

## Deaths: Preliminary Data for 2009

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### Abstract

**Objectives**—This report presents preliminary U.S. data on deaths, death rates, life expectancy, leading causes of death, and infant mortality for 2009 by selected characteristics such as age, sex, race, and Hispanic origin.

**Methods**—Data in this report are based on death records comprising more than 96 percent of the demographic and medical files for all deaths in the United States in 2009. The records are weighted to independent control counts for 2009. Comparisons are made with 2008 preliminary data.

**Results**—The age-adjusted death rate decreased from 758.7 deaths per 100,000 population in 2008 to 741.0 deaths per 100,000 population in 2009. From 2008 to 2009, age-adjusted death rates decreased significantly for 10 of the 15 leading causes of death: Diseases of heart, Malignant neoplasms, Chronic lower respiratory diseases, Cerebrovascular diseases, Accidents (unintentional injuries), Alzheimer's disease, Diabetes mellitus, Influenza and pneumonia, Septicemia, and Assault (homicide). Life expectancy increased by 0.2 year, from 78.0 in 2008 to 78.2 in 2009.

**Keywords:** death rates • life expectancy • vital statistics • cause of death

### Introduction

This report presents preliminary mortality data for the United States based on vital records for a substantial proportion of deaths occurring in 2009. Statistics in preliminary reports are generally considered reliable; past analyses reveal that most statistics shown in preliminary reports for 1995–2007 were confirmed by the final statistics for each of those years (1–13).

### Data Sources and Methods

Preliminary data in this report are based on records of deaths that occurred in calendar year 2009, which were received from state vital statistics offices and processed by the Centers for Disease

Control and Prevention's (CDC) National Center for Health Statistics (NCHS) as of November 5, 2010. Estimates of the level of completeness of preliminary data for each state are shown in [Table I](#) (see "Technical Notes"). Detailed information on the nature, sources, and qualifications of the preliminary data are given in "Technical Notes." The preliminary 2009 data for Georgia were incomplete, therefore, additional review of the data was included to ensure that the 2009 estimates for the United States were accurate.

Each state vital statistics office reported to NCHS the number of deaths registered and processed for calendar year 2009. Those state counts were used as independent control counts for NCHS' 2009 preliminary national mortality file. A comparison of a) the number of 2009 death records received from the states for processing by NCHS with b) each state's independent control counts of the number of deaths in 2009 indicates that demographic information for the United States was available for an estimated 97 percent of infant deaths (under age 1 year) and 99 percent of deaths of persons aged 1 year and over occurring in calendar year 2009 (see [Table I](#) in "Technical Notes"). Medical (or cause-of-death) information was processed separately and available for an estimated 94 percent of infant deaths and 97 percent of deaths of persons aged 1 year and over in 2009.

To produce the preliminary estimates shown in this report, 2009 records were weighted using 2009 state-specific, independent control counts of infant deaths and deaths of those aged 1 year and over received in state vital statistics offices. Two separate sets of weights were applied to the death records—one set for demographic information and another for medical information. This results in inconsistencies between demographic data from the mortality demographic tables and the medical tables showing causes of death (see "Nature and sources of data" in "Technical Notes"). Preliminary estimates are subject to sampling variation as well as random variation.

Cause-of-death information is not always available when preliminary data are sent to NCHS but is available later for final data processing. As a result, estimates of cause of death based on preliminary mortality data may differ from statistics developed from the final mortality data (see [Tables II](#) and [III](#) in "Technical Notes"). Such differences may affect certain causes of death where the cause is pending investigation, such as for Assault (homicide), Intentional self-harm

(suicide), Accidents (unintentional injuries), Drug-induced deaths, and Sudden infant death syndrome (SIDS); see “Nonsampling error” in “Technical Notes.”

This preliminary report includes national and state estimates of total deaths and death rates, as well as statistics on life expectancy, infant mortality, and causes of death. Data are shown for the following race and ethnic groups: white, non-Hispanic white, black, non-Hispanic black, American Indian or Alaska Native (AIAN), Asian or Pacific Islander (API), and Hispanic populations. Tabulations by race and ethnic group are based on the race and ethnic group reported for the decedent. Race and Hispanic origin are reported as separate items on the death certificate. Death rates for AIAN, API, and, to a lesser extent, Hispanic populations are known to be too low because of reporting problems (see “Race and Hispanic origin” in “Technical Notes”).

Changes in death rates from 2008 to 2009 were tested for statistical significance. Differences in death rates across demographic groups (but occurring in 2009 only) were also tested for statistical significance. Unless otherwise specified, reported differences in death rates are statistically significant.

Age-adjusted death rates are better indicators than crude death rates for showing changes in the risk of death over time when the age distribution of the population is changing, and for comparing the mortality of population subgroups that have different age compositions. All age-adjusted death rates are standardized to the year 2000 population (see “Computing rates and percentages” in “Technical Notes”).

Two measures of infant mortality are shown: the infant death rate and the infant mortality rate (see “Infant mortality” in “Technical Notes”). These measures typically are similar, although they can differ because they have different denominators. The denominator of the 2009 infant death rate is the estimated population under age 1 year on the reference date of July 1, 2009 (14). This estimated population includes a combination of infants born in 2008 who had not reached their first birthday by July 1, 2009, and infants born in 2009 before July 1. In contrast, the denominator of the 2009 infant mortality rate is all live births occurring in 2009. The infant mortality rate is a better indicator of the risk of dying during the first year of life than the infant death rate.

This report includes data for 30 states and the District of Columbia—Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Michigan, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, and Wyoming—that had implemented the 2003 revision of the U.S. Standard Certificate of Death by 2009, and for the remaining 20 states that collected and reported death data in 2009 based on the 1989 revision of the U.S. Standard Certificate of Death. The 2003 revision is described in detail elsewhere (15,16). In this report, revised data are combined with unrevised but comparable data. More details on procedures used to combine revised with unrevised data on race are given in “Technical Notes.”

Because the 2000 U.S. census allowed for selection of multiple races, death certificate data by race (i.e., the numerators for death rates) are not wholly compatible with the population data collected in this census. Data from the census are necessary to produce denominators for computing death rates.

Multiple-race data were collected in 2009 by the 30 states and the District of Columbia that used the 2003 revision of the U.S. Standard

Certificate of Death in a manner that is consistent with the population data collected in the 2000 census. Four additional states—Hawaii, Maine, Minnesota, and Wisconsin—that used the 1989 revision of the U.S. Standard Certificate of Death also reported multiple-race data. The remaining 16 states did not collect multiple-race data in 2009. In order to produce national death rates for 2008 and 2009 for this report, multiple-race data from death certificates were “bridged” to be consistent with the 1977 Office of Management and Budget (OMB) single-race categories (17); that is, the multiple-race categories were bridged back to single-race categories. In addition, data for Asian and Native Hawaiian or Other Pacific Islander (NHOPI) persons were reported as the combined category API (18). The populations used to calculate death rates are also bridged to single-race categories. These populations are produced under a collaborative arrangement with the U.S. Census Bureau and are based on year 2000 census counts. The procedures used to produce the bridged populations are described in separate publications (19,20). As the remaining 16 reporting areas gradually begin to collect data on race according to the 1997 OMB standards (21), use of the bridged populations is expected to be discontinued.

Note that the population data used to compile the death rates by race shown in this report are based on special estimation procedures. They are not true counts. The estimation procedures used to develop these populations are subject to error. Smaller population groups are affected much more than larger populations by this measurement error, especially the AIAN population (19).

Previous preliminary death reports have compared preliminary data from the current data year with final data from the previous year (1–13). Because the final data for 2008 are not yet available, all comparisons in this report are between the 2008 preliminary data (22) and the 2009 preliminary data.

## Results

### Trends in numbers and rates

The preliminary number of deaths in the United States for 2009 was 2,436,682 (Tables A and 1). The crude death rate of 793.7 per 100,000 population was 2.4 percent less than the rate of 813.3 per 100,000 in 2008. The estimated age-adjusted death rate, which accounts for changes in the age distribution of the population, reached a record low of 741.0 per 100,000 U.S. standard population, 2.3 percent lower than the 2008 rate of 758.7 (Tables A and 1) (22). Figure 1 illustrates the general pattern of decline in both crude and age-adjusted death rates from 1980 through 2009. The age-adjusted death rate decreased from 2008 to 2009 by 2.8 percent for females and 1.4 percent for males. The relative magnitudes of significant changes in age-adjusted death rates by sex, race, and Hispanic origin (Table 1) are:

- White males—1.5 percent decrease
- White females—3.0 percent decrease
- Non-Hispanic white males—1.9 percent decrease
- Non-Hispanic white females—3.3 percent decrease
- Black females—1.5 percent decrease
- Non-Hispanic black females—1.7 percent decrease

**Table A. Deaths, age-adjusted death rates, and life expectancy at birth, by race and sex, and infant deaths and mortality rates, by race: United States, preliminary 2008 and 2009**

[Data based on a continuous file of records received from the states. Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals]

Measure and sex	All races <sup>1</sup>		White <sup>2</sup>		Black <sup>2</sup>	
	2009	2008	2009	2008	2009	2008
All deaths . . . . .	2,436,682	2,473,018	2,085,305	2,120,961	286,928	289,306
Male . . . . .	1,217,047	1,226,721	1,036,938	1,046,532	146,319	147,275
Female . . . . .	1,219,635	1,246,297	1,048,367	1,074,429	140,609	142,031
Age-adjusted death rate <sup>3</sup> . . . . .	741.0	758.7	732.2	750.6	923.9	935.6
Male . . . . .	888.2	901.0	875.9	889.5	1,148.0	1,151.3
Female . . . . .	625.4	643.7	618.2	637.1	767.7	779.0
Life expectancy at birth (in years) <sup>4</sup> . . . . .	78.2	78.0	78.6	78.4	74.3	74.3
Male . . . . .	75.7	75.5	76.2	75.9	70.9	70.9
Female . . . . .	80.6	80.5	80.9	80.8	77.4	77.4
All infant deaths . . . . .	26,531	28,033	16,897	18,162	8,356	8,513
Infant mortality rate <sup>5</sup> . . . . .	6.42	6.59	5.32	5.54	12.71	12.68

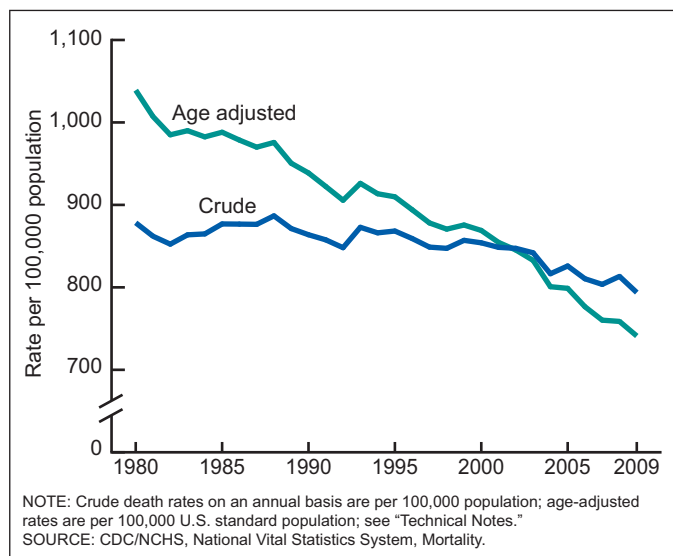
<sup>1</sup>Includes races other than white and black.

<sup>2</sup>Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported for Arkansas, California, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Kansas, Maine, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, Wisconsin, and Wyoming in 2009 and 2008. Multiple-race data for these reporting areas were bridged to single-race categories of the 1977 OMB standards for comparability with other reporting areas; see "Technical Notes."

<sup>3</sup>Per 100,000 U.S. standard population, based on the year 2000 standard.

<sup>4</sup>Data for 2008 have been updated and may differ from that previously published; see "Technical Notes."

