Summary of accuracy and coverage evaluation for Census 2000. Research Report Series Statistics #2006–3. Washington, DC: U.S. Census Bureau. 2006. Available from: <https://www.census.gov/srd/papers/pdf/rrs2006-03.pdf>.
60. Poe GS, Powell-Griner E, McLaughlin JK, Placek PJ, Thompson GB, Robinson K. Comparability of the death certificate and the 1986 National Mortality Followback Survey. National Center for Health Statistics. *Vital Health Stat* 2(118). 1993. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_118.pdf.
61. U.S. Census Bureau. DSSD 2010 census coverage measurement memorandum series 2010–G–01. 2012. Available from: https://www.census.gov/coverage_measurement/pdfs/g01.pdf.
62. Martin JA, Hamilton BE, Osterman MJK, Driscoll AK, Drake P. Births: Final data for 2016. National Vital Statistics Reports; vol 67 no 1. Hyattsville, MD: National Center for Health Statistics. 2018. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_01.pdf.
63. Sirken MG. Comparison of two methods of constructing abridged life tables by reference to a “standard” table. National Center for Health Statistics. *Vital Health Stat* 2(4). 1966. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_004.pdf.
64. Anderson RN. Method for constructing complete annual U.S. life tables. National Center for Health Statistics. *Vital Health Stat* 2(129). 1999. Available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_129.pdf.
65. National Center for Health Statistics. U.S. decennial life tables for 1989–91. Methodology of the national and state life tables; vol 1 no 2. Hyattsville, MD. 1998. Available from: https://www.cdc.gov/nchs/data/lifetables/life89_1_2.pdf.
66. Wei R, Curtin LR, Arias E, Anderson RN. United States decennial life tables for 1999–2001, methodology of the United States life tables. National Vital Statistics Reports; vol 57 no 4. Hyattsville, MD: National Center for Health Statistics. 2008. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57_04.pdf.
67. Minino AM, Murphy SL, Xu JQ, Kochanek KD. Deaths: Final data for 2008. National Vital Statistics Reports; vol 59 no 10. Hyattsville, MD: National Center for Health Statistics. 2011. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_10.pdf.
68. Arias, E. United States life tables, 2008. National Vital Statistics Reports; vol 61 no 3. Hyattsville, MD: National Center for Health Statistics. 2012. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_03.pdf.
69. Kochanek KD, Maurer JD, Rosenberg HM. Causes of death contributing to changes in life expectancy: United States, 1984–89. National Center for Health Statistics. *Vital Health Stat* 20(23). 1994. Available from: https://www.cdc.gov/nchs/data/series/sr_20/sr20_023.pdf.
70. Arriaga EE. Changing trends in mortality decline during the last decades. In: Ruzicka L, Wunsch G, Kane P, editors. *Differential mortality: Methodological issues and biosocial factors*. Oxford, England: Clarendon Press. 1989.
71. Arriaga EE. Measuring and explaining the change in life expectancies. *Demography* 21(1):83–96. 1984.
72. Minino AM, Anderson RN, Fingerhut LA, Boudreault MA, Warner M. Deaths: Injuries, 2002. National Vital Statistics Reports; vol 54 no 10. Hyattsville, MD: National Center for Health Statistics. 2006. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_10.pdf.
73. Hoyert DL. Maternal mortality and related concepts. National Center for Health Statistics. *Vital Health Stat* 3(33). Hyattsville, MD. 2007. Available from: https://www.cdc.gov/nchs/data/series/sr_03/sr03_033.pdf.
74. MacKay AP, Berg CJ, Liu X, Duran C, Hoyert DL. Changes in pregnancy mortality ascertainment: United States, 1999–2005. *Obstet Gynecol* 118(1):104–10. 2011.
75. MacKay AP, Berg CJ, Duran C, Chang J, Rosenberg H. An assessment of pregnancy-related mortality in the United States. *Paediatr Perinat Epidemiol* 19(3):206–14. 2005.
76. Horon IL, Cheng D. Effectiveness of pregnancy check boxes on death certificates in identifying pregnancy-associated mortality. *Public Health Rep* 126(2):195–200. 2011.
77. Davis NL, Hoyert DL, Goodman DA, Hirai AH, Callaghan WM. Contribution of maternal age and pregnancy checkbox on maternal mortality ratios in the United States, 1978–2012. *Am J Obstet Gynecol* 217(3):352.e1–352.e7. 2017.
78. MacDorman MF, Declercq E, Thoma ME. Trends in maternal mortality by sociodemographic characteristics and cause of death in 27 states and the District of Columbia. *Obstet Gynecol* 129(5):811–8. 2017. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28383383>.
79. U.S. Census Bureau. Annual estimates of the resident population by single year of age and sex for the United States, states, and Puerto Rico Commonwealth: April 1, 2010 to July 1, 2016. American Fact Finder. Available from: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2016_PEPANNRES&src=pt.
80. U.S. Census Bureau. International programs. International data base. 2017. Available from: <https://www.census.gov/data-tools/demo/idb/informationGateway.php>.

81. National Center for Health Statistics. Bridged-race population estimates for April 1, 2000, by county, single-year of age, bridged race, Hispanic origin, and sex (br040100.txt). Prepared under a collaborative arrangement with the U.S. Census Bureau. 2003. Available from: https://www.cdc.gov/nchs/nvss/bridged_race.htm.
82. National Center for Health Statistics. Bridged-race intercensal population estimates for July 1, 1990–July 1, 1999, by year, county, 5-year age group, bridged-race, Hispanic origin, and sex (one ASCII file each per separate year). Prepared under a collaborative agreement with the U.S. Census Bureau. 2003. Available from: https://www.cdc.gov/nchs/nvss/bridged_race.htm.
83. U.S. Census Bureau. Age, sex, race, and Hispanic origin information from the 1990 census: A comparison of census results with results where age and race have been modified, 1990. CPH–L–74. Washington, DC: U.S. Department of Commerce. 1991.
84. Anderson RN, Rosenberg HM. Age standardization of death rates: Implementation of the year 2000 standard. National Vital Statistics Reports; vol 47 no 3. Hyattsville, MD: National Center for Health Statistics. 1998. Available from: https://www.cdc.gov/nchs/data/nvsr/nvsr47/nvs47_03.pdf.
85. Brillinger DR. The natural variability of vital rates and associated statistics. *Biometrics* 42(4):693–734. 1986.
86. Fay MP, Feuer EJ. Confidence intervals for directly standardized rates: A method based on the gamma distribution. *Stat Med* 16(7):791–801. 1997.
87. Schenker N, Gentleman JF. On judging the significance of differences by examining the overlap between confidence intervals. *Am Stat* 55(3):182–6. 2001. Available from: https://www.jstor.org/stable/2685796?seq=1#page_scan_tab_contents.
88. Arnold SF. *Mathematical statistics*. Englewood Cliffs, NJ: Prentice Hall. 1990.

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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, 1940, 1950, 1960, 1970, 1980, 1990, 2000, and 2010–2016

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

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

See footnotes at end of table.

Table 1. Number of deaths, death rates, and age-adjusted death rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000, and 2010–2016—Con.

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

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

--- Data not available.

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

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

³Includes Aleut and Eskimo persons.

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

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 2. Number of deaths and death rates, by age, race and Hispanic origin, and sex: United States, 2016

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

Age	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Number																	
All ages	2,744,248	1,400,232	1,344,016	2,133,463	1,077,362	1,056,101	326,810	168,750	158,060	18,595	10,280	8,315	68,235	34,892	33,343	188,254	103,532	84,722
Under 1 year	23,161	12,867	10,294	10,046	5,622	4,424	6,863	3,746	3,117	310	181	129	929	531	398	4,817	2,678	2,139
1-4	4,045	2,256	1,789	1,978	1,113	865	1,016	575	441	82	38	44	160	80	80	799	443	356
5-9	2,490	1,377	1,113	1,158	649	509	610	333	277	42	25	17	97	55	42	578	313	265
10-14	3,013	1,764	1,249	1,623	976	647	623	368	255	50	24	26	121	63	58	586	328	258
15-19	10,812	7,713	3,099	5,668	3,924	1,744	2,570	1,952	618	187	131	56	349	242	107	2,017	1,447	570
20-24	21,763	16,300	5,463	11,847	8,721	3,126	5,133	3,957	1,176	404	273	131	622	454	168	3,705	2,857	848
25-29	27,053	19,511	7,542	16,143	11,449	4,694	5,683	4,139	1,544	533	362	171	626	451	175	3,988	3,053	935
30-34	30,563	20,746	9,817	19,079	12,844	6,235	5,829	3,967	1,862	570	367	203	775	493	282	4,207	3,006	1,201
35-39	35,277	22,809	12,468	21,922	14,148	7,774	6,888	4,302	2,586	622	397	225	993	617	376	4,731	3,265	1,466
40-44	42,515	26,406	16,109	26,487	16,374	10,113	8,307	5,014	3,293	710	428	282	1,310	809	501	5,541	3,682	1,859
45-49	65,585	39,769	25,816	42,994	26,151	16,843	12,218	7,028	5,190	919	546	373	1,814	1,080	734	7,347	4,775	2,572
50-54	107,931	65,317	42,614	73,640	44,820	28,820	19,420	11,005	8,415	1,373	817	556	2,552	1,513	1,039	10,406	6,776	3,630
55-59	162,146	98,650	63,496	114,682	70,093	44,589	28,391	16,437	11,954	1,647	1,028	619	3,606	2,161	1,445	12,974	8,336	4,638
60-64	204,299	123,734	80,565	147,548	89,957	57,591	34,430	20,064	14,366	1,786	1,037	749	4,902	2,838	2,064	14,613	9,080	5,533
65-69	246,655	144,389	102,266	186,455	109,782	76,673	35,847	20,252	15,595	1,824	1,052	772	5,869	3,317	2,552	15,582	9,244	6,338
70-74	265,425	148,353	117,072	208,699	117,232	91,467	31,781	17,049	14,732	1,813	995	818	6,156	3,476	2,680	15,968	8,967	7,001
75-79	294,895	156,851	138,044	235,476	126,471	109,005	31,486	15,654	15,832	1,703	869	834	7,444	4,029	3,415	17,961	9,329	8,632
80-84	342,021	167,968	174,053	279,076	138,949	140,127	31,588	13,999	17,589	1,629	758	871	8,830	4,341	4,489	20,145	9,519	10,626
85 and over	854,462	323,355	531,107	728,886	278,054	450,832	58,116	18,901	39,215	2,389	950	1,439	21,077	8,339	12,738	42,276	16,425	25,851
Not stated	137	97	40	56	33	23	11	8	3	2	2	-	3	3	-	13	9	4

See footnotes at end of table.

Table 2. Number of deaths and death rates, by age, race and Hispanic origin, and sex: United States, 2016—Con.

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

Age	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Rate																	
All ages	849.3	880.2	819.3	1,059.7	1,085.6	1,034.6	775.5	836.2	719.7	685.9	772.8	602.2	350.3	374.9	327.8	327.6	356.8	297.7
Under 1 year ⁵	583.4	633.7	530.7	485.9	530.9	438.7	1,124.8	1,203.6	1,042.8	775.0	890.4	655.8	408.8	456.0	359.2	469.8	511.5	426.3
1–4	25.3	27.7	22.9	23.9	26.2	21.4	41.5	46.2	36.6	51.3	46.8	55.9	17.0	16.6	17.5	19.4	21.1	17.6
5–9	12.2	13.2	11.1	10.9	11.9	9.8	19.5	21.0	18.0	20.4	24.1	*	8.3	9.2	7.3	11.0	11.7	10.2
10–14	14.6	16.8	12.4	14.6	17.1	11.9	20.4	23.8	16.9	24.4	23.2	25.7	10.2	10.6	9.8	11.7	12.8	10.5
15–19	51.2	71.4	30.0	48.4	65.3	30.5	80.1	119.7	39.1	88.8	122.7	53.9	29.2	40.0	18.1	42.1	59.1	24.3
20–24	97.2	141.8	50.2	95.1	136.2	51.6	147.2	223.1	68.6	181.0	239.9	119.8	44.1	63.4	24.2	77.1	115.0	36.6
25–29	118.2	167.7	67.0	124.1	173.3	73.4	167.6	245.9	90.4	247.9	332.0	161.4	37.5	55.1	20.6	86.5	126.4	42.6
30–34	140.3	189.1	90.7	151.6	202.2	100.0	201.3	283.9	124.3	306.7	398.0	216.8	46.5	61.9	32.5	94.4	129.0	56.5
35–39	169.8	219.8	119.9	182.5	233.9	130.4	250.6	330.1	178.9	365.7	474.9	260.2	64.0	85.1	45.5	110.2	147.4	70.6
40–44	215.9	270.1	162.4	230.0	283.1	176.4	325.5	418.0	243.5	452.6	557.4	352.2	86.6	114.0	62.4	140.1	183.6	95.3
45–49	313.1	383.3	244.2	326.1	396.3	255.7	461.7	565.5	369.7	563.0	686.9	445.4	131.5	167.4	99.9	205.7	263.8	145.9
50–54	494.2	608.7	383.6	505.0	620.1	391.8	711.7	861.5	579.9	781.7	967.2	609.8	206.0	261.7	157.3	334.3	433.7	234.1
55–59	737.7	923.4	562.1	738.9	919.3	564.7	1,079.9	1,351.1	846.3	953.2	1,262.8	677.3	321.9	419.9	238.6	511.3	669.1	359.1
60–64	1,048.6	1,328.2	792.4	1,034.3	1,300.6	783.6	1,592.5	2,064.3	1,207.2	1,251.0	1,565.1	979.0	500.2	643.9	382.7	756.3	987.0	546.7
65–69	1,466.4	1,819.2	1,151.2	1,457.7	1,790.2	1,151.5	2,136.1	2,766.0	1,648.5	1,621.4	1,991.8	1,293.6	729.1	929.7	569.4	1,086.9	1,394.6	822.2
70–74	2,247.4	2,720.0	1,841.9	2,278.8	2,725.5	1,883.3	2,966.1	3,791.5	2,369.1	2,530.5	3,013.7	2,117.5	1,137.0	1,437.5	894.5	1,650.3	2,093.3	1,298.4
75–79	3,524.1	4,212.3	2,972.3	3,606.7	4,280.1	3,050.0	4,256.9	5,330.1	3,550.2	3,612.6	4,147.4	3,184.7	1,946.1	2,363.7	1,610.4	2,681.5	3,288.8	2,235.4
80–84	5,830.9	6,846.7	5,100.6	6,011.3	7,030.9	5,255.6	6,427.4	7,835.2	5,623.3	5,756.2	6,484.7	5,243.5	3,510.7	4,119.5	3,071.8	4,458.2	5,251.3	3,926.9
85 and over	13,392.1	14,533.8	12,780.9	14,062.6	15,274.6	13,406.5	12,171.0	13,320.0	11,685.1	9,445.3	10,474.1	8,870.1	8,481.1	9,112.6	8,113.1	9,481.9	10,139.3	9,106.8

– Quantity zero.

* Figure does not meet standards of reliability or precision; see Technical Notes.

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

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

³Includes Aleut and Eskimo persons.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 3. Life expectancy at selected ages, by race and Hispanic origin and sex: United States, 2016

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

Exact age (years)	Total ¹			Non-Hispanic white ^{2,3}			Non-Hispanic black ^{2,3}			Hispanic ³		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
0.....	78.6	76.1	81.1	78.5	76.1	81.0	74.8	71.5	77.9	81.8	79.1	84.2
1.....	78.1	75.6	80.5	77.9	75.5	80.3	74.7	71.4	77.7	81.2	78.5	83.6
5.....	74.1	71.7	76.6	74.0	71.6	76.4	70.8	67.6	73.8	77.3	74.6	79.7
10.....	69.2	66.7	71.6	69.0	66.6	71.4	65.9	62.6	68.9	72.3	69.6	74.7
15.....	64.2	61.8	66.6	64.1	61.7	66.5	60.9	57.7	64.0	67.4	64.7	69.8
20.....	59.4	57.0	61.7	59.2	56.9	61.5	56.2	53.0	59.1	62.5	59.8	64.9
25.....	54.7	52.4	56.9	54.5	52.3	56.7	51.6	48.6	54.3	57.7	55.2	60.0
30.....	50.0	47.8	52.1	49.8	47.7	51.9	47.0	44.2	49.5	53.0	50.5	55.1
35.....	45.3	43.2	47.3	45.2	43.2	47.1	42.4	39.7	44.8	48.2	45.8	50.3
40.....	40.7	38.7	42.6	40.6	38.6	42.4	37.9	35.4	40.2	43.5	41.2	45.4
45.....	36.1	34.2	37.9	36.0	34.1	37.8	33.5	31.1	35.7	38.8	36.5	40.6
50.....	31.6	29.8	33.3	31.5	29.8	33.2	29.2	26.9	31.3	34.2	32.0	35.9
55.....	27.3	25.6	28.9	27.3	25.6	28.8	25.2	22.9	27.1	29.7	27.7	31.4
60.....	23.3	21.7	24.7	23.2	21.7	24.6	21.5	19.4	23.2	25.5	23.6	26.9
65.....	19.4	18.0	20.6	19.3	18.0	20.5	18.0	16.2	19.5	21.4	19.7	22.7
70.....	15.7	14.5	16.6	15.6	14.4	16.5	14.8	13.2	15.9	17.5	16.0	18.5
75.....	12.2	11.3	13.0	12.1	11.2	12.9	11.8	10.5	12.7	13.9	12.6	14.6
80.....	9.2	8.4	9.7	9.1	8.3	9.7	9.1	8.1	9.7	10.5	9.5	11.1
85.....	6.6	5.9	7.0	6.5	5.9	6.9	6.9	6.1	7.2	7.7	6.8	8.0
90.....	4.6	4.1	4.8	4.5	4.0	4.7	5.0	4.5	5.2	5.4	4.7	5.5
95.....	3.2	2.8	3.3	3.1	2.7	3.2	3.7	3.3	3.8	3.7	3.2	3.7
100.....	2.2	2.0	2.3	2.2	2.0	2.2	2.7	2.5	2.7	2.6	2.3	2.6

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 4. Life expectancy at birth, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, and 2000–2016

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

Year	All races and origins ¹			Non-Hispanic white ²			Non-Hispanic black ²			Hispanic ³		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
2016 ^{4,5}	78.6	76.1	81.1	78.5	76.1	81.0	74.8	71.5	77.9	81.8	79.1	84.2
2015 ^{4,6}	78.7	76.3	81.1	78.7	76.3	81.0	75.1	71.9	78.1	82.0	79.3	84.3
2014 ^{4,5}	78.9	76.5	81.3	78.8	76.5	81.2	75.3	72.2	78.2	82.1	79.4	84.5
2013 ^{4,5}	78.8	76.4	81.2	78.8	76.5	81.2	75.1	71.9	78.1	81.9	79.2	84.2
2012 ^{4,5}	78.8	76.4	81.2	78.9	76.5	81.2	75.1	71.9	78.1	81.9	79.3	84.3
2011 ^{4,5}	78.7	76.3	81.1	78.7	76.4	81.1	75.0	71.8	77.8	81.8	79.2	84.2
2010 ^{4,5}	78.7	76.2	81.0	78.8	76.4	81.1	74.7	71.5	77.7	81.7	78.8	84.3
2009 ⁴	78.5	76.0	80.9	78.7	76.3	81.0	74.4	71.0	77.4	81.1	78.4	83.5
2008 ⁴	78.2	75.6	80.6	78.4	76.0	80.7	73.9	70.5	77.0	80.8	78.0	83.3
2007 ⁴	78.1	75.5	80.6	78.4	75.9	80.8	73.5	69.9	76.7	80.7	77.8	83.2
2006 ⁴	77.8	75.2	80.3	78.2	75.7	80.6	73.1	69.5	76.4	80.3	77.5	82.9
2005 ⁴	77.6	75.0	80.1	---	---	---	---	---	---	---	---	---
2004 ⁴	77.6	75.0	80.1	---	---	---	---	---	---	---	---	---
2003 ⁴	77.2	74.5	79.7	---	---	---	---	---	---	---	---	---
2002 ⁴	77.0	74.4	79.6	---	---	---	---	---	---	---	---	---
2001 ⁴	77.0	74.3	79.5	---	---	---	---	---	---	---	---	---
2000	76.8	74.1	79.3	---	---	---	---	---	---	---	---	---
1990	75.4	71.8	78.8	---	---	---	---	---	---	---	---	---
1980	73.7	70.0	77.4	---	---	---	---	---	---	---	---	---
1970	70.8	67.1	74.7	---	---	---	---	---	---	---	---	---
1960	69.7	66.6	73.1	---	---	---	---	---	---	---	---	---
1950	68.2	65.6	71.1	---	---	---	---	---	---	---	---	---
1940	62.9	60.8	65.2	---	---	---	---	---	---	---	---	---

--- Data not available.

¹Includes races and origins not shown separately.²Multiple-race data reported according to 1997 OMB standards were bridged to the single-race categories of 1977 OMB standards. For more information on areas reporting multiple race, see Technical Notes.³Based on death rates adjusted for misclassification; see Technical Notes.⁴Life table data for 2001–2016 are based on revised life table methodology; see Technical Notes.⁵Life expectancies by Hispanic origin were revised using updated adjustment factors to correct for race and Hispanic-origin misclassification.⁶Life expectancies were revised using updated Medicare data; therefore, data may differ from those previously published; see Technical Notes.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2016, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2016

[Rates 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]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>) and year	All ages ¹	Age group (years)											Age-adjusted rate ³
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
All causes													
2016.....	849.3	583.4	25.3	13.4	74.9	129.0	192.2	405.5	883.8	1,788.6	4,474.8	13,392.1	728.8
2015.....	844.0	589.6	24.9	13.2	69.5	116.7	180.1	404.0	875.3	1,796.8	4,579.2	13,673.9	733.1
2014.....	823.7	588.0	24.0	12.7	65.5	108.4	175.2	404.8	870.3	1,786.3	4,564.2	13,407.9	724.6
2013.....	821.5	594.7	25.5	13.0	64.8	106.1	172.0	406.1	860.0	1,802.1	4,648.1	13,660.4	731.9
2012.....	810.2	599.3	26.3	12.6	66.4	105.4	170.7	405.4	854.2	1,802.5	4,674.5	13,678.6	732.8
2011.....	807.3	600.1	26.3	13.2	67.7	104.7	172.0	409.8	849.4	1,846.2	4,753.0	13,779.3	741.3
2010.....	799.5	623.4	26.5	12.9	67.7	102.9	170.5	407.1	851.9	1,875.1	4,790.2	13,934.3	747.0
2009.....	794.5	659.7	27.4	13.8	69.8	104.4	180.0	418.1	856.7	1,888.7	4,820.2	13,660.1	749.6
2008.....	812.9	678.9	29.3	13.9	74.2	105.1	181.0	419.6	867.1	1,958.4	4,998.1	14,332.4	774.9
2007.....	804.6	702.5	29.4	15.2	78.8	107.2	186.0	420.3	866.7	1,976.0	4,987.1	14,160.9	775.3
2006.....	813.1	705.8	29.1	15.2	81.4	109.0	192.0	427.5	881.3	2,031.4	5,096.1	14,426.7	791.8
2005.....	828.4	710.2	29.9	16.3	80.7	106.8	194.9	431.9	898.5	2,109.7	5,251.8	14,982.4	815.0
2004.....	818.8	695.9	30.3	16.7	79.7	104.1	194.9	426.8	903.2	2,141.0	5,267.4	14,777.6	813.7
2003.....	843.9	704.9	31.8	16.9	81.1	105.2	202.6	433.1	937.3	2,235.0	5,451.3	15,401.4	843.5
2002.....	849.5	709.5	31.4	17.4	80.9	105.1	204.2	431.0	948.7	2,300.3	5,543.8	15,589.5	855.9
2001.....	848.0	687.0	33.4	17.2	80.2	105.6	203.5	426.7	972.5	2,344.2	5,573.7	15,432.6	858.8
2000.....	854.0	736.7	32.4	18.0	79.9	101.4	198.9	425.6	992.2	2,399.1	5,666.5	15,524.4	869.0
1999.....	857.0	736.0	34.2	18.6	79.3	102.2	198.0	418.2	1,005.0	2,457.3	5,714.5	15,554.6	875.6
Diseases of heart (I00–I09, I11, I13, I20–I51)													
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
Malignant neoplasms (C00–C97)													
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

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 2016, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2016—Con.

[Rates 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]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Accidents (unintentional injuries) (V01–X59, Y85–Y86)													
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
Chronic lower respiratory diseases (J40–J47)													
2016.....	47.8	0.7	0.3	0.3	0.5	0.8	1.7	10.1	43.0	134.1	347.2	676.9	40.6
2015.....	48.2	0.7	0.3	0.4	0.5	0.7	1.7	10.1	42.7	136.6	357.9	705.1	41.6
2014.....	46.1	*	0.3	0.3	0.4	0.8	1.9	10.1	41.2	134.9	349.0	670.5	40.5
2013.....	47.2	0.6	0.4	0.4	0.4	0.7	1.9	10.6	40.5	141.2	367.0	699.3	42.1
2012.....	45.7	0.5	0.3	0.3	0.3	0.7	1.8	10.2	39.4	140.0	364.0	687.8	41.5
2011.....	45.9	0.8	0.3	0.3	0.4	0.6	1.8	10.4	39.5	144.3	374.9	697.9	42.5
2010.....	44.7	0.9	0.3	0.3	0.3	0.7	1.7	9.9	39.0	146.3	369.9	690.7	42.2
2009.....	44.8	0.7	0.4	0.3	0.4	0.7	1.8	10.4	40.0	147.5	376.4	684.9	42.7
2008.....	46.4	0.8	0.3	0.3	0.4	0.6	1.9	9.9	41.1	155.9	395.4	722.7	44.7
2007.....	42.5	1.0	0.4	0.3	0.3	0.7	1.9	9.5	38.6	145.5	367.1	652.0	41.4
2006.....	41.8	0.7	0.3	0.3	0.4	0.6	1.9	9.1	38.8	147.0	362.0	641.3	41.0
2005.....	44.3	0.8	0.4	0.3	0.3	0.7	2.0	9.4	41.6	158.4	385.0	691.9	43.9
2004.....	41.7	0.9	0.3	0.3	0.4	0.6	2.0	8.4	40.1	152.1	366.2	643.2	41.6
2003.....	43.6	0.8	0.4	0.3	0.5	0.7	2.2	8.7	43.1	161.7	382.2	670.2	43.7
2002.....	43.4	1.0	0.4	0.3	0.5	0.8	2.3	8.7	42.2	162.0	385.8	670.3	43.9
2001.....	43.2	1.0	0.3	0.3	0.4	0.7	2.2	8.4	44.5	167.3	379.3	658.3	43.9
2000.....	43.4	0.9	0.3	0.3	0.5	0.7	2.1	8.6	44.2	169.4	386.1	648.6	44.2
1999.....	44.5	0.9	0.4	0.3	0.5	0.8	2.0	8.5	47.5	177.2	397.8	646.0	45.4
Cerebrovascular diseases (I60–I69)													
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

Table 5. Death rates by age, and age-adjusted death rates, for the 10 leading causes of death in 2016, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2016—Con.

[Rates 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]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Cerebrovascular diseases (I60–I69)—Con.													
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
Alzheimer's disease (G30)													
2016.....	35.9	*	*	*	*	*	*	0.2	2.7	23.6	214.1	1,216.9	30.3
2015.....	34.4	*	*	*	*	*	*	0.2	2.4	22.4	211.9	1,174.2	29.4
2014.....	29.3	*	*	*	*	*	*	0.2	2.1	19.6	185.6	1,006.8	25.4
2013.....	26.8	*	*	*	*	*	*	0.2	2.2	18.1	171.6	929.5	23.5
2012.....	26.6	*	*	*	*	*	*	0.2	2.2	17.9	175.4	936.1	23.8
2011.....	27.3	*	*	*	*	*	*	0.2	2.2	19.2	183.9	967.1	24.7
2010.....	27.0	*	*	*	*	*	*	0.3	2.1	19.8	184.5	987.1	25.1
2009.....	25.8	*	*	*	*	*	*	0.2	2.0	19.4	179.1	945.3	24.2
2008.....	27.1	*	*	*	*	*	*	0.2	2.2	21.1	192.5	1,002.2	25.8
2007.....	24.8	*	*	*	*	*	*	0.2	2.2	20.2	175.8	928.7	23.8
2006.....	24.3	*	*	*	*	*	*	0.2	2.1	19.9	175.0	923.4	23.7
2005.....	24.2	*	*	*	*	*	*	0.2	2.1	20.2	177.0	935.5	24.0
2004.....	22.5	*	*	*	*	*	*	0.2	1.8	19.5	168.5	875.3	22.6
2003.....	21.9	*	*	*	*	*	*	0.2	2.0	20.7	164.1	846.8	22.1
2002.....	20.5	*	*	*	*	*	*	0.1	1.9	19.6	157.7	790.9	20.8
2001.....	18.9	*	*	*	*	*	*	0.2	2.1	18.6	147.2	725.4	19.3
2000.....	17.6	*	*	*	*	*	*	0.2	2.0	18.7	139.6	667.7	18.1
1999.....	16.0	*	*	*	*	*	*	0.2	1.9	17.4	129.5	601.3	16.5
Diabetes mellitus (E10–E14)													
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
Influenza and pneumonia (J09–J18)													
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

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 2016, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2016—Con.

[Rates 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]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>) and year	All ages ¹	Age group (years)										Age- adjusted rate ³	
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84		85 and over
Influenza and pneumonia (J09–J18)—Con.													
2010.....	16.2	4.9	0.6	0.2	0.4	0.9	1.9	4.3	9.9	27.9	102.4	426.2	15.1
2009.....	17.5	6.3	0.9	0.6	1.0	2.0	3.2	6.5	11.7	29.5	107.0	433.8	16.5
2008.....	18.5	5.5	0.9	0.2	0.5	0.9	2.1	5.1	10.9	30.5	118.6	512.3	17.6
2007.....	17.5	5.4	0.7	0.3	0.4	0.8	1.8	4.3	9.5	28.2	113.5	506.7	16.8
2006.....	18.9	6.5	0.8	0.2	0.4	0.9	1.9	4.6	9.9	31.6	127.3	547.0	18.4
2005.....	21.3	6.6	0.7	0.3	0.4	0.9	2.1	5.1	11.2	35.1	142.0	644.9	21.0
2004.....	20.4	6.8	0.8	0.2	0.4	0.8	2.0	4.6	10.8	34.2	139.1	622.8	20.4
2003.....	22.5	8.1	1.0	0.4	0.5	1.0	2.2	5.2	11.2	36.9	150.8	703.0	22.6
2002.....	22.8	6.7	0.7	0.2	0.4	0.9	2.2	4.8	11.2	37.2	156.6	732.4	23.2
2001.....	21.8	7.5	0.7	0.2	0.5	0.9	2.2	4.6	10.8	36.2	148.3	700.1	22.2
2000.....	23.2	7.6	0.7	0.2	0.5	0.9	2.4	4.7	11.9	39.1	160.3	744.1	23.7
1999.....	22.8	8.4	0.8	0.2	0.5	0.8	2.4	4.6	11.0	37.2	157.0	751.8	23.5
Nephritis, nephrotic syndrome and nephrosis (N00–N07, N17–N19, N25–N27)													
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
Intentional self-harm (suicide) (*U03, X60–X84, Y87.0)⁴													
2016.....	13.9	...	...	1.1	13.2	16.5	17.4	19.7	18.7	15.4	18.2	19.0	13.5
2015.....	13.7	...	...	1.0	12.5	15.7	17.1	20.3	18.9	15.2	17.9	19.4	13.3
2014.....	13.4	...	...	1.0	11.6	15.1	16.6	20.2	18.8	15.6	17.5	19.3	13.0
2013.....	13.0	...	...	1.0	11.1	14.8	16.2	19.7	18.1	15.0	17.1	18.6	12.6
2012.....	12.9	...	...	0.8	11.1	14.7	16.7	20.0	18.0	14.0	16.8	17.8	12.6
2011.....	12.7	...	...	0.7	11.0	14.6	16.2	19.8	17.1	14.1	16.5	16.9	12.3
2010.....	12.4	...	...	0.7	10.5	14.0	16.0	19.6	17.5	13.7	15.7	17.6	12.1
2009.....	12.0	...	...	0.6	10.0	13.1	16.1	19.2	16.4	13.7	15.8	16.4	11.8
2008.....	11.8	...	...	0.5	9.9	13.2	15.9	18.6	16.0	13.6	16.1	16.4	11.6
2007.....	11.5	...	...	0.5	9.6	13.3	15.7	17.7	15.3	12.4	16.2	17.0	11.3
2006.....	11.2	...	...	0.5	9.8	12.7	15.2	17.2	14.4	12.4	15.8	17.3	11.0
2005.....	11.0	...	...	0.7	9.9	12.7	15.1	16.5	13.7	12.4	16.8	18.3	10.9
2004.....	11.1	...	...	0.7	10.3	12.9	15.2	16.6	13.7	12.2	16.3	17.6	11.0
2003.....	10.9	...	...	0.6	9.6	12.9	15.0	15.9	13.7	12.6	16.4	17.9	10.8
2002.....	11.0	...	...	0.6	9.8	12.8	15.3	15.8	13.5	13.4	17.7	18.9	10.9
2001 ⁵	10.7	...	...	0.7	9.9	12.8	14.7	15.1	13.2	13.2	17.4	17.8	10.7
2000.....	10.4	...	...	0.7	10.2	12.0	14.5	14.4	12.1	12.5	17.6	19.6	10.4
1999.....	10.5	...	...	0.6	10.1	12.7	14.3	13.9	12.2	13.4	18.1	19.3	10.5

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 2016, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2016—Con.

[Rates 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]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>) and year	Age group (years)												Age- adjusted rate ³
	All ages ¹	Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Drug-induced causes⁶													
2016.....	20.8	0.9	0.3	0.1	12.8	35.9	36.6	36.5	27.7	9.2	4.1	5.3	20.8
2015.....	17.2	0.7	0.4	0.1	10.0	28.0	29.6	31.9	23.3	8.1	4.4	5.6	17.2
2014.....	15.6	0.6	0.3	0.1	8.9	24.0	26.2	29.8	21.7	7.6	4.4	5.0	15.5
2013.....	14.7	0.8	0.3	0.1	8.6	21.7	24.1	29.0	20.6	7.1	4.4	5.3	14.6
2012.....	14.0	0.8	0.2	0.1	8.3	20.9	23.1	28.3	17.9	6.5	4.0	5.1	13.8
2011.....	14.0	0.6	0.2	0.1	8.9	20.9	23.4	28.2	17.1	6.0	4.0	4.9	13.9
2010.....	13.1	0.6	0.3	0.2	8.4	19.2	21.7	26.5	16.2	5.2	4.0	5.5	12.9
2009.....	12.8	0.8	0.2	0.1	8.0	17.8	21.5	26.9	14.9	5.4	4.5	5.1	12.6
2008.....	12.7	0.5	0.3	0.1	8.3	17.4	22.2	26.8	14.0	5.2	4.0	5.0	12.6
2007.....	12.7	0.8	0.3	0.2	8.5	17.5	22.6	26.8	13.4	4.6	3.9	5.2	12.6
2006.....	12.9	1.1	0.2	0.1	8.5	17.2	23.5	26.7	12.1	5.2	6.0	8.8	12.8
2005.....	11.3	0.9	0.2	0.1	7.3	14.6	21.5	23.6	10.6	4.7	5.4	8.3	11.3
2004.....	10.5	0.7	0.2	0.2	6.9	12.9	21.1	21.7	9.0	4.2	4.8	6.7	10.5
2003.....	9.9	0.6	0.2	0.1	6.3	12.3	20.7	20.0	8.0	4.1	4.2	6.3	9.9
2002.....	9.1	0.7	0.2	0.1	5.4	11.3	19.8	18.0	6.8	3.6	3.8	6.0	9.1
2001.....	7.6	0.5	0.2	0.1	4.5	9.5	17.0	14.7	5.4	3.0	3.5	5.2	7.6
2000.....	7.0	*	*	0.1	4.0	8.8	16.0	13.2	4.9	2.6	3.5	5.7	7.0
1999.....	6.9	0.6	0.2	0.1	3.5	8.9	15.7	12.6	4.9	3.0	3.8	4.8	6.8
Alcohol-induced causes⁶													
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 2016, drug-induced causes, alcohol-induced causes, and injury by firearms: United States, 1999–2016—Con.

[Rates 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]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>) and year	All ages ¹	Age group (years)											Age-adjusted rate ³
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
Injury by firearms ⁶													
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

* Figure does not meet standards of reliability or precision; see Technical Notes.

... Category not applicable.

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 6. Number of deaths from selected causes, by age: United States, 2016

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	All ages	Age group (years)											Age not stated
		Under 1 year	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over	
All causes	2,744,248	23,161	4,045	5,503	32,575	57,616	77,792	173,516	366,445	512,080	636,916	854,462	137
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	6,768	1	7	2	2	18	57	184	607	1,338	2,006	2,546	–
Septicemia (A40–A41)	40,613	192	70	71	143	419	897	2,472	5,941	8,767	10,522	11,116	3
Viral hepatitis (B15–B19)	6,421	–	–	1	2	50	205	1,162	2,996	1,410	433	161	1
Human immunodeficiency virus (HIV) disease . . . (B20–B24)	6,160	–	–	1	68	546	971	1,831	1,803	722	180	38	–
Malignant neoplasms (C00–C97)	598,038	67	377	880	1,431	3,791	10,903	41,291	116,364	165,583	153,961	103,383	7
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	10,170	–	–	5	11	62	177	1,037	2,764	2,824	1,974	1,316	–
Malignant neoplasm of esophagus (C15)	15,459	–	1	–	3	48	216	1,237	3,798	4,943	3,396	1,817	–
Malignant neoplasm of stomach (C16)	11,433	–	–	–	17	137	419	1,111	2,308	2,778	2,702	1,961	–
Malignant neoplasms of colon, rectum and anus (C18–C21)	53,145	–	–	1	42	374	1,427	4,928	10,470	12,760	12,372	10,771	–
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	26,569	5	25	18	32	91	352	1,878	8,075	7,813	5,587	2,693	–
Malignant neoplasm of pancreas (C25)	42,757	–	1	2	3	61	466	2,682	8,565	12,771	11,462	6,744	–
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	148,945	1	1	2	28	127	885	7,937	30,365	48,078	42,047	19,473	1
Malignant melanoma of skin (C43)	8,188	–	2	2	22	133	314	777	1,519	2,013	1,921	1,485	–
Malignant neoplasm of breast (C50)	41,952	–	–	–	10	432	1,904	5,122	8,966	10,033	8,367	7,117	1
Malignant neoplasm of cervix uteri (C53)	4,188	–	1	–	7	225	534	898	998	816	450	259	–
Malignant neoplasm of ovary (C56)	14,223	–	–	1	15	109	319	1,266	3,037	4,060	3,457	1,959	–
Malignant neoplasm of prostate (C61)	30,370	–	–	–	1	3	19	397	2,893	6,881	10,081	10,095	–
Malignant neoplasms of kidney and renal pelvis (C64–C65)	13,842	1	11	26	32	65	226	1,016	2,764	3,921	3,515	2,265	–
Malignant neoplasm of bladder (C67)	16,646	–	–	–	2	14	87	463	1,807	3,661	5,201	5,411	–
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	16,834	13	104	327	235	415	824	1,981	4,048	4,517	3,060	1,310	–
Non-Hodgkin's lymphoma (C82–C85)	20,269	–	7	24	90	169	323	991	2,753	5,000	6,068	4,843	1
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	12,735	–	–	–	2	8	103	574	1,876	3,651	4,007	2,514	–
Leukemia (C91–C95)	23,130	29	108	214	353	425	554	1,139	2,801	5,544	6,749	5,214	–
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	15,794	53	49	59	70	110	243	578	1,568	3,122	4,699	5,243	–
Anemias (D50–D64)	5,349	14	20	24	78	165	185	261	494	787	1,180	2,141	–
Diabetes mellitus (E10–E14)	80,058	2	8	26	211	792	2,049	6,267	14,251	20,002	19,633	16,817	–
Nutritional deficiencies (E40–E64)	6,329	6	1	4	9	28	41	142	440	781	1,471	3,406	–
Obesity (E66)	7,727	–	–	4	75	392	929	1,606	2,095	1,620	785	221	–
Parkinson's disease (G20–G21)	29,697	–	–	–	–	5	8	92	663	4,094	12,165	12,670	–
Alzheimer's disease (G30)	116,103	–	–	–	–	2	8	88	1,122	6,761	30,479	77,643	–

See footnotes at end of table.