<sup>5</sup>Deaths under age 1 year per 1,000 live births in specified group.

**Figure 1. Crude and age-adjusted death rates: United States, 1980–2007 final and 2008–2009 preliminary**

- Hispanic males—2.6 percent decrease
- Hispanic females—3.3 percent decrease

Among the major race and Hispanic origin groups, the lowest mortality was reported for the API, Hispanic, and AIAN populations. Compared with the non-Hispanic white population, preliminary age-adjusted death rates were 44.5 percent lower for the API population, 30.3 percent lower for the Hispanic population, and 19.0 percent lower for the AIAN population. In contrast, the age-adjusted death rate for the non-Hispanic black population was 26.6 percent higher

than that for the non-Hispanic white population (Table 1). It is important to keep in mind, however, that mortality for races other than white and black may be seriously understated in some cases due to underreporting for some race groups and Hispanic origin on death certificates (23–25).

Statistically significant decreases in mortality from 2008 to 2009 were registered for those under age 1 year, 1–4 years, 15–24 years, and across age groups ranging from age 55 through 84 years. Other age groups did not experience significant change. The magnitude of the significant changes in mortality by age group is (Table 1):

- Under 1 year—4.2 percent decrease
- 1–4 years—7.7 percent decrease
- 15–24 years—6.7 percent decrease
- 55–64 years—0.9 percent decrease
- 65–74 years—3.4 percent decrease
- 75–84 years—4.9 percent decrease

The death rate for "under 1 year" shown above is based on a population estimate and is different from the infant mortality rate, which is based on live births (see "Infant mortality").

Preliminary life expectancy data shown in this report for the 2008 data year have been updated and may differ from those previously published (see "Life Tables" in "Technical Notes"). Life expectancy data shown in this report for data years 2008–2009 are based on methodology that was revised in 2000. The revised methodology is similar to that developed for the 1999–2001 decennial life tables; see "Technical Notes." The preliminary estimate of life expectancy at birth for the total population in 2009 is 78.2 years. This represents an increase in life expectancy of 0.2 year relative to 2008 (Tables A and 6). Life expectancy for males increased 0.2 year, from 75.5 in 2008 to 75.7 in 2009. Female life expectancy increased from 80.5 to 80.6. The dif-

ference between male and female life expectancy at birth has been generally decreasing since its peak of 7.8 years in 1979 (26). The gap between male and female life expectancy was 4.9 years in 2009. The difference in life expectancy between the white and black populations in 2009 was 4.3 years, a 0.2-year increase from the 2008 gap between the two races (22).

White females have the highest life expectancy (Figure 2), followed by, in order, black females, white males, and black males. Figure 2 also shows that this pattern has not changed from 1975 through 2009, even though life expectancy for all groups has generally increased over this time period.

By state of residence, Hawaii had the lowest mortality in 2009 with an age-adjusted death rate of 619.8 deaths per 100,000 standard population (Table 3). Mortality was highest in West Virginia, with an age-adjusted death rate of 949.6 per 100,000 standard population.

### Causes of death

The 15 leading causes of death in 2009 remained the same as in 2008, with the exception of two causes that exchanged ranks. Intentional self-harm (suicide), the 11th leading cause of death in

2008, became the 10th leading cause of death in 2009, whereas Septicemia, the 10th leading cause in 2008, became the 11th leading cause of death in 2009.

The 15 leading causes of death in 2009 (Table B) were:

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

From 2008 to 2009, the age-adjusted death rate declined significantly for 10 of the 15 leading causes of death. The preliminary

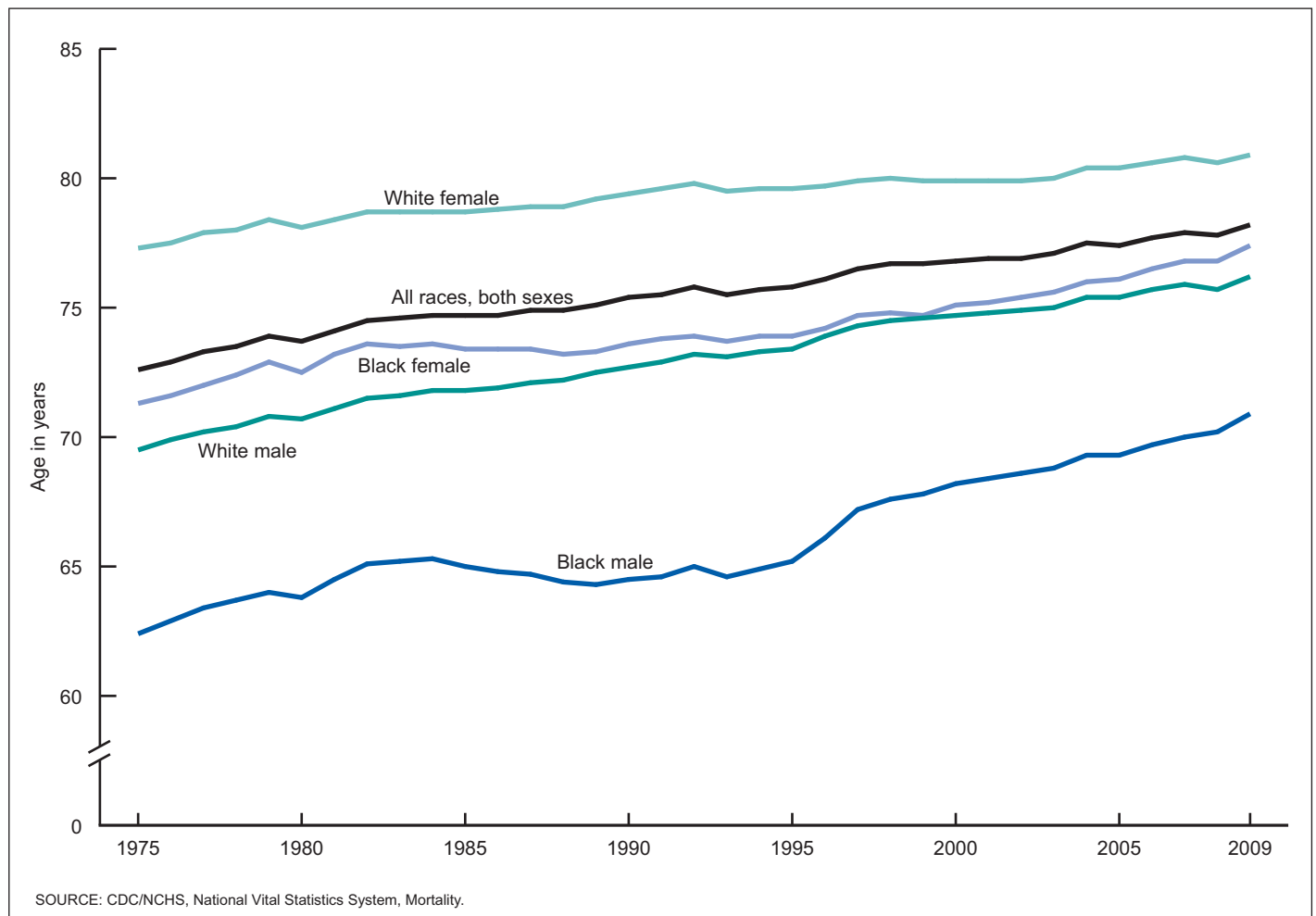


Figure 2. Life expectancy at birth, by race and sex: United States, 1975–2007 final and 2008–2009 preliminary

**Table B. Deaths and death rates for 2009, and age-adjusted death rates and percent changes from 2008 to 2009, for the 15 leading causes of death: United States, preliminary 2008 and 2009**

[Data based on a continuous file of records received from the states. Rates are per 100,000 population; age-adjusted rates per 100,000 U.S. standard population are based on the year 2000 standard; see "Technical Notes." For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals]

Rank <sup>1</sup>	Cause of death (based on the <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	Number	Death rate	Age-adjusted death rate		
				2009	2008	Percent change
...	All causes . . . . .	2,436,652	793.7	741.0	758.6	-2.3
1	Diseases of heart . . . . . (I00-I09,I11,I13,I20-I51)	598,607	195.0	179.8	186.7	-3.7
2	Malignant neoplasms . . . . . (C00-C97)	568,668	185.2	173.6	175.5	-1.1
3	Chronic lower respiratory diseases . . . . . (J40-J47)	137,082	44.7	42.2	44.0	-4.1
4	Cerebrovascular diseases . . . . . (I60-I69)	128,603	41.9	38.9	40.6	-4.2
5	Accidents (unintentional injuries) . . . . . (V01-X59,Y85-Y86) <sup>2</sup>	117,176	38.2	37.0	38.6	-4.1
6	Alzheimer's disease . . . . . (G30)	78,889	25.7	23.4	24.4	-4.1
7	Diabetes mellitus . . . . . (E10-E14)	68,504	22.3	20.9	21.8	-4.1
8	Influenza and pneumonia . . . . . (J09-J18)	53,582	17.5	16.2	17.0	-4.7
9	Nephritis, nephrotic syndrome and nephrosis . . . . . (N00-N07,N17-N19,N25-N27)	48,714	15.9	14.8	14.8	0.0
10	Intentional self-harm (suicide) . . . . . (*U03,X60-X84,Y87.0) <sup>2</sup>	36,547	11.9	11.7	11.6	0.9
11	Septicemia . . . . . (A40-A41)	35,587	11.6	10.9	11.1	-1.8
12	Chronic liver disease and cirrhosis . . . . . (K70,K73-K74)	30,444	9.9	9.2	9.2	0.0
13	Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	25,651	8.4	7.7	7.7	0.0
14	Parkinson's disease . . . . . (G20-G21)	20,552	6.7	6.4	6.4	0.0
15	Assault (homicide) . . . . . (*U01-*U02,X85-Y09,Y87.1) <sup>2</sup>	16,591	5.4	5.5	5.9	-6.8
...	All other causes . . . . . (residual)	471,455	153.6	...	...	...

... Category not applicable.

<sup>1</sup>Based on number of deaths.

<sup>2</sup>For unintentional injuries, suicides, and homicides, preliminary and final data may differ significantly because of the truncated nature of the preliminary file.

NOTES: Data are subject to sampling and random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes."

age-adjusted death rate for the leading cause of death, Diseases of heart, decreased by 3.7 percent. The age-adjusted death rate for Malignant neoplasms decreased by 1.1 percent (Tables B and 2). Deaths from these two diseases combined accounted for 48 percent of deaths in the United States in 2009. Although heart disease mortality has exhibited a downward trend since 1950, cancer mortality began to decline only in the early 1990s (10,22). The preliminary age-adjusted death rate also decreased significantly for Chronic lower respiratory diseases (4.1 percent) and Cerebrovascular diseases (4.2 percent).

Other leading causes of death that showed significant decreases in 2009 relative to 2008 were: Accidents (unintentional injuries) (4.1 percent), Alzheimer's disease (4.1 percent), Diabetes mellitus (4.1 percent), Influenza and pneumonia (4.7 percent), Septicemia (1.8 percent), and Assault (homicide) (6.8 percent).

The observed increase in the age-adjusted death rate for Intentional self-harm (suicide) was not significant. The age-adjusted death rates for Nephritis, nephrotic syndrome and nephrosis; Chronic liver disease and cirrhosis; Essential hypertension and hypertensive renal disease; and Parkinson's disease remained unchanged from 2008 to 2009.

Human immunodeficiency virus (HIV) disease was not among the 15 leading causes of death in 2009. The preliminary age-adjusted death rate for HIV disease declined by 9.1 percent from 2008 to 2009 (Table 2). Following a period of increase from 1987 through 1994, HIV disease mortality reached a plateau in 1995. Subsequently, the rate for this disease decreased an average of 33.0 percent per year from 1995

through 1998 (27), and 5.1 percent per year from 1999 through 2008 (22). For all races combined in the age group 15-24, HIV disease was the 12th leading cause of death in 2009, decreasing by two positions relative to its rank as 10th leading cause for those aged 15-24 in 2008. HIV disease remained the sixth leading cause of death for the age group 25-44, unchanged in rank from 2008. Among decedents aged 45-64, HIV disease dropped from 12th leading cause in 2008 to 13th leading cause.