Table 6. Number of deaths from selected causes, by age: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	All ages	Age group (years)											Age not stated
		Under 1 year	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)	835,947	435	179	287	1,161	4,337	13,283	42,142	97,484	144,348	199,485	332,761	45
Diseases of heart (I00–I09,I11,I13,I20–I51)	635,260	294	118	188	949	3,445	10,477	34,027	78,610	112,361	147,619	247,138	34
Essential hypertension and hypertensive renal disease (I10,I12,I15)	33,246	2	1	4	18	130	459	1,606	3,741	5,454	7,644	14,185	2
Cerebrovascular diseases (I60–I69)	142,142	124	55	88	148	575	1,851	5,353	12,310	21,768	37,789	62,073	8
Atherosclerosis (I70)	5,727	2	1	–	1	2	18	99	353	748	1,345	3,158	–
Aortic aneurysm and dissection (I71)	9,758	1	–	4	29	133	328	681	1,386	2,029	2,609	2,557	1
Influenza and pneumonia (J09–J18)	51,537	166	103	87	189	452	894	2,133	5,034	8,169	12,596	21,714	–
Chronic lower respiratory diseases (J40–J47)	154,596	28	51	143	206	353	692	4,307	17,810	38,403	49,413	43,186	4
Pneumonitis due to solids and liquids (J69)	19,715	12	6	7	38	107	187	540	1,536	2,789	5,140	9,352	1
Chronic liver disease and cirrhosis (K70,K73–K74)	40,545	5	3	1	41	925	2,851	8,364	13,448	8,797	4,544	1,562	4
Alcoholic liver disease (K70)	21,815	–	–	–	28	767	2,213	5,832	7,961	3,738	1,065	209	2
Cholelithiasis and other disorders of gallbladder (K80–K82)	3,803	–	1	2	9	27	46	148	318	614	1,027	1,611	–
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	50,046	63	15	15	56	265	743	2,140	5,650	9,904	13,959	17,232	4
Pregnancy, childbirth and the puerperium (O00–O99)	1,231	...	...	3	184	472	351	220	1	–	–	–	–
Certain conditions originating in the perinatal period (P00–P96)	11,493	11,365	60	26	13	10	5	4	3	3	1	1	2
Pregnancy, childbirth and the puerperium (O00–O99)	1,231	...	...	3	184	472	351	220	1	–	–	–	–
Certain conditions originating in the perinatal period (P00–P96)	11,493	11,365	60	26	13	10	5	4	3	3	1	1	2
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	10,131	4,816	433	349	388	436	421	771	1,209	586	376	346	–
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	33,373	2,793	265	103	611	1,211	1,341	2,130	3,336	3,707	5,352	12,505	19
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	161,374	1,219	1,261	1,634	13,895	23,984	20,975	23,377	21,860	14,050	15,759	23,332	28
Motor vehicle accidents (V02–V04,V09.0,V09.2,V12–V14,V19.0–V19.2,V19.4–V19.6,V20–V79,V80.3–V80.5,V81.0–V81.1,V82.0–V82.1,V83–V86,V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	40,327	91	420	944	7,203	7,180	5,232	5,726	5,629	3,817	2,693	1,389	3
Falls (W00–W19)	34,673	7	19	19	199	326	515	1,238	2,679	4,479	8,735	16,454	3
Accidental discharge of firearms (W32–W34)	495	1	34	39	121	84	29	67	63	32	16	9	–
Accidental drowning and submersion (W65–W74)	3,786	38	425	250	530	463	396	478	498	367	230	103	8
Accidental hanging, strangulation, and suffocation (W75–W84)	6,610	1,023	118	74	109	186	258	419	792	934	1,181	1,516	–
Accidental exposure to smoke, fire and flames (X00–X09)	2,730	12	104	130	97	154	219	329	582	522	366	213	2
Accidental poisoning and exposure to noxious substances (X40–X49)	58,335	9	34	41	4,997	14,631	13,278	13,439	9,438	1,887	366	205	10

See footnotes at end of table.

Table 6. Number of deaths from selected causes, by age: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	All ages	Age group (years)											Age not stated
		Under 1 year	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) ¹	44,965	...	...	443	5,723	7,366	7,030	8,437	7,759	4,403	2,590	1,211	3
Intentional self-harm (suicide) by poisoning (X60–X69)	6,698	...	...	17	426	767	1,144	1,736	1,538	689	250	131	–
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	11,642	...	...	254	2,100	2,643	2,199	2,112	1,474	482	237	140	1
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	22,938	...	...	160	2,683	3,298	3,099	3,873	4,067	2,932	1,956	868	2
Assault (homicide) (*U01–*U02,X85–Y09,Y87.1) ¹	19,362	276	339	286	5,172	5,376	3,369	2,152	1,407	582	279	121	3
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ¹	14,415	11	64	163	4,553	4,510	2,555	1,420	738	263	103	34	1
Legal intervention (Y35,Y89.0)	549	–	–	2	77	179	143	80	50	12	5	1	–
Complications of medical and surgical care (Y40–Y84,Y88)	3,203	18	11	23	32	92	105	310	584	777	736	515	–
Drug-induced deaths ²	67,265	34	50	59	5,559	16,058	14,812	15,623	11,485	2,644	590	341	10
Alcohol-induced deaths ²	34,865	1	1	–	157	1,591	3,719	9,169	12,315	5,822	1,681	403	6
Injury by firearms ²	38,658	12	101	377	7,503	8,128	5,867	5,458	4,942	3,259	2,092	915	4

– Quantity zero.

... Category not applicable.

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 7. Death rates for selected causes, by age: United States, 2016

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	All ages ¹	Age group (years)										
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
All causes	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
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	2.1	*	*	*	*	*	0.1	0.4	1.5	4.7	14.1	39.9
Septicemia (A40–A41)	12.6	4.8	0.4	0.2	0.3	0.9	2.2	5.8	14.3	30.6	73.9	174.2
Viral hepatitis (B15–B19)	2.0	*	*	*	*	0.1	0.5	2.7	7.2	4.9	3.0	2.5
Human immunodeficiency virus (HIV) disease (B20–B24)	1.9	*	*	*	0.2	1.2	2.4	4.3	4.3	2.5	1.3	0.6
Malignant neoplasms (C00–C97)	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
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	3.1	*	*	*	*	0.1	0.4	2.4	6.7	9.9	13.9	20.6
Malignant neoplasm of esophagus (C15)	4.8	*	*	*	*	0.1	0.5	2.9	9.2	17.3	23.9	28.5
Malignant neoplasm of stomach (C16)	3.5	*	*	*	*	0.3	1.0	2.6	5.6	9.7	19.0	30.7
Malignant neoplasms of colon, rectum and anus (C18–C21)	16.4	*	*	*	0.1	0.8	3.5	11.5	25.3	44.6	86.9	168.8
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	8.2	*	0.2	*	0.1	0.2	0.9	4.4	19.5	27.3	39.3	42.2
Malignant neoplasm of pancreas (C25)	13.2	*	*	*	*	0.1	1.2	6.3	20.7	44.6	80.5	105.7
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	46.1	*	*	*	0.1	0.3	2.2	18.6	73.2	167.9	295.4	305.2
Malignant melanoma of skin (C43)	2.5	*	*	*	0.1	0.3	0.8	1.8	3.7	7.0	13.5	23.3
Malignant neoplasm of breast (C50)	13.0	*	*	*	*	1.0	4.7	12.0	21.6	35.0	58.8	111.5
Malignant neoplasm of cervix uteri (C53)	1.3	*	*	*	*	0.5	1.3	2.1	2.4	2.9	3.2	4.1
Malignant neoplasm of ovary (C56)	4.4	*	*	*	*	0.2	0.8	3.0	7.3	14.2	24.3	30.7
Malignant neoplasm of prostate (C61)	9.4	*	*	*	*	*	*	0.9	7.0	24.0	70.8	158.2
Malignant neoplasms of kidney and renal pelvis (C64–C65)	4.3	*	*	0.1	0.1	0.1	0.6	2.4	6.7	13.7	24.7	35.5
Malignant neoplasm of bladder (C67)	5.2	*	*	*	*	*	0.2	1.1	4.4	12.8	36.5	84.8
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	5.2	*	0.7	0.8	0.5	0.9	2.0	4.6	9.8	15.8	21.5	20.5
Non–Hodgkin’s lymphoma (C82–C85)	6.3	*	*	0.1	0.2	0.4	0.8	2.3	6.6	17.5	42.6	75.9
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	3.9	*	*	*	*	*	0.3	1.3	4.5	12.8	28.2	39.4
Leukemia (C91–C95)	7.2	0.7	0.7	0.5	0.8	1.0	1.4	2.7	6.8	19.4	47.4	81.7
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	4.9	1.3	0.3	0.1	0.2	0.2	0.6	1.4	3.8	10.9	33.0	82.2
Anemias (D50–D64)	1.7	*	0.1	0.1	0.2	0.4	0.5	0.6	1.2	2.7	8.3	33.6
Diabetes mellitus (E10–E14)	24.8	*	*	0.1	0.5	1.8	5.1	14.6	34.4	69.9	137.9	263.6
Nutritional deficiencies (E40–E64)	2.0	*	*	*	*	0.1	0.1	0.3	1.1	2.7	10.3	53.4
Obesity (E66)	2.4	*	*	*	0.2	0.9	2.3	3.8	5.1	5.7	5.5	3.5
Parkinson’s disease (G20–G21)	9.2	*	*	*	*	*	*	0.2	1.6	14.3	85.5	198.6
Alzheimer’s disease (G30)	35.9	*	*	*	*	*	*	0.2	2.7	23.6	214.1	1,216.9

See footnotes at end of table.

Table 7. Death rates for selected causes, by age: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	All ages ¹	Age group (years)										
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
Major cardiovascular diseases (I00–I78)	258.7	11.0	1.1	0.7	2.7	9.7	32.8	98.5	235.1	504.2	1,401.5	5,215.4
Diseases of heart (I00–I09,I11,I13,I20–I51)	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
Essential hypertension and hypertensive renal disease (I10,I12,I15)	10.3	*	*	*	*	0.3	1.1	3.8	9.0	19.0	53.7	222.3
Cerebrovascular diseases (I60–I69)	44.0	3.1	0.3	0.2	0.3	1.3	4.6	12.5	29.7	76.0	265.5	972.9
Atherosclerosis (I70)	1.8	*	*	*	*	*	*	0.2	0.9	2.6	9.4	49.5
Aortic aneurysm and dissection (I71)	3.0	*	*	*	0.1	0.3	0.8	1.6	3.3	7.1	18.3	40.1
Influenza and pneumonia (J09–J18)	15.9	4.2	0.6	0.2	0.4	1.0	2.2	5.0	12.1	28.5	88.5	340.3
Chronic lower respiratory diseases (J40–J47)	47.8	0.7	0.3	0.3	0.5	0.8	1.7	10.1	43.0	134.1	347.2	676.9
Pneumonitis due to solids and liquids (J69)	6.1	*	*	*	0.1	0.2	0.5	1.3	3.7	9.7	36.1	146.6
Chronic liver disease and cirrhosis (K70,K73–K74)	12.5	*	*	*	0.1	2.1	7.0	19.5	32.4	30.7	31.9	24.5
Alcoholic liver disease (K70)	6.8	*	*	*	0.1	1.7	5.5	13.6	19.2	13.1	7.5	3.3
Cholelithiasis and other disorders of gallbladder (K80–K82)	1.2	*	*	*	*	0.1	0.1	0.3	0.8	2.1	7.2	25.2
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	15.5	1.6	*	*	0.1	0.6	1.8	5.0	13.6	34.6	98.1	270.1
Pregnancy, childbirth and the puerperium (O00–O99)	0.4	...	...	*	0.4	1.1	0.9	0.5	*	*	*	*
Certain conditions originating in the perinatal period (P00–P96)	3.6	286.3	0.4	0.1	*	*	*	*	*	*	*	*
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	3.1	121.3	2.7	0.9	0.9	1.0	1.0	1.8	2.9	2.0	2.6	5.4
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	10.3	70.4	1.7	0.3	1.4	2.7	3.3	5.0	8.0	12.9	37.6	196.0
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	49.9	30.7	7.9	4.0	31.9	53.7	51.8	54.6	52.7	49.1	110.7	365.7
Motor vehicle accidents (V02–V04,V09.0, V09.2,V12–V14,V19.0–V19.2,V19.4–V19.6, V20–V79,V80.3–V80.5,V81.0–V81.1,V82.0–V82.1, V83–V86,V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	12.5	2.3	2.6	2.3	16.6	16.1	12.9	13.4	13.6	13.3	18.9	21.8
Falls (W00–W19)	10.7	*	*	*	0.5	0.7	1.3	2.9	6.5	15.6	61.4	257.9
Accidental discharge of firearms (W32–W34)	0.2	*	0.2	0.1	0.3	0.2	0.1	0.2	0.2	0.1	*	*
Accidental drowning and submersion (W65–W74)	1.2	1.0	2.7	0.6	1.2	1.0	1.0	1.1	1.2	1.3	1.6	1.6
Accidental hanging, strangulation, and suffocation (W75–W84)	2.0	25.8	0.7	0.2	0.3	0.4	0.6	1.0	1.9	3.3	8.3	23.8
Accidental exposure to smoke, fire and flames (X00–X09)	0.8	*	0.7	0.3	0.2	0.3	0.5	0.8	1.4	1.8	2.6	3.3
Accidental poisoning and exposure to noxious substances (X40–X49)	18.1	*	0.2	0.1	11.5	32.7	32.8	31.4	22.8	6.6	2.6	3.2

See footnotes at end of table.

Table 7. Death rates for selected causes, by age: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	All ages ¹	Age group (years)										
		Under 1 year ²	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
Intentional self-harm (suicide) (*U03,X60–X84,Y87.0) ³	13.9	...	...	1.1	13.2	16.5	17.4	19.7	18.7	15.4	18.2	19.0
Intentional self-harm (suicide) by poisoning (X60–X69)	2.1	...	...	*	1.0	1.7	2.8	4.1	3.7	2.4	1.8	2.1
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	3.6	...	...	0.6	4.8	5.9	5.4	4.9	3.6	1.7	1.7	2.2
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	7.1	...	...	0.4	6.2	7.4	7.7	9.1	9.8	10.2	13.7	13.6
Assault (homicide) (*U01–*U02,X85–Y09,Y87.1) ³	6.0	7.0	2.1	0.7	11.9	12.0	8.3	5.0	3.4	2.0	2.0	1.9
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ³	4.5	*	0.4	0.4	10.5	10.1	6.3	3.3	1.8	0.9	0.7	0.5
Legal intervention (Y35,Y89.0)	0.2	*	*	*	0.2	0.4	0.4	0.2	0.1	*	*	*
Complications of medical and surgical care (Y40–Y84,Y88)	1.0	*	*	0.1	0.1	0.2	0.3	0.7	1.4	2.7	5.2	8.1
Drug-induced deaths ⁴	20.8	0.9	0.3	0.1	12.8	35.9	36.6	36.5	27.7	9.2	4.1	5.3
Alcohol-induced deaths ⁴	10.8	*	*	*	0.4	3.6	9.2	21.4	29.7	20.3	11.8	6.3
Injury by firearms ⁴	12.0	*	0.6	0.9	17.2	18.2	14.5	12.8	11.9	11.4	14.7	14.3

* Figure does not meet standards of reliability or precision; see Technical Notes.

... Category not applicable.

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

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

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2016

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All causes	2,744,248	1,400,232	1,344,016	2,133,463	1,077,362	1,056,101	326,810	168,750	158,060	18,595	10,280	8,315	68,235	34,892	33,343	188,254	103,532	84,722
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	6,768	2,723	4,045	5,518	2,195	3,323	609	252	357	54	21	33	124	67	57	440	179	261
Septicemia (A40–A41)	40,613	19,678	20,935	30,009	14,620	15,389	6,684	3,074	3,610	295	128	167	786	393	393	2,718	1,392	1,326
Viral hepatitis (B15–B19)	6,421	4,185	2,236	4,118	2,688	1,430	914	591	323	94	48	46	256	159	97	974	656	318
Human immunodeficiency virus (HIV) disease (B20–B24)	6,160	4,554	1,606	2,020	1,687	333	3,149	2,072	1,077	39	27	12	77	63	14	811	651	160
Malignant neoplasms (C00–C97)	598,038	314,571	283,467	466,467	247,202	219,265	69,725	35,215	34,510	3,225	1,723	1,502	17,718	8,978	8,740	39,263	20,504	18,759
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	10,170	7,150	3,020	8,012	5,600	2,412	1,113	815	298	64	50	14	398	266	132	540	386	154
Malignant neoplasm of esophagus (C15)	15,459	12,317	3,142	13,100	10,546	2,554	1,269	900	369	78	65	13	280	211	69	695	564	131
Malignant neoplasm of stomach (C16)	11,433	6,845	4,588	6,497	3,989	2,508	2,033	1,261	772	98	54	44	971	546	425	1,802	970	832
Malignant neoplasms of colon, rectum and anus (C18–C21)	53,145	27,934	25,211	39,818	20,852	18,966	7,246	3,765	3,481	322	175	147	1,710	861	849	3,906	2,190	1,716
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	26,569	17,843	8,726	17,408	11,646	5,762	3,698	2,492	1,206	247	163	84	1,627	1,102	525	3,487	2,365	1,122
Malignant neoplasm of pancreas (C25)	42,757	21,899	20,858	32,952	17,126	15,826	5,206	2,461	2,745	224	111	113	1,344	651	693	2,919	1,486	1,433
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	148,945	80,815	68,130	122,485	65,658	56,827	15,860	9,027	6,833	788	431	357	3,850	2,188	1,662	5,550	3,264	2,286
Malignant melanoma of skin (C43)	8,188	5,425	2,763	7,764	5,183	2,581	100	48	52	14	8	6	61	33	28	231	139	92
Malignant neoplasm of breast (C50)	41,952	464	41,488	31,162	361	30,801	6,327	72	6,255	201	2	199	1,176	7	1,169	2,975	22	2,953
Malignant neoplasm of cervix uteri (C53)	4,188	...	4,188	2,619	...	2,619	723	...	723	38	...	38	174	...	174	619	...	619
Malignant neoplasm of ovary (C56)	14,223	...	14,223	11,269	...	11,269	1,315	...	1,315	77	...	77	520	...	520	998	...	998
Malignant neoplasm of prostate (C61)	30,370	30,370	...	22,633	22,633	...	5,019	5,019	...	139	139	...	570	570	...	1,929	1,929	...
Malignant neoplasms of kidney and renal pelvis (C64–C65)	13,842	8,996	4,846	10,821	7,011	3,810	1,325	846	479	107	76	31	320	211	109	1,238	827	411
Malignant neoplasm of bladder (C67)	16,646	11,941	4,705	14,333	10,487	3,846	1,245	717	528	55	42	13	291	202	89	675	462	213
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	16,834	9,510	7,324	13,986	7,983	6,003	1,065	584	481	62	32	30	445	231	214	1,251	665	586
Non-Hodgkin's lymphoma (C82–C85)	20,269	11,301	8,968	16,421	9,181	7,240	1,486	788	698	86	50	36	660	362	298	1,566	883	683
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	12,735	7,016	5,719	9,151	5,138	4,013	2,253	1,122	1,131	60	32	28	281	165	116	962	543	419
Leukemia (C91–C95)	23,130	13,270	9,860	18,651	10,849	7,802	2,023	1,052	971	72	44	28	611	346	265	1,711	947	764

See footnotes at end of table.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	15,794	8,382	7,412	12,964	6,958	6,006	1,352	660	692	57	30	27	438	218	220	942	491	451
Anemias (D50–D64)	5,349	2,293	3,056	3,759	1,588	2,171	1,101	478	623	30	12	18	129	61	68	316	146	170
Diabetes mellitus (E10–E14)	80,058	43,763	36,295	53,399	30,010	23,389	14,053	6,976	7,077	1,078	574	504	2,697	1,414	1,283	8,546	4,603	3,943
Nutritional deficiencies (E40–E64)	6,329	2,424	3,905	5,043	1,893	3,150	735	316	419	47	21	26	136	49	87	359	140	219
Obesity (E66)	7,727	3,979	3,748	5,507	2,876	2,631	1,440	669	771	76	45	31	67	35	32	591	324	267
Parkinson's disease (G20–G21)	29,697	17,877	11,820	25,826	15,641	10,185	1,359	792	567	83	58	25	749	440	309	1,630	914	716
Alzheimer's disease (G30)	116,103	35,372	80,731	97,779	29,886	67,893	8,577	2,451	6,126	377	121	256	2,363	709	1,654	6,833	2,151	4,682
Major cardiovascular diseases (I00–I78)	835,947	426,063	409,884	651,495	330,858	320,637	103,726	52,418	51,308	4,283	2,380	1,903	21,623	10,981	10,642	51,936	27,663	24,273
Diseases of heart (I00–I09,I11,I13,I20–I51)	635,260	339,265	295,995	500,631	266,995	233,636	76,608	40,044	36,564	3,332	1,951	1,381	14,519	7,840	6,679	37,799	20,945	16,854
Essential hypertension and hypertensive renal disease (I10,I12,I15)	33,246	14,598	18,648	23,237	9,906	13,331	5,924	2,805	3,119	193	81	112	1,280	545	735	2,488	1,197	1,291
Cerebrovascular diseases (I60–I69)	142,142	59,355	82,787	107,491	43,713	63,778	18,189	8,115	10,074	632	288	344	5,217	2,268	2,949	10,283	4,798	5,485
Atherosclerosis (I70)	5,727	2,475	3,252	4,785	2,070	2,715	522	215	307	26	10	16	110	55	55	272	119	153
Aortic aneurysm and dissection (I71)	9,758	5,762	3,996	7,828	4,614	3,214	1,046	593	453	43	29	14	319	192	127	498	317	181
Influenza and pneumonia (J09–J18)	51,537	25,011	26,526	39,748	19,033	20,715	5,468	2,705	2,763	360	176	184	2,132	1,120	1,012	3,641	1,877	1,764
Chronic lower respiratory diseases (J40–J47)	154,596	73,045	81,551	135,268	62,945	72,323	10,838	5,519	5,319	853	430	423	1,914	1,134	780	5,287	2,759	2,528
Pneumonitis due to solids and liquids (J69)	19,715	10,862	8,853	16,302	8,997	7,305	1,809	951	858	107	57	50	476	285	191	967	539	428
Chronic liver disease and cirrhosis (K70,K73–K74)	40,545	25,818	14,727	29,432	18,522	10,910	3,152	2,001	1,151	1,010	554	456	632	388	244	6,141	4,225	1,916
Alcoholic liver disease (K70)	21,815	15,150	6,665	15,527	10,576	4,951	1,598	1,051	547	770	443	327	280	215	65	3,517	2,774	743
Cholelithiasis and other disorders of gallbladder (K80–K82)	3,803	1,813	1,990	2,917	1,438	1,479	377	148	229	33	15	18	146	63	83	325	148	177
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	50,046	25,399	24,647	35,248	18,216	17,032	9,200	4,348	4,852	343	166	177	1,348	665	683	3,775	1,931	1,844
Pregnancy, childbirth and the puerperium (O00–O99)	1,231	...	1,231	575	...	575	393	...	393	11	...	11	55	...	55	193	...	193

See footnotes at end of table.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Certain conditions originating in the perinatal period. (P00–P96)	11,493	6,415	5,078	4,526	2,508	2,018	3,775	2,101	1,674	115	72	43	527	306	221	2,415	1,348	1,067
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	10,131	5,250	4,881	6,222	3,203	3,019	1,630	864	766	120	55	65	308	160	148	1,807	949	858
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	33,373	15,833	17,540	25,465	11,499	13,966	4,462	2,312	2,150	274	156	118	618	321	297	2,348	1,409	939
Accidents (unintentional injuries) (V01–X59, Y85–Y86)	161,374	103,864	57,510	121,641	76,033	45,608	18,089	12,453	5,636	2,100	1,404	696	3,101	1,929	1,172	15,711	11,510	4,201
Motor vehicle accidents (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	40,327	28,642	11,685	26,453	18,711	7,742	5,919	4,287	1,632	739	501	238	1,010	624	386	6,114	4,450	1,664
Falls (W00–W19)	34,673	17,370	17,303	29,935	14,538	15,397	1,588	954	634	195	122	73	888	452	436	1,971	1,234	737
Accidental discharge of firearms (W32–W34)	495	424	71	311	263	48	110	94	16	9	8	1	6	4	2	58	54	4
Accidental drowning and submersion (W65–W74)	3,786	2,931	855	2,406	1,811	595	610	495	115	73	48	25	177	137	40	507	429	78
Accidental hanging, strangulation, and suffocation (W75–W84)	6,610	3,795	2,815	4,851	2,779	2,072	1,055	601	454	70	48	22	151	84	67	465	271	194
Accidental exposure to smoke, fire and flames. (X00–X09)	2,730	1,602	1,128	1,937	1,131	806	540	313	227	38	25	13	21	12	9	182	115	67
Accidental poisoning and exposure to noxious substances (X40–X49)	58,335	39,810	18,525	44,608	29,866	14,742	6,725	4,654	2,071	747	482	265	577	436	141	5,248	4,061	1,187
Intentional self-harm (suicide) (*U03, X60–X84, Y87.0) ⁵	44,965	34,727	10,238	36,531	28,110	8,421	2,676	2,137	539	580	441	139	1,363	977	386	3,668	2,944	724
Intentional self-harm (suicide) by poisoning (X60–X69)	6,698	3,316	3,382	5,789	2,848	2,941	274	140	134	48	22	26	163	88	75	385	194	191
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	11,642	9,051	2,591	8,442	6,562	1,880	716	566	150	298	219	79	624	420	204	1,525	1,251	274
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	22,938	19,647	3,291	19,699	16,811	2,888	1,350	1,171	179	200	172	28	333	295	38	1,313	1,158	155

See footnotes at end of table.

Table 8. Number of deaths from selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Assault (homicide) (*U01-*U02, X85-Y09,Y87.1) ⁵	19,362	15,467	3,895	5,600	3,766	1,834	9,860	8,532	1,328	279	209	70	365	244	121	3,187	2,657	530
Assault (homicide) by discharge of firearms (*U01.4,X93-X95) ⁵	14,415	12,213	2,202	3,370	2,412	958	8,343	7,490	853	152	119	33	230	166	64	2,287	1,996	291
Legal intervention (Y35,Y89.0)	549	527	22	306	290	16	115	111	4	20	18	2	12	12	-	94	94	-
Complications of medical and surgical care (Y40-Y84,Y88)	3,203	1,624	1,579	2,350	1,207	1,143	510	228	282	30	16	14	76	42	34	225	119	106
Drug-induced deaths ⁶	67,265	43,931	23,334	52,156	33,288	18,868	7,719	5,292	2,427	693	401	292	686	487	199	5,540	4,130	1,410
Alcohol-induced deaths ⁶	34,865	25,221	9,644	25,323	18,000	7,323	2,963	2,118	845	1,225	781	444	415	327	88	4,711	3,814	897
Injury by firearms ⁶	38,658	32,994	5,664	23,857	19,893	3,964	9,973	8,906	1,067	390	323	67	584	480	104	3,771	3,316	455

... Category not applicable.

- Quantity zero.

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

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

³Includes Aleut and Eskimo persons.

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

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2016

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All causes	849.3	880.2	819.3	1,059.7	1,085.6	1,034.6	775.5	836.2	719.7	685.9	772.8	602.2	350.3	374.9	327.8	327.6	356.8	297.7
Enterocolitis due to <i>Clostridium difficile</i> (A04.7)	2.1	1.7	2.5	2.7	2.2	3.3	1.4	1.2	1.6	2.0	1.6	2.4	0.6	0.7	0.6	0.8	0.6	0.9
Septicemia (A40–A41)	12.6	12.4	12.8	14.9	14.7	15.1	15.9	15.2	16.4	10.9	9.6	12.1	4.0	4.2	3.9	4.7	4.8	4.7
Viral hepatitis (B15–B19)	2.0	2.6	1.4	2.0	2.7	1.4	2.2	2.9	1.5	3.5	3.6	3.3	1.3	1.7	1.0	1.7	2.3	1.1
Human immunodeficiency virus (HIV) disease (B20–B24)	1.9	2.9	1.0	1.0	1.7	0.3	7.5	10.3	4.9	1.4	2.0	*	0.4	0.7	*	1.4	2.2	0.6
Malignant neoplasms (C00–C97)	185.1	197.7	172.8	231.7	249.1	214.8	165.5	174.5	157.1	119.0	129.5	108.8	91.0	96.5	85.9	68.3	70.7	65.9
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	3.1	4.5	1.8	4.0	5.6	2.4	2.6	4.0	1.4	2.4	3.8	*	2.0	2.9	1.3	0.9	1.3	0.5
Malignant neoplasm of esophagus (C15)	4.8	7.7	1.9	6.5	10.6	2.5	3.0	4.5	1.7	2.9	4.9	*	1.4	2.3	0.7	1.2	1.9	0.5
Malignant neoplasm of stomach (C16)	3.5	4.3	2.8	3.2	4.0	2.5	4.8	6.2	3.5	3.6	4.1	3.2	5.0	5.9	4.2	3.1	3.3	2.9
Malignant neoplasms of colon, rectum and anus (C18–C21)	16.4	17.6	15.4	19.8	21.0	18.6	17.2	18.7	15.9	11.9	13.2	10.6	8.8	9.3	8.3	6.8	7.5	6.0
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	8.2	11.2	5.3	8.6	11.7	5.6	8.8	12.3	5.5	9.1	12.3	6.1	8.4	11.8	5.2	6.1	8.2	3.9
Malignant neoplasm of pancreas (C25)	13.2	13.8	12.7	16.4	17.3	15.5	12.4	12.2	12.5	8.3	8.3	8.2	6.9	7.0	6.8	5.1	5.1	5.0
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	46.1	50.8	41.5	60.8	66.2	55.7	37.6	44.7	31.1	29.1	32.4	25.9	19.8	23.5	16.3	9.7	11.2	8.0
Malignant melanoma of skin (C43)	2.5	3.4	1.7	3.9	5.2	2.5	0.2	0.2	0.2	*	*	*	0.3	0.4	0.3	0.4	0.5	0.3
Malignant neoplasm of breast (C50)	13.0	0.3	25.3	15.5	0.4	30.2	15.0	0.4	28.5	7.4	*	14.4	6.0	*	11.5	5.2	0.1	10.4
Malignant neoplasm of cervix uteri (C53)	1.3	...	2.6	1.3	...	2.6	1.7	...	3.3	1.4	...	2.8	0.9	...	1.7	1.1	...	2.2
Malignant neoplasm of ovary (C56)	4.4	...	8.7	5.6	...	11.0	3.1	...	6.0	2.8	...	5.6	2.7	...	5.1	1.7	...	3.5
Malignant neoplasm of prostate (C61)	9.4	19.1	...	11.2	22.8	...	11.9	24.9	...	5.1	10.4	...	2.9	6.1	...	3.4	6.6	...
Malignant neoplasms of kidney and renal pelvis (C64–C65)	4.3	5.7	3.0	5.4	7.1	3.7	3.1	4.2	2.2	3.9	5.7	2.2	1.6	2.3	1.1	2.2	2.9	1.4
Malignant neoplasm of bladder (C67)	5.2	7.5	2.9	7.1	10.6	3.8	3.0	3.6	2.4	2.0	3.2	*	1.5	2.2	0.9	1.2	1.6	0.7
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	5.2	6.0	4.5	6.9	8.0	5.9	2.5	2.9	2.2	2.3	2.4	2.2	2.3	2.5	2.1	2.2	2.3	2.1
Non-Hodgkin's lymphoma (C82–C85)	6.3	7.1	5.5	8.2	9.3	7.1	3.5	3.9	3.2	3.2	3.8	2.6	3.4	3.9	2.9	2.7	3.0	2.4
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	3.9	4.4	3.5	4.5	5.2	3.9	5.3	5.6	5.2	2.2	2.4	2.0	1.4	1.8	1.1	1.7	1.9	1.5
Leukemia (C91–C95)	7.2	8.3	6.0	9.3	10.9	7.6	4.8	5.2	4.4	2.7	3.3	2.0	3.1	3.7	2.6	3.0	3.3	2.7

See footnotes at end of table.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	4.9	5.3	4.5	6.4	7.0	5.9	3.2	3.3	3.2	2.1	2.3	2.0	2.2	2.3	2.2	1.6	1.7	1.6
Anemias (D50–D64)	1.7	1.4	1.9	1.9	1.6	2.1	2.6	2.4	2.8	1.1	*	*	0.7	0.7	0.7	0.5	0.5	0.6
Diabetes mellitus (E10–E14)	24.8	27.5	22.1	26.5	30.2	22.9	33.3	34.6	32.2	39.8	43.1	36.5	13.8	15.2	12.6	14.9	15.9	13.9
Nutritional deficiencies (E40–E64)	2.0	1.5	2.4	2.5	1.9	3.1	1.7	1.6	1.9	1.7	1.6	1.9	0.7	0.5	0.9	0.6	0.5	0.8
Obesity (E66)	2.4	2.5	2.3	2.7	2.9	2.6	3.4	3.3	3.5	2.8	3.4	2.2	0.3	0.4	0.3	1.0	1.1	0.9
Parkinson's disease (G20–G21)	9.2	11.2	7.2	12.8	15.8	10.0	3.2	3.9	2.6	3.1	4.4	1.8	3.8	4.7	3.0	2.8	3.2	2.5
Alzheimer's disease (G30)	35.9	22.2	49.2	48.6	30.1	66.5	20.4	12.1	27.9	13.9	9.1	18.5	12.1	7.6	16.3	11.9	7.4	16.5
Major cardiovascular diseases (I00–I78)	258.7	267.8	249.9	323.6	333.4	314.1	246.1	259.7	233.6	158.0	178.9	137.8	111.0	118.0	104.6	90.4	95.3	85.3
Diseases of heart (I00–I09,I11,I13,I20–I51)	196.6	213.3	180.4	248.7	269.0	228.9	181.8	198.4	166.5	122.9	146.7	100.0	74.5	84.2	65.7	65.8	72.2	59.2
Essential hypertension and hypertensive renal disease (I10,I12,I15)	10.3	9.2	11.4	11.5	10.0	13.1	14.1	13.9	14.2	7.1	6.1	8.1	6.6	5.9	7.2	4.3	4.1	4.5
Cerebrovascular diseases (I60–I69)	44.0	37.3	50.5	53.4	44.0	62.5	43.2	40.2	45.9	23.3	21.6	24.9	26.8	24.4	29.0	17.9	16.5	19.3
Atherosclerosis (I70)	1.8	1.6	2.0	2.4	2.1	2.7	1.2	1.1	1.4	1.0	*	*	0.6	0.6	0.5	0.5	0.4	0.5
Aortic aneurysm and dissection (I71)	3.0	3.6	2.4	3.9	4.6	3.1	2.5	2.9	2.1	1.6	2.2	*	1.6	2.1	1.2	0.9	1.1	0.6
Influenza and pneumonia (J09–J18)	15.9	15.7	16.2	19.7	19.2	20.3	13.0	13.4	12.6	13.3	13.2	13.3	10.9	12.0	9.9	6.3	6.5	6.2
Chronic lower respiratory diseases (J40–J47)	47.8	45.9	49.7	67.2	63.4	70.8	25.7	27.3	24.2	31.5	32.3	30.6	9.8	12.2	7.7	9.2	9.5	8.9
Pneumonitis due to solids and liquids (J69)	6.1	6.8	5.4	8.1	9.1	7.2	4.3	4.7	3.9	3.9	4.3	3.6	2.4	3.1	1.9	1.7	1.9	1.5
Chronic liver disease and cirrhosis (K70,K73–K74)	12.5	16.2	9.0	14.6	18.7	10.7	7.5	9.9	5.2	37.3	41.6	33.0	3.2	4.2	2.4	10.7	14.6	6.7
Alcoholic liver disease (K70)	6.8	9.5	4.1	7.7	10.7	4.9	3.8	5.2	2.5	28.4	33.3	23.7	1.4	2.3	0.6	6.1	9.6	2.6
Cholelithiasis and other disorders of gallbladder (K80–K82)	1.2	1.1	1.2	1.4	1.4	1.4	0.9	0.7	1.0	1.2	*	*	0.7	0.7	0.8	0.6	0.5	0.6
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	15.5	16.0	15.0	17.5	18.4	16.7	21.8	21.5	22.1	12.7	12.5	12.8	6.9	7.1	6.7	6.6	6.7	6.5
Pregnancy, childbirth and the puerperium (O00–O99)	0.4	...	0.8	0.3	...	0.6	0.9	...	1.8	*	...	*	0.3	...	0.5	0.3	...	0.7
Certain conditions originating in the perinatal period (P00–P96)	3.6	4.0	3.1	2.2	2.5	2.0	9.0	10.4	7.6	4.2	5.4	3.1	2.7	3.3	2.2	4.2	4.6	3.7
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	3.1	3.3	3.0	3.1	3.2	3.0	3.9	4.3	3.5	4.4	4.1	4.7	1.6	1.7	1.5	3.1	3.3	3.0

See footnotes at end of table.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	10.3	10.0	10.7	12.6	11.6	13.7	10.6	11.5	9.8	10.1	11.7	8.5	3.2	3.4	2.9	4.1	4.9	3.3
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	49.9	65.3	35.1	60.4	76.6	44.7	42.9	61.7	25.7	77.5	105.5	50.4	15.9	20.7	11.5	27.3	39.7	14.8
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)	12.5	18.0	7.1	13.1	18.9	7.6	14.0	21.2	7.4	27.3	37.7	17.2	5.2	6.7	3.8	10.6	15.3	5.8
Falls (W00–W19)	10.7	10.9	10.5	14.9	14.6	15.1	3.8	4.7	2.9	7.2	9.2	5.3	4.6	4.9	4.3	3.4	4.3	2.6
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)	1.2	1.8	0.5	1.2	1.8	0.6	1.4	2.5	0.5	2.7	3.6	1.8	0.9	1.5	0.4	0.9	1.5	0.3
Accidental hanging, strangulation, and suffocation (W75–W84)	2.0	2.4	1.7	2.4	2.8	2.0	2.5	3.0	2.1	2.6	3.6	1.6	0.8	0.9	0.7	0.8	0.9	0.7
Accidental exposure to smoke, fire and flames (X00–X09)	0.8	1.0	0.7	1.0	1.1	0.8	1.3	1.6	1.0	1.4	1.9	*	0.1	*	*	0.3	0.4	0.2
Accidental poisoning and exposure to noxious substances (X40–X49)	18.1	25.0	11.3	22.2	30.1	14.4	16.0	23.1	9.4	27.6	36.2	19.2	3.0	4.7	1.4	9.1	14.0	4.2
Intentional self-harm (suicide) (*U03, X60–X84,Y87.0) ⁵	13.9	21.8	6.2	18.1	28.3	8.2	6.4	10.6	2.5	21.4	33.2	10.1	7.0	10.5	3.8	6.4	10.1	2.5
Intentional self-harm (suicide) by poisoning (X60–X69)	2.1	2.1	2.1	2.9	2.9	2.9	0.7	0.7	0.6	1.8	1.7	1.9	0.8	0.9	0.7	0.7	0.7	0.7
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	3.6	5.7	1.6	4.2	6.6	1.8	1.7	2.8	0.7	11.0	16.5	5.7	3.2	4.5	2.0	2.7	4.3	1.0
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	7.1	12.4	2.0	9.8	16.9	2.8	3.2	5.8	0.8	7.4	12.9	2.0	1.7	3.2	0.4	2.3	4.0	0.5
Assault (homicide) (*U01–*U02, X85–Y09,Y87.1) ⁵	6.0	9.7	2.4	2.8	3.8	1.8	23.4	42.3	6.0	10.3	15.7	5.1	1.9	2.6	1.2	5.5	9.2	1.9
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ⁵	4.5	7.7	1.3	1.7	2.4	0.9	19.8	37.1	3.9	5.6	8.9	2.4	1.2	1.8	0.6	4.0	6.9	1.0

See footnotes at end of table.

Table 9. Death rates for selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Legal intervention (Y35,Y89.0)	0.2	0.3	0.0	0.2	0.3	*	0.3	0.6	*	0.7	*	*	*	*	*	0.2	0.3	*
Complications of medical and surgical care (Y40–Y84,Y88)	1.0	1.0	1.0	1.2	1.2	1.1	1.2	1.1	1.3	1.1	*	*	0.4	0.5	0.3	0.4	0.4	0.4
Drug-induced deaths ⁶	20.8	27.6	14.2	25.9	33.5	18.5	18.3	26.2	11.1	25.6	30.1	21.1	3.5	5.2	2.0	9.6	14.2	5.0
Alcohol-induced deaths ⁶	10.8	15.9	5.9	12.6	18.1	7.2	7.0	10.5	3.8	45.2	58.7	32.2	2.1	3.5	0.9	8.2	13.1	3.2
Injury by firearms ⁶	12.0	20.7	3.5	11.9	20.0	3.9	23.7	44.1	4.9	14.4	24.3	4.9	3.0	5.2	1.0	6.6	11.4	1.6

* Figure does not meet standards of reliability or precision; see Technical Notes.

... Category not applicable.

0.0 Quantity more than zero but less than 0.05.

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

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

³Includes Aleut and Eskimo persons.