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 by long-term patients or residents in hospitals or other health-care facilities and accounted for an increasing number of deaths between 1999 and 2008 (28,29). In 1999, 793 deaths were due to *C. difficile* compared with 7,483 *C. difficile* deaths in 2008 (22). In 2009, the number of deaths decreased to 7,285. The age-adjusted death rate for this cause decreased from 2.3 deaths per 100,000 standard population in 2008 to 2.2 deaths per 100,000 standard population in 2009 (4.3 percent). In 2009, *C. difficile* ranked as the 19th leading cause of death for the population aged 65 and over. Approximately 92 percent of deaths from *C. difficile* occurred to people aged 65 and over (data not shown).

The preliminary age-adjusted death rate for drug-induced deaths declined by 1.6 percent, from 12.3 in 2008 to 12.1 in 2009. However, the final number of drug-induced deaths in 2008 or 2009 may be substantially higher because information on cause of death in these cases is often delayed pending investigation. Additional information

based on toxicology or autopsy reports is often not available in the preliminary file. The age-adjusted death rate for injury at work declined 10.5 percent, from 1.9 to 1.7. The observed decrease in the age-adjusted death rate for alcohol-induced deaths (1.4 percent) was not significant. Mortality from firearm injuries (Table 2) decreased by 2.9 percent.

## Infant mortality

The preliminary infant mortality rate for 2009 was 6.42 infant deaths per 1,000 live births (Tables A and 4). This represents a decrease of 2.6 percent from the preliminary 2008 rate of 6.59. With the exception of 2002 and 2005, the infant mortality rate has statistically remained the same or decreased significantly each successive year from 1958 through 2009 (22,30). The neonatal (i.e., infants aged less than 28 days) mortality rate decreased 1.9 percent from 4.27 per 1,000 live births in 2008 to 4.19 per 1,000 live births in 2009, but the decrease was not significant. The postneonatal (i.e., infants aged 28 days–11 months) mortality rate decreased by 3.4 percent between 2008 and 2009.

The 2009 preliminary infant mortality rate for black infants was 12.71 infant deaths per 1,000 live births compared with 12.68 per 1,000 live births in 2008, but the observed increase was not significant.

The infant mortality rate for white infants decreased in 2009 by 4.0 percent, from 5.54 infant deaths per 1,000 live births in 2008 to 5.32 in 2009. The mortality rate for black infants was 2.4 times the rate for white infants (Tables A and 4). Because of inconsistencies in the reporting of race groups on birth and death certificates, especially for races other than white and black and for Hispanic origin, infant mortality rates for these groups are likely to be underestimated (25). The linked birth/infant death data set provides a better source of data for infant deaths and mortality rates by maternal race and ethnicity (31).

Although the infant mortality rate is the preferred indicator of the risk of dying during the first year of life, the infant death rate is also shown in this report. While similar, these two rates vary based on differences in their denominators. The denominator of the 2009 infant death rate is the estimated population under age 1 year as of the reference date, July 1, 2009 (14). This population estimate includes a combination of infants born in 2008 who had not reached their first birthday before July 1, 2009, and infants born in 2009 before July 1, 2009. In contrast, the denominator of the 2009 infant mortality rate is all live births occurring during 2009 (32). For example, the preliminary number of live births for 2009 ( $n = 4,131,019$ ) is 3.1 percent lower than the midyear infant population in 2009 ( $n = 4,261,494$ ). Therefore, the infant mortality rate for 2009 (642.1 deaths per 100,000 live births) is higher than the infant death rate for 2009 (622.6 deaths per 100,000 population). For 2009, both the infant mortality rate and the infant death rate decreased significantly from 2008.

The 10 leading causes of infant mortality for 2009 were:

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

7. Bacterial sepsis of newborn
8. Respiratory distress of newborn
9. Diseases of the circulatory system
10. Neonatal hemorrhage

There were no differences in ranking among the leading causes of infant death between 2008 (22) and 2009 (Table 8).

The infant mortality rate decreased for 2 of 10 leading causes of death from 2008 to 2009 (Tables 5 and 8). The infant mortality rate for Newborn affected by maternal complications of pregnancy—the fourth leading cause of death—decreased by 7.5 percent (Tables 5 and 8). The infant mortality rate for Accidents (unintentional injuries)—the fifth leading cause of death—decreased by 8.5 percent.

Deaths due to SIDS, currently the third leading cause of infant death, have been declining since 1988 (4,22). The observed decrease in SIDS from 53.9 to 52.5 is not statistically significant. Because SIDS deaths often involve lengthy investigations, the mortality rate due to SIDS is typically lower based on preliminary data than that based on the final data. Recent declines in mortality due to SIDS also may reflect primarily a change in the way SIDS is diagnosed and reported by medical examiners and coroners (33).

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**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes"]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
<b>All races, both sexes</b>				
All ages . . . . .	2,436,682	793.7	2,473,018	813.3
Under 1 year <sup>1</sup> . . . . .	26,531	622.6	28,033	649.9
1-4 years . . . . .	4,460	26.2	4,747	28.4
5-14 years . . . . .	5,643	13.9	5,663	14.1
15-24 years . . . . .	30,410	70.6	32,208	75.7
25-34 years . . . . .	42,443	102.1	42,309	103.4
35-44 years . . . . .	74,548	179.5	76,409	179.8
45-54 years . . . . .	187,267	420.0	186,643	420.6
55-64 years . . . . .	303,101	871.3	296,269	879.5
65-74 years . . . . .	400,969	1,928.5	401,750	1,996.5
75-84 years . . . . .	627,819	4,775.1	653,845	5,019.9
85 years and over . . . . .	733,176	13,021.1	744,976	13,020.0
Not stated . . . . .	315	...	166	...
Age-adjusted rate <sup>2</sup> . . . . .	...	741.0	...	758.7
<b>All races, male</b>				
All ages . . . . .	1,217,047	803.6	1,226,721	818.2
Under 1 year <sup>1</sup> . . . . .	14,873	682.7	15,651	708.9
1-4 years . . . . .	2,507	28.8	2,703	31.7
5-14 years . . . . .	3,244	15.6	3,284	16.0
15-24 years . . . . .	22,294	100.7	24,030	109.9
25-34 years . . . . .	29,150	137.3	29,662	141.9
35-44 years . . . . .	46,498	222.9	47,717	223.9
45-54 years . . . . .	114,615	521.6	115,098	526.7
55-64 years . . . . .	183,945	1,096.1	179,599	1,105.2
65-74 years . . . . .	225,740	2,353.1	225,512	2,434.0
75-84 years . . . . .	311,135	5,711.5	322,031	6,034.7
85 years and over . . . . .	262,839	14,744.1	261,319	14,022.5
Not stated . . . . .	206	...	115	...
Age-adjusted rate <sup>2</sup> . . . . .	...	888.2	...	901.0
<b>All races, female</b>				
All ages . . . . .	1,219,635	784.0	1,246,297	808.6
Under 1 year <sup>1</sup> . . . . .	11,658	559.7	12,382	588.1
1-4 years . . . . .	1,953	23.4	2,044	25.1
5-14 years . . . . .	2,399	12.1	2,379	12.1
15-24 years . . . . .	8,116	38.8	8,178	39.5
25-34 years . . . . .	13,293	65.3	12,647	63.1
35-44 years . . . . .	28,050	135.7	28,692	135.4
45-54 years . . . . .	72,652	321.2	71,546	317.7
55-64 years . . . . .	119,155	661.8	116,670	669.2
65-74 years . . . . .	175,229	1,564.7	176,238	1,623.1
75-84 years . . . . .	316,684	4,112.6	331,814	4,315.6
85 years and over . . . . .	470,337	12,222.9	483,656	12,535.8
Not stated . . . . .	109	...	51	...
Age-adjusted rate <sup>2</sup> . . . . .	...	625.4	...	643.7

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
<b>Total white, both sexes</b>				
All ages . . . . .	2,085,305	844.3	2,120,961	864.9
Under 1 year <sup>1</sup> . . . . .	16,897	520.4	18,162	549.8
1–4 years . . . . .	3,159	24.2	3,350	26.0
5–14 years . . . . .	4,000	12.7	4,072	13.0
15–24 years . . . . .	22,237	66.4	23,627	71.2
25–34 years . . . . .	31,433	96.8	31,123	96.9
35–44 years . . . . .	56,241	170.7	57,627	170.4
45–54 years . . . . .	145,807	399.0	144,834	397.6
55–64 years . . . . .	243,556	831.6	238,951	840.6
65–74 years . . . . .	337,884	1,891.9	338,817	1,959.2
75–84 years . . . . .	555,011	4,817.2	579,658	5,051.9
85 years and over . . . . .	668,835	13,181.2	680,608	13,288.2
Not stated . . . . .	244	...	130	...
Age-adjusted rate <sup>2</sup> . . . . .	...	732.2	...	750.6
<b>White male</b>				
All ages . . . . .	1,036,938	846.1	1,046,532	860.6
Under 1 year <sup>1</sup> . . . . .	9,456	569.5	10,151	600.2
1–4 years . . . . .	1,791	26.8	1,920	29.1
5–14 years . . . . .	2,311	14.3	2,340	14.6
15–24 years . . . . .	16,223	94.0	17,546	102.6
25–34 years . . . . .	21,746	129.7	22,075	133.2
35–44 years . . . . .	35,572	212.2	36,677	213.6
45–54 years . . . . .	90,684	497.9	90,857	500.8
55–64 years . . . . .	148,819	1,040.7	145,915	1,051.9
65–74 years . . . . .	191,405	2,298.3	191,321	2,377.5
75–84 years . . . . .	277,531	5,750.3	287,530	6,054.3
85 years and over . . . . .	241,241	14,947.8	240,108	14,358.6
Not stated . . . . .	160	...	93	...
Age-adjusted rate <sup>2</sup> . . . . .	...	875.9	...	889.5
<b>White female</b>				
All ages . . . . .	1,048,367	842.6	1,074,429	869.0
Under 1 year <sup>1</sup> . . . . .	7,441	469.0	8,011	496.8
1–4 years . . . . .	1,369	21.5	1,430	22.8
5–14 years . . . . .	1,690	11.0	1,733	11.4
15–24 years . . . . .	6,014	37.1	6,081	37.8
25–34 years . . . . .	9,687	61.6	9,049	58.2
35–44 years . . . . .	20,669	127.7	20,949	125.8
45–54 years . . . . .	55,124	300.7	53,978	295.2
55–64 years . . . . .	94,737	632.0	93,037	639.2
65–74 years . . . . .	146,479	1,536.9	147,496	1,595.1
75–84 years . . . . .	277,480	4,144.6	292,128	4,344.1
85 years and over . . . . .	427,594	12,357.2	440,501	12,769.4
Not stated . . . . .	84	...	37	...
Age-adjusted rate <sup>2</sup> . . . . .	...	618.2	...	637.1