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

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2016

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All causes.....	728.8	861.0	617.5	749.0	879.5	637.2	882.8	1,081.2	734.1	800.3	954.0	668.0	394.4	466.6	337.4	525.8	631.8	436.4
Enterocolitis due to <i>Clostridium difficile</i> . (A04.7)	1.8	1.7	1.8	1.8	1.8	1.9	1.7	1.8	1.7	2.6	2.4	2.9	0.8	0.9	0.6	1.4	1.3	1.4
Septicemia..... (A40–A41)	10.7	12.0	9.7	10.4	11.7	9.4	18.3	20.6	16.7	12.8	12.9	12.9	4.6	5.3	3.9	7.8	8.9	7.0
Viral hepatitis..... (B15–B19)	1.6	2.2	1.1	1.5	2.0	1.0	2.0	2.9	1.3	3.3	3.4	3.2	1.4	1.8	1.0	2.3	3.1	1.5
Human immunodeficiency virus (HIV) disease..... (B20–B24)	1.8	2.7	0.9	0.8	1.4	0.3	7.5	10.6	4.9	1.5	2.1	*	0.4	0.7	*	1.7	2.8	0.7
Malignant neoplasms..... (C00–C97)	155.8	185.4	134.0	160.8	190.5	138.5	182.9	226.4	155.9	135.2	160.0	116.2	97.9	115.2	85.3	110.0	132.7	94.0
Malignant neoplasms of lip, oral cavity and pharynx..... (C00–C14)	2.6	4.0	1.4	2.7	4.2	1.5	2.7	4.6	1.3	2.4	3.9	*	2.1	3.2	1.3	1.5	2.4	0.8
Malignant neoplasm of esophagus..... (C15)	3.9	7.0	1.5	4.5	7.9	1.6	3.2	5.4	1.6	3.0	5.4	*	1.5	2.6	0.7	1.9	3.5	0.7
Malignant neoplasm of stomach..... (C16)	3.0	4.0	2.2	2.3	3.1	1.6	5.4	8.1	3.6	4.2	5.2	3.5	5.4	7.1	4.1	4.9	5.9	4.1
Malignant neoplasms of colon, rectum and anus..... (C18–C21)	13.9	16.4	11.8	13.9	16.3	11.9	19.0	23.6	15.8	13.3	16.0	11.1	9.4	10.8	8.3	10.8	13.6	8.6
Malignant neoplasms of liver and intrahepatic bile ducts..... (C22)	6.7	9.7	4.1	5.9	8.4	3.6	8.8	13.5	5.3	9.5	13.0	6.5	8.8	13.3	5.3	9.5	13.7	5.9
Malignant neoplasm of pancreas..... (C25)	11.1	12.7	9.7	11.2	13.0	9.7	13.6	15.2	12.5	9.6	10.2	9.1	7.6	8.3	6.9	8.5	9.5	7.6
Malignant neoplasms of trachea, bronchus and lung..... (C33–C34)	38.4	46.7	31.9	41.6	49.4	35.4	41.2	56.5	30.7	32.7	39.3	27.5	21.6	28.5	16.5	16.6	22.7	12.1
Malignant melanoma of skin..... (C43)	2.2	3.2	1.3	2.8	4.1	1.7	0.3	0.3	0.2	*	*	*	0.3	0.4	0.3	0.6	0.8	0.4
Malignant neoplasm of breast..... (C50)	11.1	0.3	20.1	11.0	0.3	20.1	16.4	0.4	28.2	8.6	*	15.5	6.1	*	10.9	7.6	0.2	13.9
Malignant neoplasm of cervix uteri..... (C53)	1.2	...	2.2	1.1	...	2.1	1.8	...	3.2	1.4	...	2.7	0.9	...	1.6	1.4	...	2.7
Malignant neoplasm of ovary..... (C56)	3.7	...	6.8	3.9	...	7.2	3.4	...	5.8	3.3	...	6.0	2.7	...	4.9	2.7	...	4.9
Malignant neoplasm of prostate..... (C61)	7.9	19.3	...	7.6	18.2	...	14.5	38.9	...	7.0	16.7	...	3.5	8.5	...	6.3	15.5	...
Malignant neoplasms of kidney and renal pelvis..... (C64–C65)	3.6	5.2	2.3	3.7	5.3	2.3	3.5	5.4	2.2	4.6	6.8	2.7	1.8	2.7	1.1	3.4	5.0	2.1
Malignant neoplasm of bladder..... (C67)	4.4	7.5	2.2	4.8	8.4	2.3	3.5	5.3	2.5	2.6	4.8	*	1.7	3.0	0.9	2.2	3.6	1.2
Malignant neoplasms of meninges, brain and other parts of central nervous system..... (C70–C72)	4.5	5.5	3.6	5.2	6.3	4.2	2.7	3.3	2.2	2.3	2.6	2.1	2.4	2.7	2.1	3.0	3.5	2.7
Non-Hodgkin's lymphoma..... (C82–C85)	5.4	6.9	4.2	5.7	7.3	4.4	3.9	4.9	3.2	3.8	5.1	2.9	3.8	4.7	3.0	4.6	5.9	3.7
Multiple myeloma and immunoproliferative neoplasms..... (C88,C90)	3.3	4.2	2.7	3.1	4.0	2.4	6.2	7.6	5.3	2.5	3.1	2.1	1.6	2.2	1.1	2.9	3.7	2.2
Leukemia..... (C91–C95)	6.2	8.2	4.7	6.6	8.7	4.9	5.5	6.9	4.5	3.0	4.1	2.1	3.4	4.4	2.6	4.4	5.6	3.6
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior..... (D00–D48)	4.2	5.3	3.4	4.5	5.6	3.6	3.8	4.7	3.2	2.8	3.5	2.3	2.6	3.1	2.2	2.8	3.4	2.4
Anemias..... (D50–D64)	1.4	1.5	1.4	1.2	1.3	1.2	2.9	3.0	2.9	1.3	*	*	0.8	0.8	0.7	0.9	1.0	0.8
Diabetes mellitus..... (E10–E14)	21.0	26.0	16.9	18.6	23.5	14.4	37.8	44.8	32.7	46.0	52.2	40.6	15.6	18.8	13.0	24.7	29.6	20.7
Nutritional deficiencies..... (E40–E64)	1.6	1.6	1.7	1.7	1.6	1.7	2.2	2.5	2.0	2.4	2.5	2.3	0.8	0.8	0.9	1.2	1.1	1.2

See footnotes at end of table.

Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Obesity (E66)	2.2	2.3	2.0	2.1	2.3	2.0	3.5	3.6	3.4	3.0	3.6	2.4	0.3	0.4	0.3	1.3	1.4	1.2
Parkinson's disease (G20–G21)	8.0	12.0	5.3	8.8	13.1	5.8	4.3	6.9	2.8	4.3	6.9	2.3	4.7	6.8	3.3	5.8	8.1	4.2
Alzheimer's disease (G30)	30.3	24.3	33.9	31.8	25.4	35.8	28.2	23.4	30.3	21.5	17.1	24.3	15.1	11.7	17.2	24.3	19.7	27.0
Major cardiovascular diseases (I00–I78)	218.2	263.6	180.6	219.4	265.6	180.6	287.8	350.9	240.6	196.5	241.7	159.6	127.8	150.8	109.3	159.9	192.2	133.3
Diseases of heart (I00–I09,I11,I13,I20–I51)	165.5	209.1	130.4	168.7	213.9	131.7	210.7	265.0	170.8	150.9	196.4	114.6	85.5	106.9	68.5	115.8	144.6	92.6
Essential hypertension and hypertensive renal disease (I10,I12,I15)	8.6	9.0	8.2	7.7	7.9	7.4	16.7	19.2	14.7	9.1	8.1	9.6	7.8	7.8	7.7	7.8	8.6	7.1
Cerebrovascular diseases (I60–I69)	37.3	37.5	36.5	36.1	35.7	35.8	51.9	56.7	47.8	30.7	31.2	30.1	31.0	31.6	30.2	32.1	34.0	30.1
Atherosclerosis (I70)	1.5	1.6	1.4	1.6	1.7	1.5	1.6	1.7	1.5	1.3	*	*	0.7	0.8	0.6	0.9	0.9	0.9
Aortic aneurysm and dissection (I71)	2.6	3.5	1.9	2.7	3.7	1.9	2.8	3.7	2.1	1.9	2.9	*	1.8	2.5	1.3	1.4	2.0	1.0
Influenza and pneumonia (J09–J18)	13.5	15.9	11.8	13.5	15.6	12.0	15.4	19.3	13.0	16.9	17.3	16.3	13.0	16.7	10.4	11.1	13.1	9.6
Chronic lower respiratory diseases (J40–J47)	40.6	45.1	37.4	45.8	49.5	43.3	30.0	39.0	24.6	38.5	45.5	33.6	11.7	16.9	8.1	17.1	21.7	13.9
Pneumonitis due to solids and liquids (J69)	5.2	7.0	3.9	5.4	7.4	4.1	5.3	7.3	4.1	5.2	6.4	4.3	2.9	4.4	2.0	3.1	4.2	2.4
Chronic liver disease and cirrhosis (K70,K73–K74)	10.7	14.3	7.5	11.0	14.3	8.0	7.3	10.3	4.9	39.0	44.4	34.0	3.3	4.4	2.5	14.7	20.7	9.1
Alcoholic liver disease (K70)	5.9	8.4	3.6	6.1	8.4	4.0	3.7	5.4	2.3	29.2	34.7	24.1	1.4	2.3	0.6	7.7	12.9	3.1
Cholelithiasis and other disorders of gallbladder (K80–K82)	1.0	1.2	0.9	1.0	1.2	0.8	1.1	1.0	1.1	1.5	*	*	0.9	0.9	0.8	1.0	1.1	1.0
Nephritis, nephrotic syndrome and nephrosis (N00–N07,N17–N19,N25–N27)	13.1	15.9	11.2	11.9	14.8	9.9	25.8	30.2	22.9	15.4	16.9	14.2	8.1	9.5	7.0	11.4	13.5	9.9
Pregnancy, childbirth and the puerperium (O00–O99)	0.4	...	0.8	0.3	...	0.7	1.0	...	1.9	*	...	*	0.3	...	0.5	0.3	...	0.7
Certain conditions originating in the perinatal period (P00–P96)	4.0	4.4	3.6	3.0	3.3	2.8	8.6	9.3	7.7	4.0	4.9	3.0	3.2	3.6	2.8	3.2	3.6	2.9
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	3.2	3.3	3.1	3.3	3.4	3.1	3.7	4.1	3.5	4.3	3.9	4.7	1.8	1.9	1.7	2.7	2.9	2.6
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	9.2	10.0	8.2	9.5	10.1	8.7	11.7	13.6	10.0	11.2	13.1	9.2	3.6	4.1	3.0	5.5	6.9	4.2
Accidents (unintentional injuries) (V01–X59,Y85–Y86)	47.4	65.0	30.8	53.9	72.5	36.0	44.2	66.0	25.8	81.5	112.0	53.1	16.8	22.7	11.6	31.4	45.9	17.3
Motor vehicle accidents (V02–V04,V09.0, V09.2,V12–V14,V19.0–V19.2, V19.4–V19.6,V20–V79,V80.3–V80.5, V81.0–V81.1,V82.0–V82.1,V83–V86, V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	12.1	17.6	6.9	12.4	17.9	7.1	14.1	21.8	7.4	27.8	38.6	17.6	5.2	6.9	3.7	11.0	16.1	6.1
Falls (W00–W19)	9.1	11.2	7.5	10.1	12.0	8.5	4.5	6.7	3.0	8.9	11.9	6.3	5.3	6.4	4.4	5.8	7.9	4.1

See footnotes at end of table.

Table 10. Age-adjusted death rates for selected causes, by race and Hispanic origin and sex: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Total ¹			Non-Hispanic white ²			Non-Hispanic black ²			Non-Hispanic American Indian or Alaska Native ^{2,3}			Non-Hispanic Asian or Pacific Islander ^{2,4}			Hispanic		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Accidental discharge of firearms (W32–W34)	0.2	0.2	0.0	0.2	0.2	0.1	0.3	0.4	*	*	*	*	*	*	*	0.1	0.2	*
Accidental drowning and submersion (W65–W74)	1.2	1.8	0.5	1.2	1.8	0.6	1.5	2.4	0.6	2.8	3.8	1.9	0.9	1.5	0.4	0.9	1.5	0.2
Accidental hanging, strangulation, and suffocation (W75–W84)	1.9	2.4	1.4	1.9	2.5	1.5	2.7	3.6	2.1	3.0	4.5	1.7	0.9	1.2	0.7	1.0	1.3	0.8
Accidental exposure to smoke, fire and flames (X00–X09)	0.8	1.0	0.6	0.8	1.0	0.7	1.3	1.8	1.0	1.5	1.9	*	0.1	*	*	0.4	0.5	0.3
Accidental poisoning and exposure to noxious substances (X40–X49)	18.2	25.1	11.4	23.0	31.0	14.9	15.9	23.4	9.4	28.2	37.0	19.8	2.8	4.4	1.3	9.5	14.5	4.4
Intentional self-harm (suicide) (*U03,X60–X84Y87.0) ⁵	13.5	21.4	6.0	17.0	26.6	7.9	6.3	10.6	2.4	21.4	33.1	10.3	6.8	10.2	3.7	6.7	10.9	2.6
Intentional self-harm (suicide) by poisoning (X60–X69)	2.0	2.0	1.9	2.6	2.6	2.6	0.7	0.7	0.6	2.0	1.9	2.0	0.8	0.9	0.7	0.7	0.7	0.7
Intentional self-harm (suicide) by hanging, strangulation and suffocation (X70)	3.6	5.7	1.6	4.3	6.7	1.9	1.7	2.8	0.7	10.8	16.0	5.7	3.1	4.4	1.9	2.7	4.5	0.9
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	6.8	12.0	1.9	8.8	15.4	2.7	3.2	5.8	0.8	7.4	13.2	2.1	1.7	3.1	0.4	2.4	4.5	0.5
Assault (homicide) (*U01–*U02, X85–Y09,Y87.1) ⁵	6.2	9.9	2.5	2.9	3.9	1.8	22.8	40.4	6.0	10.4	15.8	5.2	1.8	2.5	1.1	5.3	8.6	1.8
Assault (homicide) by discharge of firearms (*U01.4,X93–X95) ⁵	4.6	7.8	1.4	1.7	2.5	1.0	19.2	35.2	3.8	5.7	9.0	2.4	1.1	1.7	0.6	3.7	6.3	1.0
Legal intervention (Y35,Y89.0)	0.2	0.3	0.0	0.2	0.3	*	0.3	0.5	*	0.7	*	*	*	*	*	0.1	0.3	*
Complications of medical and surgical care (Y40–Y84,Y88)	0.9	1.0	0.8	0.9	1.0	0.7	1.3	1.4	1.3	1.2	*	*	0.4	0.5	0.3	0.6	0.7	0.5
Drug-induced deaths ⁶	20.8	27.6	14.2	26.6	34.3	18.7	18.2	26.6	10.9	26.3	30.6	21.9	3.3	5.0	1.8	10.1	14.8	5.3
Alcohol-induced deaths ⁶	9.5	14.1	5.2	10.1	14.4	6.0	6.8	10.9	3.6	46.4	61.3	32.7	2.0	3.5	0.8	10.1	17.2	3.7
Injury by firearms ⁶	11.8	20.5	3.4	11.0	18.7	3.8	23.0	42.2	4.8	14.4	24.4	4.9	2.9	4.9	1.0	6.4	11.2	1.6

* Figure does not meet standards of reliability or precision; see Technical Notes.

... Category not applicable.

0.0 Quantity more than zero but less than 0.05.

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

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

³Includes Aleut and Eskimo persons.

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

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 11. Number of deaths, death rates, and age-adjusted death rates for injury deaths, by mechanism and intent of death for all injury death and the leading causes of injury death: United States, 2016

[Totals for selected causes of death may differ from those shown in other tables that use standard mortality tabulation lists; see Technical Notes. 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, 2016; see Technical Notes. Numbers in brackets [] apply to the code or range of codes preceding them. The asterisks (*) preceding cause-of-death codes indicate that they are not part of the *International Classification of Diseases, Tenth Revision (ICD-10)*; see Technical Notes]

Mechanism and intent of death (based on ICD-10)	Number	Rate	Age-adjusted rate ¹
All injury. (*U01-*U03,V01-Y36,Y85-Y87,Y89)	231,991	71.8	69.0
Unintentional (V01-X59,Y85-Y86)	161,374	49.9	47.4
Suicide (*U03,X60-X84,Y87.0)	44,965	13.9	13.5
Homicide (*U01-*U02,X85-Y09,Y87.1)	19,362	6.0	6.2
Undetermined. (Y10-Y34,Y87.2,Y89.9)	5,723	1.8	1.7
Legal intervention/war (Y35-Y36,Y89[.0,.1])	567	0.2	0.2
Poisoning (*U01[.6-.7],X40-X49,X60-X69,X85-X90,Y10-Y19,Y35.2)	68,995	21.4	21.4
Unintentional (X40-X49)	58,335	18.1	18.2
Suicide (X60-X69)	6,698	2.1	2.0
Homicide (*U01[.6-.7],X85-X90)	135	0.0	0.0
Undetermined. (Y10-Y19)	3,827	1.2	1.2
Legal intervention/war (Y35.2)	-	*	*
Motor vehicle traffic (V02-V04[.1,.9],V09.2,V12-V14[.3-.9],V19[.4-.6],V20-V28[.3-.9],V29-V79[.4-.9],V80[.3-.5],V81.1,V82.1,V83-V86[.0-.3],V87[.0-.8],V89.2) ²	38,748	12.0	11.7
Occupant (V30-V79[.4-.9],V83-V86[.0-.3]) ²	9,322	2.9	2.8
Motorcyclist (V20-V28[.3-.9],V29[.4-.9]) ²	4,780	1.5	1.4
Pedal cyclist (V12-V14[.3-.9],V19[.4-.6]) ²	704	0.2	0.2
Pedestrian (V02-V04[.1,.9],V09.2) ²	6,348	2.0	1.9
Other (V80[.3-.5],V81.1,V82.1) ²	10	*	*
Unspecified. (V87[.0-.8],V89.2) ²	17,584	5.4	5.3
Firearm (*U01.4,W32-W34,X72-X74,X93-X95,Y22-Y24,Y35.0)	38,658	12.0	11.8
Unintentional (W32-W34)	495	0.2	0.2
Suicide (X72-X74)	22,938	7.1	6.8
Homicide (*U01.4,X93-X95)	14,415	4.5	4.6
Undetermined. (Y22-Y24)	300	0.1	0.1
Legal intervention/war (Y35.0)	510	0.2	0.2
Fall (W00-W19,X80,Y01,Y30)	35,862	11.1	9.5
Unintentional (W00-W19)	34,673	10.7	9.1
Suicide (X80)	1,107	0.3	0.3
Homicide (Y01)	5	*	*
Undetermined. (Y30)	77	0.0	0.0

0.0 Quantity more than zero but less than 0.05.

- Quantity zero.

* Figure does not meet standards of reliability or precision; see Technical Notes.

¹For method of computation, see Technical Notes.

²Intent of death is unintentional.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 12. Number of deaths, death rates, and age-adjusted death rates for major causes of death: United States, each state, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, 2016

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

Area	All causes			Malignant neoplasms (C00-C97)			Diseases of heart (I00-I09,I11,I13,I20-I51)			Accidents (unintentional injuries) (V01-X59,Y85-Y86)		
	Number	Rate	Age- adjusted rate ¹	Number	Rate	Age- adjusted rate ¹	Number	Rate	Age- adjusted rate ¹	Number	Rate	Age- adjusted rate ¹
United States ²	2,744,248	849.3	728.8	598,038	185.1	155.8	635,260	196.6	165.5	161,374	49.9	47.4
Alabama	52,466	1,078.8	920.4	10,419	214.2	174.0	12,832	263.9	222.5	2,755	56.6	55.5
Alaska	4,494	605.7	745.6	995	134.1	158.7	831	112.0	141.0	439	59.2	63.1
Arizona	56,645	817.3	675.8	11,876	171.3	136.8	11,957	172.5	138.9	4,010	57.9	54.2
Arkansas	31,756	1,062.7	893.2	6,612	221.3	178.8	8,090	270.7	223.7	1,604	53.7	51.8
California	262,240	668.1	616.9	59,515	151.6	139.7	61,573	156.9	143.1	13,213	33.7	32.0
Colorado	37,530	677.4	669.5	7,928	143.1	137.1	7,277	131.3	129.8	2,880	52.0	51.2
Connecticut	30,543	854.0	654.0	6,696	187.2	144.9	7,051	197.2	144.3	1,978	55.3	50.3
Delaware	8,874	932.1	746.2	2,124	223.1	170.8	1,974	207.3	163.2	516	54.2	52.4
District of Columbia	5,037	739.5	766.0	1,044	153.3	160.1	1,375	201.9	211.7	401	58.9	58.3
Florida	197,313	957.3	666.6	44,266	214.8	146.9	45,659	221.5	146.2	12,561	60.9	54.9
Georgia	81,428	789.8	800.4	17,184	166.7	160.2	18,143	176.0	179.0	4,701	45.6	45.8
Hawaii	10,913	763.9	572.0	2,401	168.1	128.7	2,488	174.2	127.0	577	40.4	35.3
Idaho	13,366	794.1	725.0	2,884	171.3	150.9	2,969	176.4	160.0	849	50.4	49.5
Illinois	107,020	836.0	724.3	24,389	190.5	163.5	25,013	195.4	165.7	5,508	43.0	41.0
Indiana	63,473	956.9	835.0	13,424	202.4	172.5	13,952	210.3	180.6	3,496	52.7	51.6
Iowa	29,538	942.3	721.1	6,432	205.2	159.8	6,937	221.3	162.8	1,608	51.3	45.8
Kansas	26,245	902.7	756.8	5,484	188.6	158.6	5,672	195.1	159.2	1,444	49.7	45.7
Kentucky	47,827	1,077.9	938.4	10,363	233.6	193.8	10,519	237.1	203.0	3,194	72.0	71.0
Louisiana	44,306	946.4	870.5	9,149	195.4	171.9	10,943	233.7	213.1	2,710	57.9	57.4
Maine	14,182	1,065.1	759.0	3,275	246.0	168.9	2,907	218.3	149.5	909	68.3	62.4
Maryland	48,824	811.5	717.6	10,911	181.4	156.5	11,390	189.3	164.3	2,271	37.7	35.7
Massachusetts	56,961	836.2	669.0	12,717	186.7	150.2	11,921	175.0	134.8	3,831	56.2	52.8
Michigan	96,231	969.3	785.4	20,870	210.2	166.4	25,304	254.9	200.6	5,313	53.5	50.5
Minnesota	43,078	780.4	648.1	9,857	178.6	148.6	7,825	141.8	114.9	2,697	48.9	43.8
Mississippi	31,741	1,062.0	948.9	6,568	219.8	187.7	7,865	263.2	233.1	1,803	60.3	59.2
Missouri	59,873	982.7	808.2	12,696	208.4	167.0	14,579	239.3	192.1	3,625	59.5	57.0
Montana	9,905	950.1	743.2	2,031	194.8	145.9	2,138	205.1	154.4	626	60.0	54.1
Nebraska	16,217	850.3	707.0	3,477	182.3	153.6	3,322	174.2	140.3	772	40.5	37.0
Nevada	23,902	813.0	762.6	5,214	177.3	157.3	6,457	219.6	205.9	1,395	47.4	46.0
New Hampshire	12,203	914.2	721.5	2,875	215.4	164.1	2,631	197.1	151.1	924	69.2	66.6
New Jersey	73,155	817.9	668.5	16,377	183.1	149.7	18,597	207.9	164.7	3,839	42.9	40.8
New Mexico	18,365	882.5	753.4	3,560	171.1	138.8	3,800	182.6	150.6	1,487	71.5	69.5
New York	154,358	781.7	640.7	35,368	179.1	147.5	44,076	223.2	177.8	7,354	37.2	34.2
North Carolina	90,465	891.6	782.4	19,523	192.4	161.6	18,266	180.0	155.8	5,476	54.0	52.2
North Dakota	6,242	823.5	688.4	1,253	165.3	142.7	1,338	176.5	140.9	371	48.9	45.4
Ohio	119,572	1,029.5	832.3	25,509	219.6	173.4	27,410	236.0	185.1	7,999	68.9	66.6
Oklahoma	39,276	1,001.0	888.4	8,115	206.8	177.8	10,209	260.2	228.2	2,592	66.1	64.1
Oregon	35,778	874.0	705.9	8,078	197.3	155.9	6,968	170.2	135.0	2,105	51.4	46.0
Pennsylvania	133,040	1,040.7	770.1	28,492	222.9	164.7	31,990	250.2	176.2	8,410	65.8	61.8
Rhode Island	9,735	921.5	690.1	2,171	205.5	158.0	2,256	213.6	152.4	675	63.9	56.6
South Carolina	48,130	970.1	829.8	10,356	208.7	167.7	10,195	205.5	173.8	3,012	60.7	58.9
South Dakota	7,845	906.5	719.5	1,694	195.7	156.7	1,729	199.8	153.4	505	58.4	53.4
Tennessee	67,857	1,020.2	886.3	14,450	217.3	179.9	15,429	232.0	198.8	4,238	63.7	61.1
Texas	191,966	689.0	730.6	40,195	144.3	148.5	43,772	157.1	167.7	10,536	37.8	38.6
Utah	17,913	587.1	714.7	3,125	102.4	122.4	3,636	119.2	150.0	1,211	39.7	43.8
Vermont	5,909	946.1	712.8	1,356	217.1	158.4	1,366	218.7	158.8	372	59.6	54.8
Virginia	66,473	790.2	715.5	15,027	178.6	156.1	14,124	167.9	150.7	3,710	44.1	42.4
Washington	54,769	751.5	672.0	12,594	172.8	150.9	11,161	153.1	136.1	3,221	44.2	41.4
West Virginia	22,732	1,241.4	943.3	4,659	254.4	182.2	4,767	260.3	191.0	1,705	93.1	89.7
Wisconsin	51,815	896.7	717.9	11,498	199.0	158.0	11,526	199.5	154.9	3,575	61.9	55.6
Wyoming	4,722	806.5	720.9	962	164.3	140.9	1,051	179.5	157.8	371	63.4	61.9
Puerto Rico	29,338	860.0	637.9	5,124	150.2	109.2	5,345	156.7	111.0	837	24.5	20.6
Virgin Islands	632	587.9	575.1	131	121.8	109.2	144	133.9	124.5	25	23.3	23.6
Guam	998	598.0	871.4	185	110.8	157.0	354	212.1	330.1	28	16.8	19.1
American Samoa	278	532.9	971.6	44	84.3	149.6	48	92.0	165.8	13	*	*
Northern Marianas	220	418.9	840.7	39	74.3	118.0	52	99.0	182.0	12	*	*

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, Virgin Islands, Guam, American Samoa, and Northern Marianas, 2016—Con.

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

Area	Motor vehicle accidents ³			Accidental poisoning and exposure to noxious substances (X40–X49)			Intentional self-harm (suicide) (*U03,X60–X84,Y87.0)			Assault (homicide) (*U01–*U02,X85–Y09,Y87.1)		
	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹
United States ²	40,327	12.5	12.1	58,335	18.1	18.2	44,965	13.9	13.5	19,362	6.0	6.2
Alabama	1,158	23.8	23.9	726	14.9	15.6	788	16.2	15.7	544	11.2	11.8
Alaska	97	13.1	12.9	129	17.4	16.9	193	26.0	25.8	54	7.3	7.3
Arizona	993	14.3	14.1	1,299	18.7	19.2	1,271	18.3	17.7	420	6.1	6.3
Arkansas	634	21.2	20.8	345	11.5	12.1	555	18.6	18.2	248	8.3	8.7
California	4,155	10.6	10.2	4,324	11.0	10.5	4,294	10.9	10.5	2,074	5.3	5.3
Colorado	635	11.5	11.1	848	15.3	15.0	1,168	21.1	20.5	235	4.2	4.3
Connecticut	305	8.5	8.1	928	25.9	26.4	397	11.1	10.1	88	2.5	2.7
Delaware	117	12.3	12.0	272	28.6	29.5	119	12.5	11.5	63	6.6	7.0
District of Columbia	34	5.0	4.8	253	37.1	36.3	40	5.9	5.2	127	18.6	16.8
Florida	3,239	15.7	15.2	4,417	21.4	22.5	3,143	15.2	14.0	1,294	6.3	6.8
Georgia	1,628	15.8	15.5	1,336	13.0	12.8	1,409	13.7	13.3	806	7.8	7.9
Hawaii	135	9.5	9.1	175	12.3	11.6	174	12.2	12.1	39	2.7	2.8
Idaho	271	16.1	16.2	189	11.2	11.8	351	20.9	21.4	30	1.8	1.9
Illinois	1,177	9.2	8.9	2,282	17.8	17.9	1,415	11.1	10.7	1,157	9.0	9.2
Indiana	846	12.8	12.4	1,412	21.3	22.2	1,034	15.6	15.4	480	7.2	7.6
Iowa	431	13.7	13.5	289	9.2	9.7	451	14.4	14.6	85	2.7	2.8
Kansas	432	14.9	14.4	272	9.4	9.7	514	17.7	17.9	147	5.1	5.3
Kentucky	874	19.7	19.2	1,356	30.6	32.2	756	17.0	16.8	302	6.8	7.2
Louisiana	835	17.8	17.8	934	20.0	20.5	677	14.5	14.2	648	13.8	14.3
Maine	176	13.2	12.8	324	24.3	26.8	226	17.0	15.9	19	*	*
Maryland	568	9.4	9.3	621	10.3	10.1	586	9.7	9.4	579	9.6	10.1
Massachusetts	464	6.8	6.3	2,185	32.1	32.5	631	9.3	8.8	137	2.0	2.1
Michigan	986	9.9	9.6	2,056	20.7	21.5	1,364	13.7	13.3	624	6.3	6.7
Minnesota	477	8.6	8.3	650	11.8	11.9	745	13.5	13.2	129	2.3	2.4
Mississippi	785	26.3	26.2	334	11.2	11.5	383	12.8	12.7	345	11.5	12.1
Missouri	1,004	16.5	16.2	1,227	20.1	21.3	1,133	18.6	18.4	570	9.4	9.9
Montana	199	19.1	18.5	102	9.8	10.1	267	25.6	25.9	42	4.0	4.3
Nebraska	216	11.3	11.2	122	6.4	6.6	246	12.9	13.1	60	3.1	3.3
Nevada	359	12.2	11.8	568	19.3	18.6	650	22.1	21.4	211	7.2	7.4
New Hampshire	132	9.9	9.2	448	33.6	36.9	244	18.3	17.2	18	*	*
New Jersey	628	7.0	6.8	2,014	22.5	22.9	687	7.7	7.2	395	4.4	4.6
New Mexico	417	20.0	20.1	501	24.1	25.4	471	22.6	22.5	185	8.9	9.4
New York	1,145	5.8	5.4	3,412	17.3	16.9	1,679	8.5	8.1	696	3.5	3.6
North Carolina	1,541	15.2	14.9	1,811	17.8	18.3	1,373	13.5	13.0	735	7.2	7.4
North Dakota	126	16.6	16.5	73	9.6	10.2	140	18.5	19.0	17	*	*
Ohio	1,324	11.4	11.0	4,156	35.8	37.7	1,707	14.7	14.2	721	6.2	6.5
Oklahoma	720	18.4	18.1	779	19.9	20.6	822	21.0	21.0	322	8.2	8.6
Oregon	525	12.8	12.2	455	11.1	10.9	772	18.9	17.8	129	3.2	3.3
Pennsylvania	1,283	10.0	9.7	4,402	34.4	36.2	1,970	15.4	14.7	723	5.7	6.0
Rhode Island	58	5.5	5.2	332	31.4	31.3	126	11.9	11.2	25	2.4	2.3
South Carolina	1,074	21.6	21.5	844	17.0	17.5	815	16.4	15.7	426	8.6	9.0
South Dakota	137	15.8	16.1	69	8.0	8.5	163	18.8	20.2	38	4.4	4.7
Tennessee	1,099	16.5	16.1	1,528	23.0	23.1	1,111	16.7	16.3	563	8.5	8.8
Texas	4,022	14.4	14.4	2,649	9.5	9.5	3,488	12.5	12.6	1,669	6.0	6.0
Utah	285	9.3	9.8	494	16.2	17.2	620	20.3	21.8	80	2.6	2.5
Vermont	67	10.7	10.4	104	16.7	19.2	118	18.9	17.3	11	*	*
Virginia	834	9.9	9.6	1,336	15.9	15.9	1,166	13.9	13.2	455	5.4	5.5
Washington	620	8.5	8.2	1,001	13.7	13.2	1,141	15.7	14.9	216	3.0	2.9
West Virginia	299	16.3	15.6	848	46.3	49.9	362	19.8	19.3	108	5.9	6.3
Wisconsin	655	11.3	10.9	1,009	17.5	18.2	866	15.0	14.7	256	4.4	4.8
Wyoming	106	18.1	17.7	95	16.2	16.8	144	24.6	25.2	17	*	*

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, Virgin Islands, Guam, American Samoa, and Northern Marianas, 2016—Con.

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

Area	Motor vehicle accidents ³			Accidental poisoning and exposure to noxious substances (X40–X49)			Intentional self-harm (suicide) (*U03,X60–X84,Y87.0)			Assault (homicide) (*U01–*U02,X85–Y09,Y87.1)		
	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹	Number	Rate	Age-adjusted rate ¹
Puerto Rico	305	8.9	8.4	44	1.3	1.2	188	5.5	5.1	680	19.9	21.5
Virgin Islands	9	*	*	1	*	*	2	*	*	41	38.1	44.7
Guam	12	*	*	–	*	*	47	28.2	29.1	2	*	*
American Samoa	1	*	*	1	*	*	3	*	*	2	*	*
Northern Marianas	4	*	*	–	*	*	7	*	*	1	*	*

* Figure does not meet standards of reliability or precision; see Technical Notes.

– Quantity zero.

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

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000–2016

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

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

Table 13. Infant, neonatal, and postneonatal mortality rates, by race and Hispanic origin and sex: United States, 1940, 1950, 1960, 1970, 1980, 1990, 2000–2016—Con.

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

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

--- Data not available.

¹Includes races and origins not shown separately.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 14. Number of infant deaths and infant mortality rates for selected causes, by race and Hispanic origin: United States, 2016

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Number ¹				Rate			
	Total ²	Non- Hispanic white ³	Non- Hispanic black ³	Hispanic	Total ²	Non- Hispanic white ³	Non- Hispanic black ³	Hispanic
All causes	23,161	10,046	6,863	4,817	587.0	479.7	1,175.6	524.5
Certain intestinal infectious diseases (A00–A08)	7	3	1	2	*	*	*	*
Diarrhea and gastroenteritis of infectious origin (A09)	213	70	84	45	5.4	3.3	14.4	4.9
Tuberculosis (A16–A19)	1	–	–	–	*	*	*	*
Tetanus (A33, A35)	–	–	–	–	*	*	*	*
Diphtheria (A36)	–	–	–	–	*	*	*	*
Whooping cough (A37)	8	2	1	5	*	*	*	*
Meningococcal infection (A39)	2	1	–	1	*	*	*	*
Septicemia (A40–A41)	192	68	69	45	4.9	3.2	11.8	4.9
Congenital syphilis (A50)	2	–	1	1	*	*	*	*
Gonococcal infection (A54)	–	–	–	–	*	*	*	*
Acute poliomyelitis (A80)	–	–	–	–	*	*	*	*
Varicella (chickenpox) (B01)	–	–	–	–	*	*	*	*
Measles (B05)	–	–	–	–	*	*	*	*
Human immunodeficiency virus (HIV) disease (B20–B24)	–	–	–	–	*	*	*	*
Mumps (B26)	–	–	–	–	*	*	*	*
Candidiasis (B37)	–	–	–	–	*	*	*	*
Malaria (B50–B54)	–	–	–	–	*	*	*	*
Pneumocystosis (B59)	–	–	–	–	*	*	*	*
Malignant neoplasms (C00–C97)	67	30	14	20	1.7	1.4	*	2.2
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	53	31	5	12	1.3	1.5	*	*
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89)	103	53	22	19	2.6	2.5	3.8	*
Short stature, not elsewhere classified (E34.3)	6	2	2	2	*	*	*	*
Nutritional deficiencies (E40–E64)	6	4	1	1	*	*	*	*
Cystic fibrosis (E84)	1	–	1	–	*	*	*	*
Volume depletion, disorders of fluid, electrolyte and acid-base balance (E86–E87)	57	18	18	18	1.4	*	*	*
Meningitis (G00, G03)	60	21	15	16	1.5	1.0	*	*
Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) (G12.0)	7	6	1	–	*	*	*	*
Infantile cerebral palsy (G80)	2	1	–	1	*	*	*	*
Anoxic brain damage, not elsewhere classified (G93.1)	37	15	12	6	0.9	*	*	*
Diseases of the ear and mastoid process (H60–H93)	3	2	1	–	*	*	*	*
Diseases of the circulatory system (I00–I99)	460	211	129	97	11.7	10.1	22.1	10.6
Acute upper respiratory infections (J00–J06)	13	8	4	1	*	*	*	*
Influenza and pneumonia (J09–J18)	166	61	63	34	4.2	2.9	10.8	3.7
Acute bronchitis and acute bronchiolitis (J20–J21)	39	16	13	9	1.0	*	*	*
Bronchitis, chronic and unspecified (J40–J42)	23	12	9	2	0.6	*	*	*
Asthma (J45–J46)	3	–	2	–	*	*	*	*
Pneumonitis due to solids and liquids (J69)	12	6	3	1	*	*	*	*
Gastritis, duodenitis, and noninfective enteritis and colitis (K29, K50–K55)	31	11	8	10	0.8	*	*	*
Hernia of abdominal cavity and intestinal obstruction without hernia (K40–K46, K56)	42	21	11	9	1.1	1.0	*	*
Renal failure and other disorders of kidney (N17–N19, N25, N27)	57	21	17	14	1.4	1.0	*	*
Newborn affected by maternal hypertensive disorders (P00.0)	66	25	22	14	1.7	1.2	3.8	*

See footnotes at end of table.

Table 14. Number of infant deaths and infant mortality rates for selected causes, by race and Hispanic origin: United States, 2016—Con.

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

Cause of death (based on <i>International Classification of Diseases, Tenth Revision</i>)	Number ¹				Rate			
	Total ²	Non- Hispanic white ³	Non- Hispanic black ³	Hispanic	Total ²	Non- Hispanic white ³	Non- Hispanic black ³	Hispanic
Newborn affected by other maternal conditions which may be unrelated to present pregnancy (P00.1–P00.9)	82	35	29	13	2.1	1.7	5.0	*
Newborn affected by maternal complications of pregnancy (P01)	1,402	516	470	327	35.5	24.6	80.5	35.6
Newborn affected by complications of placenta, cord and membranes (P02)	841	344	256	170	21.3	16.4	43.9	18.5
Newborn affected by other complications of labor and delivery (P03)	131	58	44	23	3.3	2.8	7.5	2.5
Newborn affected by noxious influences transmitted via placenta or breast milk (P04)	45	20	11	8	1.1	1.0	*	*
Slow fetal growth and fetal malnutrition (P05)	102	38	40	20	2.6	1.8	6.9	2.2
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	3,927	1,388	1,504	779	99.5	66.3	257.6	84.8
Disorders related to long gestation and high birth weight (P08)	–	–	–	–	*	*	*	*
Birth trauma (P10–P15)	17	11	3	2	*	*	*	*
Intrauterine hypoxia and birth asphyxia (P20–P21)	342	158	89	68	8.7	7.5	15.2	7.4
Respiratory distress of newborn (P22)	488	206	154	86	12.4	9.8	26.4	9.4
Other respiratory conditions originating in the perinatal period (P23–P28)	809	363	242	164	20.5	17.3	41.5	17.9
Congenital pneumonia (P23)	52	16	21	11	1.3	*	3.6	*
Neonatal aspiration syndromes (P24)	42	23	9	5	1.1	1.1	*	*
Interstitial emphysema and related conditions originating in the perinatal period (P25)	102	41	26	31	2.6	2.0	4.5	3.4
Pulmonary hemorrhage originating in the perinatal period (P26)	178	80	55	35	4.5	3.8	9.4	3.8
Chronic respiratory disease originating in the perinatal period (P27)	94	37	37	15	2.4	1.8	6.3	*
Atelectasis (P28.0–P28.1)	276	128	78	59	7.0	6.1	13.4	6.4
Bacterial sepsis of newborn (P36)	583	215	205	132	14.8	10.3	35.1	14.4
Omphalitis of newborn with or without mild hemorrhage (P38)	1	1	–	–	*	*	*	*
Neonatal hemorrhage (P50–P52,P54)	398	184	99	83	10.1	8.8	17.0	9.0
Hemorrhagic disease of newborn (P53)	4	4	–	–	*	*	*	*
Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice (P55–P59)	19	8	2	7	*	*	*	*
Hematological disorders (P60–P61)	94	39	30	20	2.4	1.9	5.1	2.2
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	16	8	1	7	*	*	*	*
Necrotizing enterocolitis of newborn (P77)	341	119	128	74	8.6	5.7	21.9	8.1
Hydrops fetalis not due to hemolytic disease (P83.2)	178	87	15	57	4.5	4.2	*	6.2
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	4,816	2,375	944	1,222	122.1	113.4	161.7	133.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	2,793	1,301	914	426	70.8	62.1	156.6	46.4
Sudden infant death syndrome (R95)	1,500	757	490	178	38.0	36.1	83.9	19.4
Accidents (unintentional injuries) (V01–X59)	1,219	589	416	168	30.9	28.1	71.3	18.3
Assault (homicide) (*U01,X85–Y09) ⁴	276	125	89	48	7.0	6.0	15.2	5.2
Complications of medical and surgical care (Y40–Y84)	18	11	4	3	*	*	*	*

* Figure does not meet standards of reliability or precision; see Technical Notes.

– Quantity zero.