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
Non-Hispanic white, both sexes				
All ages . . . . .	1,935,927	957.6	1,981,198	982.0
Under 1 year <sup>1</sup> . . . . .	11,658	516.5	12,545	544.0
1–4 years . . . . .	2,179	23.9	2,380	26.2
5–14 years . . . . .	2,857	12.2	3,082	13.2
15–24 years . . . . .	17,072	65.3	18,570	70.7
25–34 years . . . . .	25,054	100.8	24,868	101.6
35–44 years . . . . .	47,507	180.2	49,109	180.0
45–54 years . . . . .	129,908	409.4	130,455	410.4
55–64 years . . . . .	223,250	842.6	220,247	854.9
65–74 years . . . . .	314,166	1,917.3	316,695	1,994.5
75–84 years . . . . .	522,348	4,882.7	549,133	5,143.4
85 years and over . . . . .	639,807	13,422.0	654,028	13,556.3
Not stated . . . . .	123	...	88	...
Age-adjusted rate <sup>2</sup> . . . . .	...	744.7	...	766.2
Non-Hispanic white male				
All ages . . . . .	954,633	961.2	969,419	978.4
Under 1 year <sup>1</sup> . . . . .	6,547	566.8	7,044	596.3
1–4 years . . . . .	1,257	26.9	1,367	29.3
5–14 years . . . . .	1,677	14.0	1,811	15.1
15–24 years . . . . .	12,249	91.3	13,578	100.8
25–34 years . . . . .	17,068	136.0	17,348	140.6
35–44 years . . . . .	29,709	224.8	30,831	225.5
45–54 years . . . . .	80,296	510.2	81,342	515.9
55–64 years . . . . .	136,173	1,052.0	134,286	1,067.2
65–74 years . . . . .	177,944	2,322.4	178,750	2,413.2
75–84 years . . . . .	261,433	5,832.5	272,518	6,167.3
85 years and over . . . . .	230,211	15,295.4	230,484	14,721.1
Not stated . . . . .	67	...	58	...
Age-adjusted rate <sup>2</sup> . . . . .	...	891.7	...	908.6
Non-Hispanic white female				
All ages . . . . .	981,295	954.2	1,011,780	985.6
Under 1 year <sup>1</sup> . . . . .	5,111	463.8	5,500	488.9
1–4 years . . . . .	922	20.8	1,012	22.8
5–14 years . . . . .	1,179	10.4	1,271	11.1
15–24 years . . . . .	4,822	37.9	4,993	39.1
25–34 years . . . . .	7,986	64.9	7,520	62.0
35–44 years . . . . .	17,797	135.4	18,278	134.3
45–54 years . . . . .	49,612	310.3	49,112	306.6
55–64 years . . . . .	87,078	642.5	85,961	652.3
65–74 years . . . . .	136,222	1,561.5	137,944	1,628.4
75–84 years . . . . .	260,915	4,197.8	276,614	4,420.4
85 years and over . . . . .	409,596	12,557.5	423,543	12,996.7
Not stated . . . . .	55	...	30	...
Age-adjusted rate <sup>2</sup> . . . . .	...	629.1	...	650.9

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
<b>Total black, both sexes</b>				
All ages . . . . .	286,928	699.8	289,306	716.7
Under 1 year <sup>1</sup> . . . . .	8,356	1,176.7	8,513	1,190.7
1–4 years . . . . .	1,068	38.4	1,131	42.1
5–14 years . . . . .	1,300	20.2	1,287	20.1
15–24 years . . . . .	6,749	96.8	7,222	105.6
25–34 years . . . . .	9,211	154.4	9,287	159.8
35–44 years . . . . .	15,141	273.5	15,797	281.1
45–54 years . . . . .	35,447	646.3	35,994	665.4
55–64 years . . . . .	50,704	1,375.4	48,748	1,385.6
65–74 years . . . . .	51,943	2,649.5	51,810	2,734.4
75–84 years . . . . .	57,585	5,190.9	59,172	5,652.7
85 years and over . . . . .	49,371	13,467.3	50,315	12,071.2
Not stated . . . . .	53	...	30	...
Age-adjusted rate <sup>2</sup> . . . . .	...	923.9	...	935.6
<b>Black male</b>				
All ages . . . . .	146,319	745.9	147,275	763.4
Under 1 year <sup>1</sup> . . . . .	4,724	1,303.5	4,728	1,293.2
1–4 years . . . . .	577	40.8	654	47.8
5–14 years . . . . .	756	23.1	769	23.6
15–24 years . . . . .	5,100	144.3	5,522	159.4
25–34 years . . . . .	6,238	213.2	6,378	225.4
35–44 years . . . . .	8,957	343.4	9,201	348.0
45–54 years . . . . .	20,296	801.0	20,703	828.2
55–64 years . . . . .	29,918	1,820.1	28,686	1,827.7
65–74 years . . . . .	28,095	3,429.3	28,001	3,541.4
75–84 years . . . . .	26,147	6,394.9	27,094	7,107.5
85 years and over . . . . .	15,477	15,448.7	15,518	12,538.0
Not stated . . . . .	34	...	20	...
Age-adjusted rate <sup>2</sup> . . . . .	...	1,148.0	...	1,151.3
<b>Black female</b>				
All ages . . . . .	140,609	657.5	142,031	674.0
Under 1 year <sup>1</sup> . . . . .	3,632	1,044.5	3,785	1,083.5
1–4 years . . . . .	491	36.0	477	36.1
5–14 years . . . . .	544	17.2	518	16.4
15–24 years . . . . .	1,649	48.0	1,701	50.4
25–34 years . . . . .	2,972	97.7	2,909	97.6
35–44 years . . . . .	6,183	211.2	6,596	221.7
45–54 years . . . . .	15,151	513.4	15,290	525.5
55–64 years . . . . .	20,786	1,017.6	20,062	1,029.5
65–74 years . . . . .	23,848	2,089.8	23,809	2,156.4
75–84 years . . . . .	31,438	4,488.2	32,077	4,819.3
85 years and over . . . . .	33,894	12,722.2	34,797	11,874.0
Not stated . . . . .	20	...	10	...
Age-adjusted rate <sup>2</sup> . . . . .	...	767.7	...	779.0

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
<b>Non-Hispanic black, both sexes</b>				
All ages . . . . .	282,694	727.4	285,959	746.4
Under 1 year <sup>1</sup> . . . . .	8,012	1,255.3	8,193	1,271.8
1–4 years . . . . .	1,028	41.2	1,085	44.6
5–14 years . . . . .	1,263	21.0	1,260	20.9
15–24 years . . . . .	6,586	99.5	7,096	109.1
25–34 years . . . . .	9,007	159.5	9,130	166.2
35–44 years . . . . .	14,871	282.8	15,600	291.9
45–54 years . . . . .	34,993	663.0	35,605	683.5
55–64 years . . . . .	50,046	1,403.3	48,289	1,418.6
65–74 years . . . . .	51,302	2,697.2	51,303	2,791.6
75–84 years . . . . .	56,768	5,259.4	58,551	5,753.3
85 years and over . . . . .	48,770	13,716.8	49,823	12,259.9
Not stated . . . . .	48	...	24	...
Age-adjusted rate <sup>2</sup> . . . . .	...	942.6	...	956.6
<b>Non-Hispanic black male</b>				
All ages . . . . .	144,001	776.1	145,377	795.5
Under 1 year <sup>1</sup> . . . . .	4,542	1,394.6	4,542	1,379.5
1–4 years . . . . .	561	44.2	624	50.4
5–14 years . . . . .	733	24.0	752	24.6
15–24 years . . . . .	4,980	148.5	5,428	164.8
25–34 years . . . . .	6,090	220.5	6,252	234.2
35–44 years . . . . .	8,788	355.1	9,080	361.5
45–54 years . . . . .	20,002	821.2	20,450	850.4
55–64 years . . . . .	29,496	1,857.5	28,378	1,871.3
65–74 years . . . . .	27,734	3,494.6	27,702	3,617.3
75–84 years . . . . .	25,755	6,485.2	26,797	7,243.7
85 years and over . . . . .	15,290	15,824.9	15,358	12,760.9
Not stated . . . . .	31	...	14	...
Age-adjusted rate <sup>2</sup> . . . . .	...	1,173.2	...	1,178.3
<b>Non-Hispanic black female</b>				
All ages . . . . .	138,693	683.0	140,582	701.6
Under 1 year <sup>1</sup> . . . . .	3,471	1,110.5	3,651	1,159.1
1–4 years . . . . .	467	38.0	461	38.6
5–14 years . . . . .	530	17.9	508	17.1
15–24 years . . . . .	1,607	49.2	1,669	52.0
25–34 years . . . . .	2,917	101.2	2,878	101.9
35–44 years . . . . .	6,083	218.5	6,520	230.2
45–54 years . . . . .	14,991	527.4	15,155	540.4
55–64 years . . . . .	20,550	1,038.7	19,911	1,054.8
65–74 years . . . . .	23,568	2,126.3	23,600	2,201.6
75–84 years . . . . .	31,013	4,545.8	31,753	4,902.0
85 years and over . . . . .	33,480	12,930.1	34,465	12,049.1
Not stated . . . . .	17	...	10	...
Age-adjusted rate <sup>2</sup> . . . . .	...	782.6	...	796.1

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
Total AIAN <sup>3,4</sup> both sexes				
All ages . . . . .	14,941	426.8	14,785	432.1
Under 1 year <sup>1</sup> . . . . .	383	541.7	405	582.0
1–4 years . . . . .	85	31.5	100	38.9
5–14 years . . . . .	114	20.2	97	17.5
15–24 years . . . . .	671	110.1	636	105.5
25–34 years . . . . .	751	141.7	774	151.0
35–44 years . . . . .	1,258	278.4	1,214	266.9
45–54 years . . . . .	2,172	485.8	2,090	477.0
55–64 years . . . . .	2,523	827.2	2,446	847.0
65–74 years . . . . .	2,656	1,738.0	2,668	1,844.7
75–84 years . . . . .	2,531	3,447.8	2,589	3,646.9
85 years and over . . . . .	1,786	6,722.6	1,762	6,155.5
Not stated . . . . .	11	...	3	...
Age-adjusted rate <sup>2</sup> . . . . .	...	603.2	...	610.3
AIAN <sup>3,4</sup> male				
All ages . . . . .	8,097	462.4	8,170	478.0
Under 1 year <sup>1</sup> . . . . .	213	592.5	234	659.7
1–4 years . . . . .	50	36.5	50	38.4
5–14 years . . . . .	56	19.6	52	18.5
15–24 years . . . . .	468	150.5	462	150.7
25–34 years . . . . .	501	182.1	530	199.0
35–44 years . . . . .	779	338.3	725	315.0
45–54 years . . . . .	1,251	574.0	1,318	618.3
55–64 years . . . . .	1,494	1,022.7	1,440	1,039.3
65–74 years . . . . .	1,433	2,009.3	1,466	2,172.8
75–84 years . . . . .	1,219	3,907.6	1,271	4,156.7
85 years and over . . . . .	626	7,002.2	621	6,503.3
Not stated . . . . .	8	...	–	...
Age-adjusted rate <sup>2</sup> . . . . .	...	696.7	...	717.8
AIAN <sup>3,4</sup> female				
All ages . . . . .	6,843	391.2	6,615	386.3
Under 1 year <sup>1</sup> . . . . .	170	489.1	170	498.3
1–4 years . . . . .	35	26.3	50	39.5
5–14 years . . . . .	58	21.0	45	16.5
15–24 years . . . . .	203	68.0	174	58.7
25–34 years . . . . .	250	98.0	244	99.1
35–44 years . . . . .	479	216.1	488	217.2
45–54 years . . . . .	921	401.9	772	343.2
55–64 years . . . . .	1,029	647.5	1,006	669.6
65–74 years . . . . .	1,223	1,500.6	1,202	1,557.9
75–84 years . . . . .	1,312	3,108.0	1,319	3,263.7
85 years and over . . . . .	1,159	6,575.1	1,141	5,981.3
Not stated . . . . .	3	...	3	...
Age-adjusted rate <sup>2</sup> . . . . .	...	520.2	...	515.0

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
Total API, <sup>5</sup> both sexes				
All ages . . . . .	49,508	318.8	47,966	319.1
Under 1 year <sup>1</sup> . . . . .	895	383.2	953	423.6
1–4 years . . . . .	147	15.5	165	18.8
5–14 years . . . . .	228	10.9	206	10.6
15–24 years . . . . .	752	37.1	722	37.1
25–34 years . . . . .	1,048	40.4	1,125	45.0
35–44 years . . . . .	1,908	73.7	1,772	68.0
45–54 years . . . . .	3,841	181.4	3,725	177.7
55–64 years . . . . .	6,317	419.3	6,124	421.6
65–74 years . . . . .	8,485	1,035.3	8,455	1,070.8
75–84 years . . . . .	12,692	2,860.5	12,426	2,868.2
85 years and over . . . . .	13,185	8,072.4	12,291	7,958.5
Not stated . . . . .	7	...	3	...
Age-adjusted rate <sup>2</sup> . . . . .	...	413.2	...	414.2
API <sup>5</sup> male				
All ages . . . . .	25,693	341.3	24,744	338.1
Under 1 year <sup>1</sup> . . . . .	481	402.0	536	464.2
1–4 years . . . . .	90	18.6	79	17.5
5–14 years . . . . .	122	11.5	123	12.4
15–24 years . . . . .	503	48.6	500	50.1
25–34 years . . . . .	665	52.7	679	55.0
35–44 years . . . . .	1,190	94.8	1,114	87.7
45–54 years . . . . .	2,385	236.9	2,220	223.0
55–64 years . . . . .	3,715	536.9	3,558	530.4
65–74 years . . . . .	4,807	1,283.4	4,724	1,313.4
75–84 years . . . . .	6,237	3,445.0	6,136	3,500.0
85 years and over . . . . .	5,494	9,208.1	5,073	8,742.2
Not stated . . . . .	5	...	2	...
Age-adjusted rate <sup>2</sup> . . . . .	...	498.4	...	493.4
API <sup>5</sup> female				
All ages . . . . .	23,815	297.7	23,222	301.0
Under 1 year <sup>1</sup> . . . . .	414	363.4	417	380.9
1–4 years . . . . .	57	12.2	86	20.1
5–14 years . . . . .	107	10.4	83	8.6
15–24 years . . . . .	250	25.2	222	23.4
25–34 years . . . . .	384	28.9	445	35.1
35–44 years . . . . .	718	53.9	658	49.3
45–54 years . . . . .	1,456	131.2	1,505	136.7
55–64 years . . . . .	2,602	319.5	2,566	328.2
65–74 years . . . . .	3,678	826.4	3,731	867.9
75–84 years . . . . .	6,455	2,457.6	6,290	2,438.8
85 years and over . . . . .	7,691	7,418.7	7,218	7,486.9
Not stated . . . . .	2	...	1	...
Age-adjusted rate <sup>2</sup> . . . . .	...	348.8	...	353.5

See footnotes at end of table.

**Table 1. Deaths and death rates by age, sex, and race and Hispanic origin, and age-adjusted death rates, by sex and race and Hispanic origin: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Age-specific rates are per 100,000 population in specified group. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on the death certificate. Data for Hispanic origin and specified races other than white and black should be interpreted with caution because of inconsistencies between reporting Hispanic origin and race on death certificates and on censuses and surveys; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." The multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes." Data for persons of Hispanic origin are included in the data for each race group, according to the decedent's reported race; see "Technical Notes."]

Age, sex, and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
Hispanic, <sup>6</sup> both sexes				
All ages . . . . .	140,533	290.2	140,103	298.4
Under 1 year <sup>1</sup> . . . . .	5,436	492.1	5,891	531.5
1–4 years . . . . .	1,014	23.2	1,030	24.6
5–14 years . . . . .	1,164	13.1	1,019	12.1
15–24 years . . . . .	5,145	65.0	5,202	69.2
25–34 years . . . . .	6,303	77.1	6,408	78.3
35–44 years . . . . .	8,554	121.1	8,644	123.3
45–54 years . . . . .	15,150	293.2	14,428	289.6
55–64 years . . . . .	19,129	638.8	18,602	651.8
65–74 years . . . . .	22,242	1,419.8	22,092	1,467.3
75–84 years . . . . .	30,240	3,474.4	30,492	3,619.5
85 years and over . . . . .	26,129	8,062.6	26,283	8,390.9
Not stated . . . . .	26	...	11	...
Age-adjusted rate <sup>2</sup> . . . . .	...	519.0	...	536.0
Hispanic <sup>6</sup> male				
All ages . . . . .	77,491	309.3	77,261	318.5
Under 1 year <sup>1</sup> . . . . .	2,996	531.2	3,279	578.5
1–4 years . . . . .	546	24.4	588	27.5
5–14 years . . . . .	646	14.3	548	12.7
15–24 years . . . . .	3,944	94.9	4,076	103.8
25–34 years . . . . .	4,636	102.9	4,848	107.4
35–44 years . . . . .	5,737	151.7	5,934	159.1
45–54 years . . . . .	9,908	374.0	9,513	374.3
55–64 years . . . . .	11,846	816.0	11,518	835.5
65–74 years . . . . .	12,517	1,768.0	12,506	1,839.4
75–84 years . . . . .	14,769	4,070.7	14,938	4,288.9
85 years and over . . . . .	9,930	8,673.7	9,502	8,475.4
Not stated . . . . .	17	...	11	...
Age-adjusted rate <sup>2</sup> . . . . .	...	618.0	...	634.8
Hispanic <sup>6</sup> female				
All ages . . . . .	63,043	269.8	62,842	277.0
Under 1 year <sup>1</sup> . . . . .	2,440	451.3	2,612	482.3
1–4 years . . . . .	468	21.8	442	21.6
5–14 years . . . . .	519	12.0	471	11.4
15–24 years . . . . .	1,201	31.9	1,126	31.4
25–34 years . . . . .	1,667	45.4	1,561	42.6
35–44 years . . . . .	2,817	85.8	2,710	82.6
45–54 years . . . . .	5,242	208.1	4,915	201.4
55–64 years . . . . .	7,283	472.1	7,085	480.2
65–74 years . . . . .	9,725	1,132.7	9,586	1,160.9
75–84 years . . . . .	15,472	3,048.3	15,555	3,147.9
85 years and over . . . . .	16,199	7,728.8	16,780	8,343.4
Not stated . . . . .	9	...	—	...
Age-adjusted rate <sup>2</sup> . . . . .	...	434.3	...	449.3

... Category not applicable.

— Quantity zero.

<sup>1</sup>Death rates for "Under 1 year" (based on population estimates) differ from infant mortality rates (based on live births). See text for additional information on the infant mortality rate.

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

<sup>3</sup>American Indian or Alaska Native.

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

<sup>5</sup>Asian or Pacific Islander.

<sup>6</sup>Includes all persons of Hispanic origin of any race; see "Technical Notes."

NOTE: Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes."



**Table 2. Deaths, death rates, and age-adjusted death rates for 113 selected causes, Injury by firearms, Drug-induced deaths, Alcohol-induced deaths, Injury at work, and Enterocolitis due to *Clostridium difficile*: United States, preliminary 2008 and 2009**

[Data are based on a continuous file of records received from the states. Rates per 100,000 population. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009			2008		
	Number	Rate	Age-adjusted rate	Number	Rate	Age-adjusted rate
All causes . . . . .	2,436,652	793.7	741.0	2,472,699	813.2	758.6
Salmonella infections . . . . . (A01–A02)	26	0.0	0.0	43	0.0	0.0
Shigellosis and amebiasis . . . . . (A03,A06)	11	*	*	6	*	*
Certain other intestinal infections . . . . . (A04,A07–A09) <sup>1</sup>	10,242	3.3	3.1	7,883	2.6	2.4
Tuberculosis . . . . . (A16–A19)	547	0.2	0.2	590	0.2	0.2
Respiratory tuberculosis . . . . . (A16)	422	0.1	0.1	452	0.1	0.1
Other tuberculosis . . . . . (A17–A19)	126	0.0	0.0	138	0.0	0.0
Whooping cough . . . . . (A37)	15	*	*	20	0.0	0.0
Scarlet fever and erysipelas . . . . . (A38,A46)	5	*	*	3	*	*
Meningococcal infection . . . . . (A39)	97	0.0	0.0	102	0.0	0.0
Septicemia . . . . . (A40–A41)	35,587	11.6	10.9	35,961	11.8	11.1
Syphilis . . . . . (A50–A53)	33	0.0	0.0	34	0.0	0.0
Acute poliomyelitis . . . . . (A80)	–	*	*	–	*	*
Arthropod-borne viral encephalitis . . . . . (A83–A84,A85.2)	2	*	*	2	*	*
Measles . . . . . (B05)	2	*	*	–	*	*
Viral hepatitis . . . . . (B15–B19)	7,652	2.5	2.2	7,631	2.5	2.3
Human immunodeficiency virus (HIV) disease . . . . . (B20–B24)	9,424	3.1	3.0	10,295	3.4	3.3
Malaria . . . . . (B50–B54)	4	*	*	5	*	*
Other and unspecified infectious and parasitic diseases and their sequelae . . . . . (A00,A05,A20–A36, A42–A44,A48–A49,A54–A79,A81–A82,A85.0–A85.1,A85.8,A86–B04,B06–B09,B25–B49,B55–B99)	5,842	1.9	1.8	5,933	2.0	1.8
Malignant neoplasms . . . . . (C00–C97)	568,668	185.2	173.6	566,137	186.2	175.5
Malignant neoplasms of lip, oral cavity and pharynx . . . . . (C00–C14)	7,913	2.6	2.4	8,031	2.6	2.4
Malignant neoplasm of esophagus . . . . . (C15)	13,916	4.5	4.2	13,739	4.5	4.2
Malignant neoplasm of stomach . . . . . (C16)	11,139	3.6	3.4	11,381	3.7	3.5
Malignant neoplasms of colon, rectum and anus . . . . . (C18–C21)	52,462	17.1	16.0	53,337	17.5	16.5
Malignant neoplasms of liver and intrahepatic bile ducts . . . . . (C22)	19,311	6.3	5.8	18,243	6.0	5.6
Malignant neoplasm of pancreas . . . . . (C25)	35,872	11.7	10.9	35,267	11.6	10.9
Malignant neoplasm of larynx . . . . . (C32)	3,633	1.2	1.1	3,759	1.2	1.2
Malignant neoplasms of trachea, bronchus and lung . . . . . (C33–C34)	158,105	51.5	48.4	158,873	52.3	49.6
Malignant melanoma of skin . . . . . (C43)	9,254	3.0	2.8	8,643	2.8	2.7
Malignant neoplasm of breast . . . . . (C50)	41,115	13.4	12.5	41,049	13.5	12.6
Malignant neoplasm of cervix uteri . . . . . (C53)	3,909	1.3	1.2	4,018	1.3	1.3
Malignant neoplasms of corpus uteri and uterus, part unspecified . . . . . (C54–C55)	7,636	2.5	2.3	7,682	2.5	2.4
Malignant neoplasm of ovary . . . . . (C56)	14,513	4.7	4.4	14,373	4.7	4.4
Malignant neoplasm of prostate . . . . . (C61)	28,154	9.2	8.6	28,517	9.4	8.8
Malignant neoplasms of kidney and renal pelvis . . . . . (C64–C65)	13,027	4.2	3.9	12,915	4.2	4.0
Malignant neoplasm of bladder . . . . . (C67)	14,315	4.7	4.4	14,053	4.6	4.3
Malignant neoplasms of meninges, brain and other parts of central nervous system . . . . . (C70–C72)	14,192	4.6	4.4	13,739	4.5	4.3
Malignant neoplasms of lymphoid, hematopoietic and related tissue . . . . . (C81–C96)	55,462	18.1	17.1	54,998	18.1	17.2
Hodgkin's disease . . . . . (C81)	1,265	0.4	0.4	1,170	0.4	0.4
Non-Hodgkin's lymphoma . . . . . (C82–C85)	20,361	6.6	6.3	20,374	6.7	6.3
Leukemia . . . . . (C91–C95)	22,697	7.4	7.0	22,357	7.4	7.0
Multiple myeloma and immunoproliferative neoplasms . . . . . (C88,C90)	11,072	3.6	3.4	11,038	3.6	3.4

See footnotes at end of table.