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

²Includes races and origins not shown separately.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 15. Number of infant deaths and mortality rates, by race and Hispanic origin for the United States, each state, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, and by sex for the United States, 2016

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

Area and sex	Total ¹		Non-Hispanic white ²		Non-Hispanic black ²		Hispanic	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
United States ³	23,161	5.87	10,046	4.80	6,863	11.76	4,817	5.24
Male	12,867	6.38	5,622	5.24	3,746	12.67	2,678	5.72
Female	10,294	5.34	4,424	4.34	3,117	10.82	2,139	4.75
Alabama	537	9.08	226	6.40	269	14.95	33	7.21
Alaska	60	5.35	19	*	3	*	—	*
Arizona	456	5.40	131	3.63	46	9.99	216	6.18
Arkansas	309	8.07	184	7.28	90	12.34	21	5.17
California	2,057	4.21	529	3.82	255	9.45	1,039	4.54
Colorado	319	4.79	163	4.04	39	11.42	100	5.40
Connecticut	174	4.83	60	3.02	55	11.68	43	4.99
Delaware	87	7.91	27	4.56	40	13.54	15	*
District of Columbia	70	7.10	5	*	55	11.24	5	*
Florida	1,381	6.14	434	4.31	559	11.23	361	5.48
Georgia	976	7.51	310	5.26	530	11.66	114	6.35
Hawaii	110	6.09	20	4.36	6	*	21	7.59
Idaho	137	6.09	101	5.69	1	*	31	8.58
Illinois	980	6.35	393	4.73	349	13.24	203	6.22
Indiana	620	7.46	398	6.37	145	13.96	65	8.73
Iowa	240	6.09	163	5.15	38	14.06	28	8.06
Kansas	225	5.91	145	5.32	40	14.26	32	5.08
Kentucky	370	6.67	272	5.97	73	13.89	18	*
Louisiana	503	7.96	173	5.20	305	13.02	19	*
Maine	74	5.82	65	5.57	5	*	3	*
Maryland	480	6.56	143	4.49	248	10.54	64	5.39
Massachusetts	279	3.91	133	3.10	54	7.50	65	4.93
Michigan	730	6.44	362	4.58	273	12.75	69	9.22
Minnesota	356	5.10	180	3.65	82	9.84	32	6.57
Mississippi	325	8.57	135	6.91	183	11.45	5	*
Missouri	488	6.53	305	5.39	146	13.06	24	5.80
Montana	72	5.86	44	4.42	1	*	5	*
Nebraska	164	6.17	104	5.47	28	14.79	26	6.07
Nevada	207	5.71	66	4.55	53	11.32	66	4.93
New Hampshire	45	3.67	38	3.55	3	*	3	*
New Jersey	421	4.10	137	2.94	153	10.72	105	3.74
New Mexico	154	6.24	30	4.18	5	*	102	7.48
New York	1,047	4.47	435	3.85	299	8.47	194	3.58
North Carolina	870	7.20	339	5.07	378	13.26	110	5.99
North Dakota	74	6.50	43	4.97	9	*	5	*
Ohio	1,023	7.41	589	5.80	363	15.22	54	7.28
Oklahoma	391	7.43	198	6.10	70	13.64	56	7.42
Oregon	211	4.63	156	4.87	9	*	36	4.25
Pennsylvania	857	6.15	434	4.52	281	14.28	114	7.43
Rhode Island	62	5.74	27	4.18	12	*	15	*
South Carolina	401	6.99	177	5.28	189	11.07	29	5.65
South Dakota	59	4.81	33	3.66	4	*	1	*
Tennessee	597	7.39	346	6.35	196	11.94	38	4.98
Texas	2,287	5.75	674	4.93	534	10.73	983	5.22
Utah	274	5.43	201	5.24	8	*	50	6.28
Vermont	19	*	17	*	—	*	—	*
Virginia	595	5.81	254	4.37	225	10.57	70	4.92
Washington	390	4.31	225	4.09	33	6.90	79	4.78
West Virginia	139	7.29	124	7.04	9	*	6	*
Wisconsin	422	6.33	253	5.21	111	15.58	38	5.84
Wyoming	37	5.01	26	4.46	1	*	6	*

Table 15. Number of infant deaths and mortality rates, by race and Hispanic origin for the United States, each state, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, and by sex for the United States, 2016—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. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget (OMB) standards; see Technical Notes]

Area and sex	Total ¹		Non-Hispanic white ²		Non-Hispanic black ²		Hispanic	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Puerto Rico	214	7.57	—	*	—	*	214	7.81
Virgin Islands	3	*	—	*	1	*	2	*
Guam	43	12.53	1	*	—	*	—	*
American Samoa	14	*	—	*	—	*	—	*
Northern Marianas	8	*	—	*	—	*	—	*

* Figure does not meet standards of reliability or precision; see Technical Notes.

— Quantity zero.

¹Includes races and origins not shown separately.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

Technical Notes

Nature and sources of data

Data in this report are based on information from all death certificates filed in the 50 states and the District of Columbia, and are processed by the National Center for Health Statistics (NCHS). Data for 2016 are based on records of deaths that occurred during 2016 and were received as of July 20, 2017. Data for earlier years can be obtained via CDC WONDER (18).

The U.S. Standard Certificate of Death, which the states use as a model, was revised in 2003 (33). Prior to 2003, the standard certificate of death had not been revised since 1989 (34). This report includes data for 49 states (Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming) and the District of Columbia that used the 2003 revision of the U.S. Standard Certificate of Death in 2016; and data for West Virginia that collected and reported death data in 2016 based on the 1989 revision of the U.S. Standard Certificate of Death.

Because most of the items presented in this report appear largely comparable despite changes to item wording and format in the 2003 death certificate revision, data from all states are combined unless otherwise stated. Data for American Samoa, Guam, Commonwealth of the Northern Mariana Islands (Northern Marianas), Puerto Rico, and Virgin Islands are included in tables showing data by state but are not included in U.S. totals. In 2016, Guam, Northern Marianas, and Puerto Rico collected and reported death data using the 2003 revision of the U.S. Standard Certificate of Death. American Samoa and Virgin Islands collected and reported death data in 2016 using the 1989 revision.

Mortality statistics are based on information submitted by the jurisdictions and coded by NCHS through the Vital Statistics Cooperative Program. For the 2016 data year, all states, the District of Columbia, New York City, and Puerto Rico submitted mortality medical data in electronic data files to NCHS. American Samoa, Guam, Northern Marianas, and Virgin Islands submitted copies of death certificates from which NCHS entered and coded all medical data. All states, the District of Columbia, New York City, American Samoa, and Puerto Rico submitted mortality demographic data in electronic data files to NCHS. All demographic data for Guam, Northern Marianas, and Virgin Islands were entered and coded by NCHS from copies of death certificates submitted to NCHS.

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

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

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with World Health Organization (WHO) regulations, which specify that member countries classify and code causes of death in accordance with the current revision of the *International Classification of Diseases* (ICD). ICD provides the basic guidance used in virtually all countries to code and classify causes of death. Effective with deaths occurring in 1999, the United States began using the Tenth Revision of this classification (ICD-10) (35). 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 (36–41).

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 Manuals (6,42,43). 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) (44), multiple-cause codes are inputted to computer software that uses WHO rules to select the underlying cause. All cause-of-death data in this report are coded using ACME.

The ACME system is used to select the underlying cause of death for all death certificates in the United States. In addition, NCHS developed two computer systems as inputs to ACME. Beginning with 1990 data, the Mortality Medical Indexing, Classification, and Retrieval system (MICAR) (45,46) 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 (47), 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 2016, SuperMICAR (47) was used to process all of the country's death records.

In this report, tabulations of cause-of-death statistics are based solely on the underlying cause of death. The underlying cause is defined by WHO as "the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury" (5). The underlying cause is selected from the conditions entered by the medical certifier in the cause-of-death section of the death certificate. When more than one cause or condition is entered by the medical certifier, the underlying cause is determined by the sequence of conditions on the certificate, provisions of ICD, and associated selection rules and modifications. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. This is captured in NCHS multiple cause-of-death statistics (48–50).

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 March 2011 to include WHO updates to ICD–10 for data year 2011) (51). Prior to the 2015 data year, annual reports of final data presented cause-of-death data based on two 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 (51). These lists are used to rank leading causes of death for the two population groups. To streamline cause-of-death information shown in this report, beginning with the 2015 data year, cause-of-death data are presented for only select causes of death. The select causes include all rankable causes as well as other select causes based on public health impact and future planning. However, data for all causes on the "List of 113 Selected Causes of Death" and "List of 130 Selected Causes of Infant Death" are still available from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05_tables.pdf and through CDC's WONDER system at <https://wonder.cdc.gov/>. In the list of 113 causes, the group titles of Major cardiovascular diseases (ICD–10 codes I00–I78) and Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99) are not ranked. In addition, category titles that begin with the words "other" and "all other" are not ranked to determine the leading causes of death. When one of the titles that represents a subtotal is ranked—for example, Tuberculosis (A16–A19)—its component parts are not ranked, as in this case, Respiratory tuberculosis (A16) and Other tuberculosis (A17–A19). For the list of 130 causes of infant death, the same ranking procedures are used except that the category of Major cardiovascular diseases is not on the list. More detail regarding ranking procedures can be found in "Deaths: Leading Causes for 2016" (2).

Leading cause-of-death trends discussed in this report are based on cause-of-death data according to ICD–10 for 1999–2016 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" (38) and "Deaths: Final Data for 1999" (52).

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

Revision of ICD and resulting changes in classification and rules for selecting the underlying cause of death have important implications for the analysis of mortality trends by cause of death. For some causes of death, the discontinuity in trend can be substantial (36,38). 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 2016

No ICD–10 codes were added or deleted in data year 2016. Information on categories added or deleted in previous years is available from: <https://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2011.pdf> (51).

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. No deaths were assigned to terrorism categories in 2016.

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

Enterocolitis due to *Clostridium difficile*

The number of deaths from Enterocolitis due to *Clostridium difficile* (*C. difficile*) (ICD–10 code A04.7) was 6,768 in 2016. Deaths from this cause increased dramatically from 793 deaths

in 1999 to a high of 8,085 deaths in 2011. Because of the increasing importance of this cause of death (27,28), beginning with data year 2006, *C. difficile* was added to the list of rankable causes.

Quality of reporting and processing cause of death

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

One index of the quality of reporting causes of death is the proportion of death certificates coded to Chapter XVIII—Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (ICD–10 codes R00–R99). Although 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 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, increased from 1.18% in 2015 to 1.22% in 2016.

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

Detail on coding and classification rule changes can be found in the instruction manual under Part 2 (e.g., Part 2c, “ICD–10 ACME Decision Tables for Classifying Underlying Causes of Death”), available from: https://www.cdc.gov/nchs/nvss/instruction_manuals.htm (44). No new coding or classification rule changes occurred in 2016. Trend data for causes of death affected by coding rule changes in previous years should be interpreted with caution.

Rare causes of death

Selected causes of death considered to be of public health concern are supposed to be routinely confirmed by states according to agreed-upon procedures between state vital statistics programs and NCHS. These causes, termed “infrequent and rare causes of death,” are listed in the NCHS Instruction Manual, Parts 2a, 11, and 20 (42,53,54). In 2016, some states did not confirm some or all deaths from rare causes.

Codes for drug-induced deaths

Causes of death attributable to drug-induced mortality include ICD–10 codes D52.1, Drug-induced folate deficiency anemia; D59.0, Drug-induced hemolytic anemia; D59.2, Drug-induced nonautoimmune hemolytic anemia; D61.1, Drug-induced

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

Codes for alcohol-induced deaths

Causes of death attributable to alcohol-induced mortality include ICD–10 codes E24.4, Alcohol-induced pseudo-Cushing’s 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 deaths

Causes of death attributable to firearm mortality 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) (33). This change was implemented to reflect the increasing diversity of the U.S. population and to be consistent with the decennial census. The race and ethnicity items on the revised certificate are compliant with the 1997 “Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity,” issued by the Office of Management and Budget (OMB) (16). This revision replaced standards that were issued in 1977 (55). The new standards mandate the collection of more than one race where applicable for federal data (16). In addition, the new death certificate is compliant with the OMB-mandated minimum set of five races to be reported for federal data (33). Multiple race includes any combination of white, black or African American, American Indian or Alaska Native (AIAN), Asian, and Native Hawaiian or Other Pacific Islander (NHOPI). If two or more specific subgroups such as Korean and Chinese are reported, these count as a single race of Asian rather than as multiple races.

The number of states reporting multiple race has increased, from 7 states in 2003 to 49 states and the District of Columbia in 2016 (Table I). In the 49 states and the District of Columbia that reported multiple race on death certificates in 2016, more than one race was reported for 0.4% 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 (2.9% of decedents under age 25 compared with 0.7% of decedents aged 25–64 and 0.3% of decedents aged 65 and over). In 2016, no decedents were reported as having more than four races.

Data from vital records based on the 1989 revision of the U.S. Standard Certificate of Death follow the 1977 OMB standard, allowing only a single race to be reported (34,55). The 1977 standard stipulates that states must report a minimum set of four races: white, black or African American, AIAN, and Asian or Pacific Islander (API). Under these standards, data for API persons were collected as a single group; that is, data for Asian persons were not reported separately from NHOPI persons (55). The 1997 OMB guidelines provide for the reporting of Asian persons separately from NHOPI persons (16).

Some death certificates currently collect only one race for the decedent in the same categories as specified in the 1977 OMB guidelines. Therefore, death certificate data by race—the source of the numerators for death rates—are currently incompatible with the population data collected in the 2000 and 2010 censuses, intercensal estimates for 1991–1999 and 2001–2009, and postcensal estimates for 2011–2016—the denominators for the rates. To produce death rates by race, the reported population data for multiple-race persons had to be “bridged” to single-race categories. To provide uniformity and comparability of data during the transition period, before all or most of the data become available in the multiple-race format, the responses of those for whom more than one race was reported (multiple race) must be bridged to a single race. The bridging procedure is similar to that used to bridge multiracial population estimates (17,56). Multiracial decedents are imputed to a single race (white, black, AIAN, or API) according to their combination of races, Hispanic origin, sex, and age indicated on the death certificate. The imputation procedure is described in detail at https://www.cdc.gov/nchs/data/dvs/Multiple_race_documentation_5-10-04.pdf. Similarly, when calculating infant mortality rates, multiracial infants are bridged to a single race. The bridging procedure for multiple-race mothers and fathers is based on the procedure used to bridge the multiple-race population estimates (32); see “*Infant mortality rates*” in this section.

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

Quality of race and Hispanic-origin data—Death rates for Hispanic, non-Hispanic AIAN, and non-Hispanic API persons should be interpreted with caution because of inconsistencies in reporting Hispanic origin or race on the death certificate compared with censuses, surveys, and birth certificates. Studies have shown underreporting on death certificates of non-Hispanic AIAN, non-Hispanic API, and Hispanic decedents, as well as undercounts of these groups in censuses (19,20,57,58).

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 (19,20,59,60). 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, on the basis of observation. In contrast, race and Hispanic origin in the census or the U.S. Census Bureau’s American Community Survey (ACS) is obtained while the person is alive; in these cases, race and ethnicity is self-reported or reported by another member of the household familiar with the person and, therefore, may be considered more valid. A high level of agreement between the death certificate and the census or survey report is essential to assure unbiased death rates by race and ethnicity.

Table I. Year that state started reporting multiple race and year that state began using the revised standard certificate of death: Each state, 2003–2016

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

... Category not applicable.

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

²Began reporting multiple race in March.

³Began implementing revised certificate in March.

⁴Began reporting multiple race in July.

⁵Began implementing revised certificate in July.

⁶Began implementing revised certificate in June.

⁷Began implementing revised certificate in September.

⁸Began reporting multiple race in September.

⁹Began reporting multiple race in mid-April.

¹⁰Began implementing revised certificate in mid-April.

¹¹Began reporting multiple race in November.

¹²Began implementing revised certificate in November.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Studies (19,58) show that a person self-reported as non-Hispanic AIAN or non-Hispanic API on census or survey records was sometimes reported as non-Hispanic white on the death certificate. Using the National Longitudinal Mortality Study, Arias et al. examined the reliability of race and Hispanic origin reported on about 559,007 death certificates compared with that reported on a total of 38 Current Population Surveys (CPSs) conducted by the Census Bureau for 1979–2011 (19,20). Agreement between the two sources was found to be excellent for the non-Hispanic white and non-Hispanic black populations, both exhibiting CPS-to-death certificate ratios of 1.00. On the other hand, substantial differences were found for other race and ethnicity groups. The ratio of CPS to death certificates was found to be 1.33 for the non-Hispanic AIAN population and 1.03 for the non-Hispanic API population, indicating net underreporting on death certificates of 33% for non-Hispanic AIAN and 3% for non-Hispanic API. The ratio of deaths for CPS to death certificates for Hispanic persons

was found to be 1.03, indicating a net underreporting on death certificates for the Hispanic population of 3%. The net effect of misclassification is an underestimation of deaths and death rates for the non-Hispanic API, non-Hispanic AIAN, and Hispanic populations.

In addition, undercoverage of minority groups in the census and resultant population estimates introduces biases into death rates by race and Hispanic origin (19,20,57–60). 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%) (59). 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

Table II. Deaths, by race and Hispanic origin: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming, 2016

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

Race and origin	Deaths	Percent of non-Hispanic deaths	Race and origin	Deaths	Percent of Hispanic deaths
Non-Hispanic	2,525,184	100.0	Hispanic	188,201	100.0
One race	2,513,881	99.6	One race	186,568	99.1
Non-Hispanic white	2,103,854	83.3	Hispanic white	163,082	86.7
Non-Hispanic black	323,880	12.8	Hispanic other ¹	19,390	10.3
Non-Hispanic Asian	62,221	2.5	Hispanic black	2,720	1.4
Non-Hispanic AIAN	17,014	0.7	Hispanic AIAN	745	0.4
Non-Hispanic other	3,980	0.2	Hispanic Asian	465	0.2
Non-Hispanic NHOPI	2,932	0.1	Hispanic NHOPI	166	0.1
Two or more races	11,303	0.4	Two or more races	1,633	0.9
Two races	10,553	0.4	Two races	1,489	0.8
Non-Hispanic AIAN and non-Hispanic white	4,471	0.2	Hispanic AIAN and Hispanic white	532	0.3
Non-Hispanic Asian and non-Hispanic white	1,940	0.1	Hispanic Asian and Hispanic white	446	0.2
Non-Hispanic black and non-Hispanic white	1,628	0.1	Hispanic black and Hispanic white	339	0.2
Non-Hispanic Asian and non-Hispanic NHOPI	795	0.0	Hispanic NHOPI and Hispanic white	100	0.1
Non-Hispanic NHOPI and non-Hispanic white	792	0.0	Hispanic black and Hispanic AIAN	23	0.0
Non-Hispanic black and non-Hispanic AIAN	561	0.0	Hispanic black and Hispanic Asian	18	0.0
Non-Hispanic black and non-Hispanic Asian	216	0.0	Hispanic Asian and Hispanic NHOPI	18	0.0
Non-Hispanic black and non-Hispanic NHOPI	78	0.0	Hispanic AIAN and Hispanic Asian	7	0.0
Non-Hispanic AIAN and non-Hispanic Asian	50	0.0	Hispanic black and Hispanic NHOPI	3	0.0
Non-Hispanic AIAN and non-Hispanic NHOPI	22	0.0	Hispanic AIAN and Hispanic NHOPI	3	0.0
Three races	735	0.0	Three races	141	0.1
Non-Hispanic Asian, non-Hispanic NHOPI, and non-Hispanic white	500	0.0	Hispanic Asian, Hispanic NHOPI, and Hispanic white	92	0.0
Non-Hispanic black, non-Hispanic AIAN, and non-Hispanic white	146	0.0	Hispanic black, Hispanic AIAN, and Hispanic white	22	0.0
Non-Hispanic black, non-Hispanic Asian, and non-Hispanic white	33	0.0	Hispanic AIAN, Hispanic Asian, and Hispanic white	12	0.0
Non-Hispanic AIAN, non-Hispanic Asian, and non-Hispanic white	19	0.0	Hispanic black, Hispanic Asian, and Hispanic white	7	0.0
Non-Hispanic AIAN, non-Hispanic NHOPI, and non-Hispanic white	12	0.0	Hispanic AIAN, Hispanic NHOPI, and Hispanic white	5	0.0
Non-Hispanic black, non-Hispanic AIAN, and non-Hispanic Asian	8	0.0	Hispanic black, Hispanic NHOPI, and Hispanic white	2	0.0
Non-Hispanic black, non-Hispanic NHOPI, and non-Hispanic white	8	0.0	Hispanic black, Hispanic AIAN, and Hispanic Asian	1	0.0
Non-Hispanic black, non-Hispanic Asian, and non-Hispanic NHOPI	7	0.0			
Non-Hispanic AIAN, non-Hispanic Asian, and non-Hispanic NHOPI	1	0.0			
Non-Hispanic black, non-Hispanic AIAN, and non-Hispanic NHOPI	1	0.0			

See footnotes at end of table.

Table II. Deaths by race and Hispanic origin: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming, 2016—Con.