**Table 2. Deaths, death rates, and age-adjusted death rates for 113 selected causes, Injury by firearms, Drug-induced deaths, Alcohol-induced deaths, Injury at work, and Enterocolitis due to *Clostridium difficile*: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records received from the states. Rates per 100,000 population. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009			2008		
	Number	Rate	Age-adjusted rate	Number	Rate	Age-adjusted rate
Other and unspecified malignant neoplasms of lymphoid, hematopoietic and related tissue . . . (C96)	66	0.0	0.0	59	0.0	0.0
All other and unspecified malignant neoplasms . . . . . (C17,C23–C24,C26–C31,C37–C41,C44–C49, C51–C52,C57–C60,C62–C63,C66,C68–C69,C73–C80,C97)	64,738	21.1	19.8	63,519	20.9	19.7
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . (D00–D48)	14,616	4.8	4.5	14,481	4.8	4.5
Anemias . . . . . (D50–D64)	4,652	1.5	1.4	5,033	1.7	1.5
Diabetes mellitus . . . . . (E10–E14)	68,504	22.3	20.9	70,601	23.2	21.8
Nutritional deficiencies . . . . . (E40–E64)	2,836	0.9	0.8	2,981	1.0	0.9
Malnutrition . . . . . (E40–E46)	2,672	0.9	0.8	2,767	0.9	0.8
Other nutritional deficiencies . . . . . (E50–E64)	164	0.1	0.0	214	0.1	0.1
Meningitis . . . . . (G00,G03)	648	0.2	0.2	633	0.2	0.2
Parkinson's disease . . . . . (G20–G21)	20,552	6.7	6.4	20,507	6.7	6.4
Alzheimer's disease . . . . . (G30)	78,889	25.7	23.4	82,476	27.1	24.4
Major cardiovascular diseases . . . . . (I00–I78)	779,367	253.9	234.4	804,899	264.7	243.6
Diseases of heart . . . . . (I00–I09,I11,I13,I20–I51)	598,607	195.0	179.8	617,527	203.1	186.7
Acute rheumatic fever and chronic rheumatic heart diseases . . . . . (I00–I09)	3,251	1.1	1.0	3,149	1.0	1.0
Hypertensive heart disease . . . . . (I11)	33,029	10.8	9.8	32,374	10.6	9.7
Hypertensive heart and renal disease . . . . . (I13)	2,880	0.9	0.9	2,867	0.9	0.9
Ischemic heart diseases . . . . . (I20–I25)	385,723	125.6	115.9	405,019	133.2	122.6
Acute myocardial infarction . . . . . (I21–I22)	125,361	40.8	37.8	133,723	44.0	40.7
Other acute ischemic heart diseases . . . . . (I24)	3,953	1.3	1.2	4,233	1.4	1.3
Other forms of chronic ischemic heart disease . . . . . (I20,I25)	256,408	83.5	76.9	267,063	87.8	80.6
Atherosclerotic cardiovascular disease, so described . . . . . (I25.0)	56,731	18.5	17.0	58,517	19.2	17.6
All other forms of chronic ischemic heart disease . . . . . (I20,I25.1–I25.9)	199,677	65.0	60.0	208,545	68.6	63.0
Other heart diseases . . . . . (I26–I51)	173,725	56.6	52.2	174,118	57.3	52.6
Acute and subacute endocarditis . . . . . (I33)	1,164	0.4	0.4	1,179	0.4	0.4
Diseases of pericardium and acute myocarditis . . . . . (I30–I31,I40)	837	0.3	0.2	829	0.3	0.3
Heart failure . . . . . (I50)	56,752	18.5	16.9	57,215	18.8	17.0
All other forms of heart disease . . . . . (I26–I28,I34–I38,I42–I49,I51)	114,971	37.4	34.7	114,895	37.8	34.9
Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	25,651	8.4	7.7	25,823	8.5	7.7
Cerebrovascular diseases . . . . . (I60–I69)	128,603	41.9	38.9	133,750	44.0	40.6
Atherosclerosis . . . . . (I70)	7,341	2.4	2.2	7,846	2.6	2.3
Other diseases of circulatory system . . . . . (I71–I78)	19,165	6.2	5.8	19,952	6.6	6.1
Aortic aneurysm and dissection . . . . . (I71)	10,581	3.4	3.3	11,088	3.6	3.4
Other diseases of arteries, arterioles and capillaries . . . . . (I72–I78)	8,584	2.8	2.6	8,864	2.9	2.7
Other disorders of circulatory system . . . . . (I80–I99)	4,044	1.3	1.2	4,034	1.3	1.2
Influenza and pneumonia . . . . . (J09–J18) <sup>2</sup>	53,582	17.5	16.2	56,335	18.5	17.0
Influenza . . . . . (J09–J11) <sup>2</sup>	2,808	0.9	0.9	1,721	0.6	0.5
Pneumonia . . . . . (J12–J18)	50,774	16.5	15.3	54,614	18.0	16.4
Other acute lower respiratory infections . . . . . (J20–J22,U04)	263	0.1	0.1	285	0.1	0.1
Acute bronchitis and bronchiolitis . . . . . (J20–J21)	226	0.1	0.1	235	0.1	0.1
Other and unspecified acute lower respiratory infections . . . . . (J22,U04)	38	0.0	0.0	50	0.0	0.0
Chronic lower respiratory diseases . . . . . (J40–J47)	137,082	44.7	42.2	141,075	46.4	44.0

See footnotes at end of table.

**Table 2. Deaths, death rates, and age-adjusted death rates for 113 selected causes, Injury by firearms, Drug-induced deaths, Alcohol-induced deaths, Injury at work, and Enterocolitis due to *Clostridium difficile*: United States, preliminary 2008 and 2009—Con.**

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Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009			2008		
	Number	Rate	Age-adjusted rate	Number	Rate	Age-adjusted rate
Bronchitis, chronic and unspecified . . . . . (J40–J42)	636	0.2	0.2	733	0.2	0.2
Emphysema . . . . . (J43)	10,916	3.6	3.4	12,459	4.1	3.9
Asthma . . . . . (J45–J46)	3,345	1.1	1.0	3,395	1.1	1.0
Other chronic lower respiratory diseases . . . . . (J44, J47)	122,185	39.8	37.6	124,489	40.9	38.8
Pneumoconioses and chemical effects . . . . . (J60–J66, J68)	843	0.3	0.3	905	0.3	0.3
Pneumonitis due to solids and liquids . . . . . (J69)	15,928	5.2	4.8	16,622	5.5	5.0
Other diseases of respiratory system . . . . . (J00–J06, J30–J39, J67, J70–98)	30,655	10.0	9.4	30,000	9.9	9.3
Peptic ulcer . . . . . (K25–K28)	2,937	1.0	0.9	3,070	1.0	0.9
Diseases of appendix . . . . . (K35–K38)	428	0.1	0.1	420	0.1	0.1
Hernia . . . . . (K40–K46)	1,821	0.6	0.5	1,682	0.6	0.5
Chronic liver disease and cirrhosis . . . . . (K70, K73–K74)	30,444	9.9	9.2	29,963	9.9	9.2
Alcoholic liver disease . . . . . (K70)	15,107	4.9	4.5	14,859	4.9	4.5
Other chronic liver disease and cirrhosis . . . . . (K73–K74)	15,338	5.0	4.6	15,104	5.0	4.6
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	3,286	1.1	1.0	3,425	1.1	1.0
Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07, N17–N19, N25–N27)	48,714	15.9	14.8	48,283	15.9	14.8
Acute and rapidly progressive nephritic and nephrotic syndrome . . . . . (N00–N01, N04)	163	0.1	0.0	165	0.1	0.0
Chronic glomerulonephritis, nephrosis and nephropathy not specified as acute or chronic, and renal sclerosis unspecified . . . . . (N02–N03, N05–N07, N26)	4,897	1.6	1.5	4,120	1.4	1.2
Renal failure . . . . . (N17–N19)	43,628	14.2	13.3	43,965	14.5	13.5
Other disorders of kidney . . . . . (N25, N27)	25	0.0	0.0	33	0.0	0.0
Infections of kidney . . . . . (N10–N12, N13.6, N15.1)	602	0.2	0.2	629	0.2	0.2
Hyperplasia of prostate . . . . . (N40)	438	0.1	0.1	504	0.2	0.1
Inflammatory diseases of female pelvic organs . . . . . (N70–N76)	138	0.0	0.0	133	0.0	0.0
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	873	0.3	0.3	774	0.3	0.3
Pregnancy with abortive outcome . . . . . (O00–O07)	34	0.0	0.0	34	0.0	0.0
Other complications of pregnancy, childbirth and the puerperium . . . . . (O10–O99)	839	0.3	0.3	739	0.2	0.2
Certain conditions originating in the perinatal period . . . . . (P00–P96)	13,114	4.3	4.2	13,889	4.6	4.4
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	9,927	3.2	3.2	10,284	3.4	3.3
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	43,076	14.0	13.1	38,455	12.6	11.7
All other diseases (Residual) . . . . .	252,241	82.2	75.8	252,706	83.1	76.4
Accidents (unintentional injuries) . . . . . (V01–X59, Y85–Y86)	117,176	38.2	37.0	121,207	39.9	38.6
Transport accidents . . . . . (V01–V99, Y85)	39,057	12.7	12.6	42,742	14.1	13.9
Motor vehicle accidents . . . . . (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	36,284	11.8	11.7	39,831	13.1	12.9
Other land transport accidents . . . . . (V01, V05–V06, V09.1, V09.3–V09.9, V10–V11, V15–V18, V19.3, V19.8–V19.9, V80.0–V80.2, V80.6–V80.9, V81.2–V81.9, V82.2–V82.9, V87.9, V88.9, V89.1, V89.3, V89.9)	991	0.3	0.3	1,146	0.4	0.4
Water, air and space, and other and unspecified transport accidents and their sequelae . . . . . (V90–V99, Y85)	1,782	0.6	0.6	1,765	0.6	0.6
Nontransport accidents . . . . . (W00–X59, Y86)	78,118	25.4	24.5	78,465	25.8	24.7
Falls . . . . . (W00–W19)	24,834	8.1	7.5	24,062	7.9	7.3
Accidental discharge of firearms . . . . . (W32–W34)	588	0.2	0.2	587	0.2	0.2

See footnotes at end of table.

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Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009			2008		
	Number	Rate	Age-adjusted rate	Number	Rate	Age-adjusted rate
Accidental drowning and submersion . . . . . (W65–W74)	3,539	1.2	1.1	3,549	1.2	1.2
Accidental exposure to smoke, fire and flames . . . . . (X00–X09)	2,751	0.9	0.8	2,907	1.0	0.9
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	30,504	9.9	9.9	30,306	10.0	9.9
Other and unspecified nontransport accidents and their sequelae . . . . . (W20–W31, W35–W64, W75–W99, X10–X39, X50–X59, Y86)	15,902	5.2	4.9	17,054	5.6	5.3
Intentional self-harm (suicide) . . . . . (*U03, X60–X84, Y87.0)	36,547	11.9	11.7	35,933	11.8	11.6
Intentional self-harm (suicide) by discharge of firearms . . . . . (X72–X74)	18,689	6.1	5.9	18,251	6.0	5.8
Intentional self-harm (suicide) by other and unspecified means and their sequelae . . . . . (*U03, X60–X71, X75–X84, Y87.0)	17,859	5.8	5.8	17,681	5.8	5.7
Assault (homicide) . . . . . (*U01–*U02, X85–Y09, Y87.1)	16,591	5.4	5.5	17,837	5.9	5.9
Assault (homicide) by discharge of firearms . . . . . (*U01.4, X93–X95)	11,406	3.7	3.8	12,209	4.0	4.0
Assault (homicide) by other and unspecified means and their sequelae . . . . . (*U01.0–*U01.3, *U01.5–*U01.9, *U02, X85–X92, X96–Y09, Y87.1)	5,185	1.7	1.7	5,628	1.9	1.8
Legal intervention . . . . . (Y35, Y89.0)	372	0.1	0.1	380	0.1	0.1
Events of undetermined intent . . . . . (Y10–Y34, Y87.2, Y89.9)	4,730	1.5	1.5	4,979	1.6	1.6
Discharge of firearms, undetermined intent . . . . . (Y22–Y24)	230	0.1	0.1	276	0.1	0.1
Other and unspecified events of undetermined intent and their sequelae . . . . . (Y10–Y21, Y25–Y34, Y87.2, Y89.9)	4,500	1.5	1.5	4,703	1.5	1.5
Operations of war and their sequelae . . . . . (Y36, Y89.1)	25	0.0	0.0	31	0.0	0.0
Complications of medical and surgical care . . . . . (Y40–Y84, Y88)	2,550	0.8	0.8	2,602	0.9	0.8
Injury by firearms . . . . . (*U01.4, W32–W34, X72–X74, X93–X95, Y22–Y24, Y35.0) <sup>3</sup>	31,228	10.2	10.0	31,651	10.4	10.3
Drug-induced deaths . . . . . (D52.1, D59.0, D59.2, D61.1, D64.2, E06.4, E16.0, E23.1, E24.2, E27.3, E66.1, F11.0–F11.5, F11.7–F11.9, F12.0–F12.5, F12.7–F12.9, F13.0–F13.5, F13.7–F13.9, F14.0–F14.5, F14.7–F14.9, F15.0–F15.5, F15.7–F15.9, F16.0–F16.5, F16.7–F16.9, F17.0, F17.3–F17.5, F17.7–F17.9, F18.0–F18.5, F18.7–18.9, F19.0–F19.5, F19.7–F19.9, G21.1, G24.0, G25.1, G25.4, G25.6, G44.4, G62.0, G72.0, I95.2, J70.2–J70.4, K85.3, L10.5, L27.0–L27.1, M10.2, M32.0, M80.4, M81.4, M83.5, M87.1, R50.2, R78.1–R78.5, X40–X44, X60–X64, X85, Y10–14) <sup>3</sup>	37,485	12.2	12.1	37,777	12.4	12.3
Alcohol-induced deaths . . . . . (E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K85.2, K86.0, R78.0, X45, X65, Y15) <sup>3</sup>	24,263	7.9	7.3	24,081	7.9	7.4
Injury at work <sup>4</sup> . . . . .	4,108	1.7	1.7	4,689	1.9	1.9
Enterocolitis due to <i>Clostridium difficile</i> . . . . . (A04.7) <sup>5</sup>	7,285	2.4	2.2	7,483	2.5	2.3

0.0 Quantity more than zero but less than 0.05.

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

– Quantity zero.

<sup>1</sup>Expanded ICD–10 code A09 (Diarrhea and gastroenteritis of infectious origin) was added to the category in 2009; see "Technical Notes."

<sup>2</sup>Expanded ICD–10 code J09 (Influenza due to certain identified influenza virus) was added to the category in 2009; see "Technical Notes."

<sup>3</sup>Included in selected categories above.

<sup>4</sup>Described in "Technical Notes."

<sup>5</sup>Included in "Certain other intestinal infections (A04, A07–A09)" shown above; see "Technical Notes."

NOTES: For certain causes of death such as unintentional injuries, homicides, suicides, and respiratory diseases, preliminary and final data differ because of the truncated nature of the preliminary file. Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes."

**Table 3. Deaths, death rates, and age-adjusted death rates: United States, and each state and territory, preliminary 2008 and 2009**

[By place of residence. Data are based on a continuous file of records received from the states. Rates are per 100,000 population. Age-adjusted rates are per 100,000 U.S. standard population; see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals]

Area	2009			2008		
	Number	Rate	Age-adjusted rate	Number	Rate	Age-adjusted rate
United States <sup>1</sup>	2,436,652	793.7	740.9	2,473,018	813.3	758.7
Alabama	47,428	1,007.2	920.3	47,712	1,023.4	930.3
Alaska	3,616	517.7	754.3	3,483	507.5	739.6
Arizona	45,839	695.0	652.9	45,610	701.7	650.6
Arkansas	28,669	992.2	874.4	29,310	1,026.5	899.2
California	232,767	629.8	652.2	234,229	637.2	658.8
Colorado	31,170	620.3	688.0	31,256	632.8	708.6
Connecticut	28,513	810.4	682.3	28,797	822.5	691.4
Delaware	7,535	851.3	753.6	7,623	873.1	780.8
District of Columbia	4,761	794.0	801.5	5,139	868.3	849.9
Florida	169,843	916.2	673.4	170,668	931.2	679.0
Georgia <sup>2</sup>	---	---	---	69,942	722.1	835.4
Hawaii	9,916	765.6	619.8	9,475	735.5	589.0
Idaho	11,097	717.9	721.2	10,942	718.1	721.7
Illinois	99,994	774.5	743.0	103,615	803.1	772.0
Indiana	55,956	871.2	815.5	56,743	889.8	835.1
Iowa	27,553	916.0	724.8	28,533	950.3	744.0
Kansas	24,014	851.9	759.9	24,969	891.1	784.7
Kentucky	41,350	958.5	897.8	41,280	966.9	901.2
Louisiana	40,246	895.9	887.5	41,217	934.5	922.0
Maine	12,575	953.9	755.9	12,531	951.9	764.1
Maryland	43,907	770.4	763.8	43,885	779.0	771.6
Massachusetts	52,375	794.3	681.0	53,521	823.7	705.9
Michigan	86,472	867.3	786.1	88,418	883.9	811.7
Minnesota	37,845	718.6	651.7	38,487	737.2	675.2
Mississippi	28,282	958.1	926.3	28,980	986.2	950.0
Missouri	54,251	906.1	804.4	56,566	956.9	847.0
Montana	8,723	894.7	757.3	8,903	920.3	785.9
Nebraska	14,811	824.4	716.1	15,455	866.6	741.1
Nevada <sup>3</sup>	19,224	727.3	786.3	20,790	799.6	868.2
New Hampshire	10,088	761.6	676.5	10,268	780.4	712.5
New Jersey	68,277	784.1	694.8	69,993	806.1	716.8
New Mexico	15,662	779.3	740.3	15,996	806.1	758.2
New York	146,161	748.0	665.5	148,660	762.7	675.8
North Carolina	77,121	822.1	800.7	77,277	837.9	825.6
North Dakota	5,915	914.4	719.3	5,870	915.1	713.0
Ohio	107,156	928.3	813.5	109,749	955.5	844.0
Oklahoma	35,598	965.5	890.5	37,061	1,017.5	932.2
Oregon	31,635	826.9	733.1	31,939	842.7	747.9
Pennsylvania	124,813	990.2	771.0	127,450	1,023.8	796.5
Rhode Island	9,387	891.3	716.8	9,740	926.9	749.6
South Carolina	40,313	883.8	815.2	40,305	899.7	839.7
South Dakota	6,922	852.1	689.1	7,080	880.4	708.4
Tennessee	58,301	926.0	867.4	58,882	947.4	889.7
Texas	163,266	658.8	754.4	165,197	679.1	777.3
Utah	14,141	507.8	658.8	13,991	511.3	656.9
Vermont	5,029	808.8	680.9	5,213	839.1	722.2
Virginia	58,660	744.2	749.4	59,093	760.6	762.6
Washington	48,263	724.2	709.7	48,603	742.1	723.3
West Virginia	21,381	1,174.9	949.6	21,549	1,187.6	958.1
Wisconsin	45,691	808.0	708.8	46,799	831.5	729.7
Wyoming	4,284	787.1	776.4	4,222	792.6	772.5
Puerto Rico	28,874	727.8	683.6	28,781	727.9	700.4
Virgin Islands	---	---	---	699	636.4	682.9
Guam	---	---	---	762	433.0	683.1
American Samoa	310	472.4	1,216.9	241	371.8	958.9
Northern Marianas	194	376.8	901.7	175	316.8	833.0

--- Data not available.

<sup>1</sup>Excludes data for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas.

<sup>2</sup>Data not shown separately but included in the U.S. total because the percent completeness did not meet the criterion of at least 75 percent of the state's demographic file for the 12-month period; see "Technical Notes."

<sup>3</sup>For 2008, data are based on the state of occurrence due to the lack of geographic code for the state; see "Technical Notes."

NOTE: Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes."

**Table 4. Infant deaths and infant mortality rates, by age and race and Hispanic origin: United States, preliminary 2008 and 2009**

[Data based on the continuous file of records received from the states. Rates are per 1,000 live births. Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals. Race and Hispanic origin are reported separately on both the birth and death certificates. Rates for Hispanic origin should be interpreted with caution because of the inconsistencies between reporting Hispanic origin on birth and death certificates; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported for deaths by 34 states and the District of Columbia in 2009 and 2008, and were reported for births by 32 states and the District of Columbia in 2009 and by 30 states in 2008; see "Technical Notes." Multiple-race data for these states were bridged to the single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes"]

Age and race and Hispanic origin	2009		2008	
	Number	Rate	Number	Rate
All races <sup>1</sup>				
Under 1 year . . . . .	26,531	6.42	28,033	6.59
Under 28 days . . . . .	17,298	4.19	18,154	4.27
28 days–11 months . . . . .	9,233	2.24	9,879	2.32
Total white				
Under 1 year . . . . .	16,897	5.32	18,162	5.54
Under 28 days . . . . .	11,083	3.49	11,820	3.61
28 days–11 months . . . . .	5,814	1.83	6,343	1.94
Non-Hispanic white				
Under 1 year . . . . .	11,658	5.27	12,545	5.52
Under 28 days . . . . .	7,595	3.43	8,022	3.53
28 days–11 months . . . . .	4,063	1.84	4,522	1.99
Total black				
Under 1 year . . . . .	8,356	12.71	8,513	12.68
Under 28 days . . . . .	5,393	8.20	5,483	8.17
28 days–11 months . . . . .	2,964	4.51	3,030	4.51
Hispanic <sup>2</sup>				
Under 1 year . . . . .	5,436	5.44	5,891	5.67
Under 28 days . . . . .	3,619	3.62	3,959	3.81
28 days–11 months . . . . .	1,817	1.82	1,932	1.86

<sup>1</sup>Includes races other than white and black.

<sup>2</sup>Includes all persons of Hispanic origin of any race; see "Technical Notes."

NOTES: Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes." Although the infant mortality rate is the preferred indicator of the risk of dying during the first year of life, another measure of infant mortality, the infant death rate, is shown elsewhere in this report. The two measures typically are similar but use different denominators. For more information on these measures of risk, see "Infant mortality" in "Technical Notes."