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

Race and origin	Deaths	Percent of non-Hispanic deaths	Race and origin	Deaths	Percent of Hispanic deaths
Non-Hispanic—Con.			Hispanic—Con.		
Four races.....	15	0.0	Four races.....	3	0.0
Non-Hispanic AIAN, non-Hispanic Asian, non-Hispanic NHOPI, and non-Hispanic white	9	0.0	Hispanic AIAN, Hispanic Asian, Hispanic NHOPI, Hispanic white	3	0.0
Non-Hispanic black, non-Hispanic Asian, non-Hispanic AIAN, and non-Hispanic white	4	0.0			
Non-Hispanic black, non-Hispanic AIAN, non-Hispanic NHOPI, and non-Hispanic white	2	0.0			

0.0 Quantity more than zero but less than 0.05.

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

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 (61).

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

Other races, race not stated, and Hispanic origin not stated—Beginning in 1992, all records coded as “other races” (0.8% of total deaths in 2016) were assigned to the specified race of the previous record. Records for which race was unknown, not stated, or not classifiable (0.2%) were assigned the racial designation of the previous record. Records for which Hispanic origin was not stated or not classifiable (0.3%) did not have this information imputed.

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

In 2016, multiple race was reported on the revised birth certificates of all 50 states, District of Columbia, Puerto Rico, Virgin Islands, Guam, and Northern Marianas using the 2003 revision of the U.S. Standard Certificate of Birth (62).

Infant mortality rates for the Hispanic-origin population are based on numbers of resident infant deaths reported to be of Hispanic origin and numbers of resident live births by Hispanic origin of mother for the United States. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. In the United States in 2016, the percentage of infant deaths of unknown origin was 0.8%, and the percentage of live births to mothers of unknown origin was 0.9%.

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

Infant mortality rates calculated from the general mortality file for specified race and Hispanic origin contain errors because of reporting problems that affect the classification of race and Hispanic origin on the birth and death certificates for the same infant. Infant mortality rates by specified race and Hispanic origin are more accurate when based on the linked file of infant deaths and live births (32). 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 (32,57).

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 (63). 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 (64), using a methodology similar to that of the 1989–1991 decennial life tables (65). The methodology was again revised for data years 2000–2007 using a methodology similar to that of the 1999–2001 decennial life tables (66).

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 (67), 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 (68). Life table data shown in this report for data years 2001–2016 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 (15), the values may differ from those previously published in annual final mortality and life table reports. Life expectancy values in this report for 2015 were revised using updated Medicare data; therefore, these values may differ from those previously published. Life expectancy values for 2016 will be revised in future annual reports when updated Medicare data becomes available (3).

Historically, NCHS has produced annual life tables by race including the white and black populations but did not produce life tables for other racial or ethnic groups. Beginning with data year 2006 (originally published elsewhere) (21), 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 (19,20). These methods that adjust for misclassification are applied to the production of the life tables, but not to the death rates shown throughout this report. Life tables by race and ethnicity are shown in this report with trend data from 2006 through 2016 (Table 4).

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

Causes of death contributing to changes in life expectancy

A life table partitioning technique was used to estimate causes of death contributing to changes in life expectancy in this report. The method partitions changes into component additive parts and identifies the causes of death having the greatest influence, positive or negative, on changes in life expectancy (69–71).

Injury mortality by mechanism and intent

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

The number of deaths for selected causes in this framework may differ from those shown in tables that use the standard mortality tabulation lists. Following WHO conventions, standard mortality tabulations (Table 8) present external causes of death (ICD–10 codes *U01–*U03 and V01–Y89); in contrast, the matrix (Table 11) excludes deaths classified as Complications of medical and surgical care (Y40–Y84 and Y88). For additional information on injury data presented in this framework, see the report, “Deaths: Injuries, 2002,” available from: https://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_10.pdf (72). Data for later years are available through CDC’s WONDER system at <https://wonder.cdc.gov/> or through CDC’s WISQARS at <https://www.cdc.gov/injury/wisqars/index.html>. Implementation of changes to ICD–10 may affect the matrix, requiring modification of codes in selected categories. No changes were made to the matrix in 2016. For more information on the latest ICD–10 external cause-of-injury codes included in the matrix, see https://www.cdc.gov/nchs/injury/injury_tools.htm.

Infant mortality

Infant mortality rates are the most commonly used index for measuring the risk of dying during the first year of life. The rates presented in this report are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period, and are presented as rates per 1,000 or per 100,000 live births. For final birth figures used in the denominator for infant mortality rates, see the report, “Births: Final Data for 2016” (62). 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, 2016, 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 (32), which is more reliable than the infant’s race listed on the death certificate, and because the numerator and denominator are referring to the same person’s race.

Other variables available online

Hispanic subgroup

Mortality data by Hispanic subgroup no longer appear in the printed version of this report but are available in Table I–4 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05_tables.pdf.

Marital status

Mortality data by marital status no longer appear in the printed version of this report but are available in Table I–5 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05_tables.pdf.

Educational attainment

Mortality data by educational attainment no longer appear in the printed version of this report but are available in Tables I–6 and I–7 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05_tables.pdf.

Injury at work

Mortality data by injury at work are available in Tables I–8 and I–9 from the NCHS website at: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05_tables.pdf.

Maternal mortality

Maternal mortality data are not included in this report. The 2003 revision of the U.S. Standard Certificate of Death introduced a checkbox question format with categories to take advantage of additional codes available in ICD–10 for deaths with a connection to pregnancy, childbirth, and the puerperium. As states revise their death certificates, most are adopting the checkbox format, resulting in wider adoption of a pregnancy status question nationwide and greater standardization of the particular question used. In 2016, the District of Columbia and all states except West Virginia had a separate question related to pregnancy status of female decedents around the time of their death. The 2003 standard format of the question or a question that could provide comparable information was used by 48 states and the District

of Columbia. The question used by California only specifies if pregnant within the last year. Unlike the other states, it does not indicate detail on whether pregnant at the time of death, pregnant 42 days before death, or pregnant 43 days to 1 year before death.

Adopting a pregnancy status question consistent with the standard death certificate increases the identification of maternal deaths (73,74). Maternal mortality rates are consistently greater for those states with the additional information from the separate question than for the states without it. In addition, state maternal mortality rates tend to be greater after adopting the standard question than before. Some research on this issue (74–76) indicates that this increase represents an improvement in identifying maternal deaths. For example, a study in Maryland that used multiple data sources as the standard showed an improvement in identifying maternal deaths (from 62% to 98%) after adoption of a pregnancy checkbox item consistent with the 2003 standard certificate (76). However, growing evidence suggests the pregnancy status question may increase false reporting of recent pregnancy, especially with increasing age (77,78). This may result in overreporting of maternal deaths.

Population bases for computing rates

Populations used for computing death rates and life tables shown in this report represent the population residing in the United States, enumerated as of April 1 for census years and estimated as of July 1 for all other years. Population estimates used to compute death rates for the United States for 2016 are shown for 5-year age groups by race and Hispanic origin in Table III. These estimates are available by single years of age from: https://www.cdc.gov/nchs/nvss/bridged_race.htm (14).

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, 2016 (14). Rates for Puerto Rico are also based on population estimates from the 2010 census as of July 1, 2016, and are provided by the Census Bureau (79). Rates for American Samoa, Guam, Northern Marianas, and Virgin Islands are based on population estimates provided by the Census Bureau's International Data Base (80). 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 2011–2016 are based on postcensal population estimates consistent with the 2010 census, estimated as of July 1 (9–14). Rates for 2010 are based on populations enumerated as of April 1, 2010 (8). Rates for 2001–2009 shown in this report were revised using revised intercensal population estimates based on the 2010 census, estimated as of July 1 (15). Death rates for 2000 are based on populations enumerated as of April 1, 2000 (81). Rates for 1991–1999 are based on intercensal population estimates consistent with the 2000 census levels (82). These estimates were produced under a collaborative arrangement with the Census Bureau and are based on the 2000 census counts by age, race, and sex, modified for consistency with 1977 OMB race categories and historical categories for death data (55,83). The modification procedures are described in detail elsewhere (18,56). The bridged population data are

anticipated to be used over the next few years for computing population-based rates by race.

Computing rates

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

Age-adjusted rates (R') are used to compare relative mortality risks among groups and over time. However, they should be viewed as relative indexes rather than as actual measures of mortality risk. They were computed by the direct method—that is, by applying age-specific death rates (R_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 a detailed discussion, see the report, “Age Standardization of Death Rates: Implementation of the Year 2000 Standard” (84). Beginning with 2003 data, the traditional standard million population along with corresponding standard weights to six decimal places were replaced by the projected year 2000 population age distribution (Table V). The effect of the change is negligible and does not significantly affect comparability with age-adjusted rates calculated using the previous method.

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

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

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

Random variation

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

Table III. Estimated population by 5-year age groups, according to race and Hispanic origin and sex: United States, 2016

[Populations are postcensal estimates based on 2010 census estimated as of July 1, 2016; see Technical Notes]

Race, Hispanic origin, and sex	Total	Age group (years)									
		Under 1 year	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44
All origins ¹	323,127,513	3,970,145	15,956,892	20,429,799	20,618,233	21,129,999	22,381,028	22,890,884	21,786,359	20,773,905	19,696,251
Male	159,078,923	2,030,478	8,156,375	10,429,923	10,518,732	10,801,846	11,491,065	11,631,474	10,968,264	10,376,442	9,776,321
Female	164,048,590	1,939,667	7,800,517	9,999,876	10,099,501	10,328,153	10,889,963	11,259,410	10,818,095	10,397,463	9,919,930
Non-Hispanic											
white	201,324,760	2,067,447	8,289,748	10,658,257	11,150,427	11,721,642	12,458,059	13,006,045	12,584,790	12,010,836	11,518,433
Male	99,244,006	1,058,912	4,250,603	5,457,578	5,716,252	6,011,499	6,404,432	6,606,675	6,351,471	6,049,049	5,784,403
Female	102,080,754	1,008,535	4,039,145	5,200,679	5,434,175	5,710,143	6,053,627	6,399,370	6,233,319	5,961,787	5,734,030
Non-Hispanic											
black	42,141,669	610,153	2,447,475	3,121,214	3,052,700	3,210,015	3,488,007	3,391,038	2,896,058	2,748,536	2,552,017
Male	20,181,252	311,234	1,244,085	1,585,729	1,548,271	1,630,424	1,773,358	1,683,093	1,397,545	1,303,281	1,199,479
Female	21,960,417	298,919	1,203,390	1,535,485	1,504,429	1,579,591	1,714,649	1,707,945	1,498,513	1,445,255	1,352,538
Non-Hispanic											
American Indian or Alaska Native	2,711,067	39,999	159,861	205,571	204,687	210,663	223,172	215,021	185,840	170,075	156,859
Male	1,330,302	20,328	81,179	103,885	103,537	106,753	113,803	109,050	92,211	83,603	76,789
Female	1,380,765	19,671	78,682	101,686	101,150	103,910	109,369	105,971	93,629	86,472	80,070
Non-Hispanic											
Asian or Pacific Islander	19,479,730	227,251	939,929	1,174,250	1,187,991	1,196,268	1,409,285	1,667,426	1,665,242	1,551,568	1,512,818
Male	9,307,742	116,458	481,901	598,190	597,077	604,329	715,850	818,256	796,556	724,896	709,716
Female	10,171,988	110,793	458,028	576,060	590,914	591,939	693,435	849,170	868,686	826,672	803,102
Hispanic											
Male	29,015,621	523,546	2,098,607	2,684,541	2,553,595	2,448,841	2,483,622	2,414,400	2,330,481	2,215,613	2,005,934
Female	28,454,666	501,749	2,021,272	2,585,966	2,468,833	2,342,570	2,318,883	2,196,954	2,123,948	2,077,277	1,950,190

Race, Hispanic origin, and sex	Age group (years)									
	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85 and over	
All origins ¹	20,947,623	21,839,056	21,980,108	19,483,036	16,820,083	11,810,247	8,367,895	5,865,639	6,380,331	
Male	10,375,955	10,730,184	10,683,406	9,315,632	7,936,919	5,454,190	3,723,619	2,453,255	2,224,843	
Female	10,571,668	11,108,872	11,296,702	10,167,404	8,883,164	6,356,057	4,644,276	3,412,384	4,155,488	
Non-Hispanic white										
Male	13,185,670	14,583,247	15,520,697	14,266,131	12,790,738	9,158,131	6,528,792	4,642,504	5,183,166	
Female	6,598,591	7,227,858	7,624,881	6,916,690	6,132,295	4,301,332	2,954,863	1,976,253	1,820,369	
Non-Hispanic black										
Male	2,646,567	2,728,521	2,629,074	2,162,018	1,678,191	1,071,492	739,639	491,457	477,497	
Female	1,242,735	1,277,354	1,216,592	971,972	732,181	449,661	293,691	178,668	141,899	
Non-Hispanic American Indian or Alaska Native										
Male	163,236	175,650	172,790	142,768	112,494	71,647	47,141	28,300	25,293	
Female	79,484	84,474	81,404	66,258	52,816	33,016	20,953	11,689	9,070	
Non-Hispanic Asian or Pacific Islander										
Male	1,379,805	1,238,720	1,120,168	980,059	804,994	541,411	382,515	251,514	248,516	
Female	645,066	578,130	514,635	440,758	356,775	241,809	170,452	105,377	91,511	
Hispanic										
Male	734,739	660,590	605,533	539,301	448,219	299,602	212,063	146,137	157,005	
Female	3,572,345	3,112,918	2,537,379	1,932,060	1,433,666	967,566	669,808	451,864	445,859	
Male	1,810,079	1,562,368	1,245,894	919,954	662,852	428,372	283,660	181,268	161,994	
Female	1,762,266	1,550,550	1,291,485	1,012,106	770,814	539,194	386,148	270,596	283,865	

¹Includes origin not stated.

SOURCE: NCHS, estimates of July 1, 2016, U.S. resident population by age, sex, race, and Hispanic origin prepared under collaborative arrangement with U.S. Census Bureau, 2017.

Table IV. Estimated population for United States, each state, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, 2016

[Populations are postcensal estimates based on 2010 census, estimated as of July 1, 2016]

Area	Total	Area	Total
United States	323,127,513	Nevada	2,940,058
Alabama	4,863,300	New Hampshire	1,334,795
Alaska	741,894	New Jersey	8,944,469
Arizona	6,931,071	New Mexico	2,081,015
Arkansas	2,988,248	New York	19,745,289
California	39,250,017	North Carolina	10,146,788
Colorado	5,540,545	North Dakota	757,952
Connecticut	3,576,452	Ohio	11,614,373
Delaware	952,065	Oklahoma	3,923,561
District of Columbia	681,170	Oregon	4,093,465
Florida	20,612,439	Pennsylvania	12,784,227
Georgia	10,310,371	Rhode Island	1,056,426
Hawaii	1,428,557	South Carolina	4,961,119
Idaho	1,683,140	South Dakota	865,454
Illinois	12,801,539	Tennessee	6,651,194
Indiana	6,633,053	Texas	27,862,596
Iowa	3,134,693	Utah	3,051,217
Kansas	2,907,289	Vermont	624,594
Kentucky	4,436,974	Virginia	8,411,808
Louisiana	4,681,666	Washington	7,288,000
Maine	1,331,479	West Virginia	1,831,102
Maryland	6,016,447	Wisconsin	5,778,708
Massachusetts	6,811,779	Wyoming	585,501
Michigan	9,928,300	Puerto Rico	3,411,307
Minnesota	5,519,952	Virgin Islands	107,510
Mississippi	2,988,726	Guam	166,898
Missouri	6,093,000	American Samoa	52,165
Montana	1,042,520	Northern Marianas	52,524
Nebraska	1,907,116		

SOURCES: NCHS, Vintage 2016 bridged-race postcensal population estimates (available from: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm); U.S. Census Bureau, Population Division, Annual estimates of the resident population by single year of age and sex: April 1, 2010 to July 1, 2016 (available from: <https://factfinder2.census.gov/bkmk/table/1.0/en/PEP/2016/PEPSYASEX/0400000US72>); and International data base, 2016 (available from: <https://www.census.gov/data-tools/demo/ldb/informationGateway.php>).

Table V. U.S. standard population

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

because of resource constraints. Mortality data, even based on complete counts, may be affected by random variation—that is, the number of deaths that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances (85,86). 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 (85). 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,

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

For crude and age-specific death rates,

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

Thus,

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

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

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

where:

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

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

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

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

$$\text{SE}(IMR) = \sqrt{\frac{\text{var}(D) + IMR \cdot \text{var}(B)}{E(B)^2}} = \sqrt{\frac{D}{B^2} + \frac{D^2}{B^3}} \quad [5]$$

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:

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

Formulas 1–6 may be used for all tables presented in this report except for death rates and age-adjusted death rates shown

in [Tables I–4 through I–6](#), which are calculated using population figures that are subject to sampling error.

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

Confidence intervals and statistical tests based on 100 deaths or more—When the number of deaths is large, a normal approximation may be used in calculating confidence intervals and statistical tests. How large, in terms of number of deaths, is to some extent subjective. In general, for crude and age-specific death rates and for infant mortality rates, the normal approximation performs well when the number of deaths is 100 or greater. For age-adjusted rates, the criterion for use of the normal approximation is somewhat more complicated (5,84,86). Formula 7 is used to calculate 95% confidence limits for the death rate when the normal approximation is appropriate:

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

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

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

If $|z| \geq 1.96$, then the difference between the rates is statistically significant at the 0.05 level. If $|z| < 1.96$, then the difference is not statistically significant. Formula 8 can also be used to perform tests for other mortality statistics when the

normal approximation is appropriate (when both statistics being compared meet the normal criteria) by 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 (84,86). For more information regarding how the gamma method is derived, see “*Derivation of gamma method*” at the end of this section.

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

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

and

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

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

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

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

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

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

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

and

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

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

Although the calculations are similar, confidence intervals based on small numbers for age-adjusted death rates, infant mortality rates, and rates that are subject to sampling variability in the denominator are somewhat more complicated (5,86).

For more details, refer to the most recent version of the Mortality Technical Appendix, available from: <https://www.cdc.gov/nchs/products/vsus/ta.htm>.

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

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

and

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

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

and

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

Because $R_1 > R_2$ and $L(R_1) > U(R_2)$, it can be concluded that the difference between the death rates for non-Hispanic AIAN females aged 1–4 and non-Hispanic API females of the same

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

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

SOURCE: NCHS, National Vital Statistics System, Mortality.

age is statistically significant at the 0.05 level. That is, taking into account random variability, non-Hispanic API females aged 1–4 have a death rate significantly lower than that for non-Hispanic AIAN females of the same age.

This test may also be used to perform tests for other statistics when the normal approximation is not appropriate for one or both of the statistics being compared, by replacing R_1 and R_2 with D_1 and D_2 , R'_1 and R'_2 , or others.

Users of the method of comparing confidence intervals should be aware that this method is a conservative test for statistical significance—the difference between two rates may, in fact, be statistically significant even though confidence intervals for the two rates overlap (87). Caution should be observed when interpreting a nonsignificant difference between two rates, especially when the lower and upper limits being compared overlap only slightly.

Derivation of gamma method—For a random variable X that follows a gamma distribution $\Gamma(y,z)$, where y and z are the parameters that determine the shape of the distribution (88), $E(X) = yz$ and $\text{Var}(X) = yz^2$. For the number of deaths, D , $E(D) = D$ and $\text{Var}(D) = D$. It follows that $y = D$ and $z = 1$, and thus,

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

From 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,

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

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

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

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

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

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

For more detail regarding the derivation of the gamma method and its application to age-adjusted death rates and other mortality statistics, see References (4,84,86).

Availability of mortality data

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

Definition of terms

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

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

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

Infant deaths—Deaths of infants under age 1 year.

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

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

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National Vital Statistics Reports, Vol. 67, No. 5, July 26, 2018

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Acknowledgments

This report was prepared in the Division of Vital Statistics (DVS) under the direction of Delton Atkinson, Director, DVS; Hanyu Ni, Associate Director for Science, DVS; Robert N. Anderson, Chief, Mortality Statistics Branch (MSB); and Elizabeth Arias, Team Leader, Statistical Analysis and Research Team (MSB). Melonie Heron (MSB) provided content review. Donna L. Hoyert and Melonie Heron (MSB), and David W. Justice of the Data Acquisition, Classification and Evaluation Branch (DACEB), contributed to Technical Notes. Rajesh Virkar, Chief, Information Technology Branch (ITB), and Joseph Bohn, David Johnson, and Jaleh Mousavi (ITB) provided computer programming support. Jaleh Mousavi also prepared the mortality file. Registration Methods staff and DACEB staff provided consultation to state vital statistics offices regarding collection of the death certificate data on which this report is based. The report was edited and produced by NCHS Office of Information Services, Information Design and Publishing Staff: Jen Hurlburt edited the report; typesetting was done by Kyung M. Park and Odell D. Eldridge (contractor); and graphics were produced by Michael W. Jones (contractor).

Suggested citation

Xu JQ, Murphy SL, Kochanek KD, Bastian B, Arias E. Deaths: Final data for 2016. National Vital Statistics Reports; vol 67 no 5. Hyattsville, MD: National Center for Health Statistics. 2018.

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