**Table 5. Infant deaths and infant mortality rates for 130 selected causes: United States, preliminary 2008 and 2009**

[Data are based on a continuous file of records from the states. Rates are per 100,000 live births. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009		2008	
	Number	Rate	Number	Rate
All causes . . . . .	26,526	642.1	28,029	659.3
Certain infectious and parasitic diseases . . . . . (A00-B99) <sup>1</sup>	735	17.8	485	11.4
Certain intestinal infectious diseases . . . . . (A00-A08)	11	*	12	*
Diarrhea and gastroenteritis of infectious origin . . . . . (A09) <sup>1</sup>	328	7.9	-	*
Tuberculosis . . . . . (A16-A19)	1	*	-	*
Tetanus . . . . . (A33,A35)	-	*	-	*
Diphtheria . . . . . (A36)	-	*	-	*
Whooping cough . . . . . (A37)	15	*	18	*
Meningococcal infection . . . . . (A39)	10	*	9	*
Septicemia . . . . . (A40-A41)	234	5.7	293	6.9
Congenital syphilis . . . . . (A50)	-	*	-	*
Gonococcal infection . . . . . (A54)	-	*	-	*
Viral diseases . . . . . (A80-B34)	98	2.4	102	2.4
Acute poliomyelitis . . . . . (A80)	-	*	-	*
Varicella (chickenpox) . . . . . (B01)	-	*	-	*
Measles . . . . . (B05)	-	*	-	*
Human immunodeficiency virus (HIV) disease . . . . . (B20-B24)	1	*	-	*
Mumps . . . . . (B26)	-	*	-	*
Other and unspecified viral diseases . . . . . (A81-B00,B02-B04,B06-B19,B25,B27-B34)	97	2.3	102	2.4
Candidiasis . . . . . (B37)	8	*	7	*
Malaria . . . . . (B50-B54)	1	*	-	*
Pneumocystosis . . . . . (B59)	-	*	3	*
All other and unspecified infectious and parasitic diseases . . . . . (A20-A32,A38,A42-A49, A51-A53,A55-A79,B35-B36,B38-B49,B55-B58,B60-B99)	27	0.7	40	0.9
Neoplasms . . . . . (C00-D48)	148	3.6	128	3.0
Malignant neoplasms . . . . . (C00-C97)	87	2.1	68	1.6
Hodgkin's disease and non-Hodgkin's lymphomas . . . . . (C81-C85)	-	*	1	*
Leukemia . . . . . (C91-C95)	28	0.7	27	0.6
Other and unspecified malignant neoplasms . . . . . (C00-C80,C88,C90,C96-C97)	60	1.5	39	0.9
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00-D48)	61	1.5	60	1.4
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism . . . . . (D50-D89)	89	2.2	81	1.9
Anemias . . . . . (D50-D64)	12	*	15	*
Hemorrhagic conditions and other diseases of blood and blood-forming organs . . . . . (D65-D76)	62	1.5	56	1.3
Certain disorders involving the immune mechanism . . . . . (D80-D89)	14	*	9	*
Endocrine, nutritional and metabolic diseases . . . . . (E00-E88)	209	5.1	247	5.8
Short stature, not elsewhere classified . . . . . (E34.3)	3	*	9	*
Nutritional deficiencies . . . . . (E40-E64)	3	*	9	*
Cystic fibrosis . . . . . (E84)	7	*	4	*
Volume depletion, disorders of fluid, electrolyte and acid-base balance . . . . . (E86-E87)	45	1.1	80	1.9
All other endocrine, nutritional and metabolic diseases . . . . . (E00-E32,E34.0-E34.2, E34.4-E34.9,E65-E83,E85,E88)	151	3.7	145	3.4
Diseases of the nervous system . . . . . (G00-G98)	340	8.2	414	9.7
Meningitis . . . . . (G00,G03)	59	1.4	67	1.6
Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) . . . . . (G12.0)	13	*	5	*

See footnotes at end of table.

**Table 5. Infant deaths and infant mortality rates for 130 selected causes: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records from the states. Rates are per 100,000 live births. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009		2008	
	Number	Rate	Number	Rate
Infantile cerebral palsy . . . . . (G80)	7	*	8	*
Anoxic brain damage, not elsewhere classified . . . . . (G93.1)	38	0.9	51	1.2
Other diseases of nervous system . . . . . (G04,G06–G11,G12.1–G12.9,G20–G72,G81–G92,G93.0, G93.2–G93.9,G95–G98)	223	5.4	283	6.7
Diseases of the ear and mastoid process . . . . . (H60–H93)	2	*	6	*
Diseases of the circulatory system . . . . . (I00–I99)	565	13.7	590	13.9
Pulmonary heart disease and diseases of pulmonary circulation . . . . . (I26–I28)	105	2.5	88	2.1
Pericarditis, endocarditis and myocarditis . . . . . (I30,I33,I40)	16	*	19	*
Cardiomyopathy . . . . . (I42)	110	2.7	114	2.7
Cardiac arrest . . . . . (I46)	27	0.7	25	0.6
Cerebrovascular diseases . . . . . (I60–I69)	129	3.1	144	3.4
All other diseases of circulatory system . . . . . (I00–I25,I31,I34–I38,I44–I45,I47–I51,I70–I99)	177	4.3	201	4.7
Diseases of the respiratory system . . . . . (J00–J98,U04) <sup>2</sup>	584	14.1	578	13.6
Acute upper respiratory infections . . . . . (J00–J06)	10	*	12	*
Influenza and pneumonia . . . . . (J09–J18) <sup>2</sup>	238	5.8	225	5.3
Influenza . . . . . (J09–J11) <sup>2</sup>	28	0.7	16	*
Pneumonia . . . . . (J12–J18)	210	5.1	208	4.9
Acute bronchitis and acute bronchiolitis . . . . . (J20–J21)	46	1.1	43	1.0
Bronchitis, chronic and unspecified . . . . . (J40–J42)	13	*	22	0.5
Asthma . . . . . (J45–J46)	4	*	6	*
Pneumonitis due to solids and liquids . . . . . (J69)	6	*	10	*
Other and unspecified diseases of respiratory system . . . . . (J22,J30–J39,J43–J44,J47–J68,J70–J98,U04)	267	6.5	260	6.1
Diseases of the digestive system . . . . . (K00–K92)	229	5.5	578	13.6
Gastritis, duodenitis, and noninfective enteritis and colitis . . . . . (K29,K50–K55)	33	0.8	355	8.4
Hernia of abdominal cavity and intestinal obstruction without hernia . . . . . (K40–K46,K56)	50	1.2	47	1.1
All other and unspecified diseases of digestive system . . . . . (K00–K28,K30–K38,K57–K92)	147	3.6	175	4.1
Diseases of the genitourinary system . . . . . (N00–N95)	124	3.0	172	4.0
Renal failure and other disorders of kidney . . . . . (N17–N19,N25,N27)	103	2.5	140	3.3
Other and unspecified diseases of genitourinary system . . . . . (N00–N15,N20–N23,N26,N28–N95)	21	0.5	32	0.8
Certain conditions originating in the perinatal period . . . . . (P00–P96)	12,981	314.2	13,738	323.2
Newborn affected by maternal factors and by complications of pregnancy, labor and delivery . . . . . (P00–P04)	2,914	70.5	3,153	74.2
Newborn affected by maternal hypertensive disorders . . . . . (P00.0)	82	2.0	84	2.0
Newborn affected by other maternal conditions which may be unrelated to present pregnancy . . . . . (P00.1–P00.9)	90	2.2	89	2.1
Newborn affected by maternal complications of pregnancy . . . . . (P01)	1,586	38.4	1,764	41.5
Newborn affected by incompetent cervix . . . . . (P01.0)	423	10.2	447	10.5
Newborn affected by premature rupture of membranes . . . . . (P01.1)	778	18.8	840	19.8
Newborn affected by multiple pregnancy . . . . . (P01.5)	198	4.8	257	6.0
Newborn affected by other maternal complications of pregnancy . . . . . (P01.2–P01.4,P01.6–P01.9)	187	4.5	220	5.2
Newborn affected by complications of placenta, cord and membranes . . . . . (P02)	1,022	24.7	1,073	25.2
Newborn affected by complications involving placenta . . . . . (P02.0–P02.3)	498	12.1	531	12.5
Newborn affected by complications involving cord . . . . . (P02.4–P02.6)	40	1.0	55	1.3
Newborn affected by chorioamnionitis . . . . . (P02.7)	483	11.7	486	11.4
Newborn affected by other and unspecified abnormalities of membranes . . . . . (P02.8–P02.9)	1	*	1	*
Newborn affected by other complications of labor and delivery . . . . . (P03)	109	2.6	95	2.2

See footnotes at end of table.



**Table 5. Infant deaths and infant mortality rates for 130 selected causes: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records from the states. Rates are per 100,000 live births. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009		2008	
	Number	Rate	Number	Rate
Newborn affected by noxious influences transmitted via placenta or breast milk . . . . . (P04)	26	0.6	48	1.1
Disorders related to length of gestation and fetal malnutrition . . . . . (P05–P08)	4,568	110.6	4,816	113.3
Slow fetal growth and fetal malnutrition . . . . . (P05)	106	2.6	83	2.0
Disorders related to short gestation and low birth weight, not elsewhere classified. . . . . (P07)	4,463	108.0	4,733	111.3
Extremely low birth weight or extreme immaturity . . . . . (P07.0,P07.2)	3,399	82.3	3,636	85.5
Other low birth weight or preterm . . . . . (P07.1,P07.3)	1,064	25.8	1,097	25.8
Disorders related to long gestation and high birth weight. . . . . (P08)	–	–	–	–
Birth trauma . . . . . (P10–P15)	17	*	18	*
Intrauterine hypoxia and birth asphyxia . . . . . (P20–P21)	342	8.3	382	9.0
Intrauterine hypoxia . . . . . (P20)	139	3.4	144	3.4
Birth asphyxia . . . . . (P21)	203	4.9	238	5.6R
Respiratory distress of newborn . . . . . (P22)	587	14.2	625	14.7
Other respiratory conditions originating in the perinatal period . . . . . (P23–P28)	964	23.3	1,102	25.9
Congenital pneumonia . . . . . (P23)	101	2.4	74	1.7
Neonatal aspiration syndromes . . . . . (P24)	40	1.0	58	1.4
Interstitial emphysema and related conditions originating in the perinatal period . . . . . (P25)	113	2.7	121	2.8
Pulmonary hemorrhage originating in the perinatal period . . . . . (P26)	162	3.9	199	4.7
Chronic respiratory disease originating in the perinatal period . . . . . (P27)	180	4.4	239	5.6
Atelectasis . . . . . (P28.0–P28.1)	297	7.2	334	7.9
All other respiratory conditions originating in the perinatal period . . . . . (P28.2–P28.9)	72	1.7	77	1.8
Infections specific to the perinatal period . . . . . (P35–P39)	858	20.8	896	21.1
Bacterial sepsis of newborn . . . . . (P36)	682	16.5	696	16.4
Omphalitis of newborn with or without mild hemorrhage . . . . . (P38)	4	*	2	*
All other infections specific to the perinatal period . . . . . (P35,P37,P39)	172	4.2	198	4.7
Hemorrhagic and hematological disorders of newborn . . . . . (P50–P61)	644	15.6	642	15.1
Neonatal hemorrhage . . . . . (P50–P52,P54)	537	13.0	551	13.0
Hemorrhagic disease of newborn . . . . . (P53)	1	*	2	*
Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice . . . . . (P55–P59)	14	*	10	*
Hematological disorders . . . . . (P60–P61)	91	2.2	78	1.8
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus . . . . . (P70.0–P70.2)	11	*	11	*
Necrotizing enterocolitis of newborn . . . . . (P77)	505	12.2	547	12.9
Hydrops fetalis not due to hemolytic disease . . . . . (P83.2)	185	4.5	170	4.0
Other perinatal conditions . . . . . (P29,P70.3–P76,P78–P81,P83.0–P83.1,P83.3–P96)	1,385	33.5	1,375	32.3
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	5,358	129.7	5,647	132.8
Anencephaly and similar malformations . . . . . (Q00)	318	7.7	340	8.0
Congenital hydrocephalus . . . . . (Q03)	114	2.8	104	2.4
Spina bifida. . . . . (Q05)	21	0.5	22	0.5
Other congenital malformations of nervous system . . . . . (Q01–Q02,Q04,Q06–Q07)	321	7.8	356	8.4
Congenital malformations of heart . . . . . (Q20–Q24)	1,232	29.8	1,307	30.7
Other congenital malformations of circulatory system . . . . . (Q25–Q28)	181	4.4	219	5.2
Congenital malformations of respiratory system . . . . . (Q30–Q34)	387	9.4	378	8.9
Congenital malformations of digestive system . . . . . (Q35–Q45)	66	1.6	85	2.0
Congenital malformations of genitourinary system . . . . . (Q50–Q64)	488	11.8	516	12.1
Congenital malformations and deformations of musculoskeletal system, limbs and integument . . . . . (Q65–Q85)	583	14.1	665	15.6
Down's syndrome . . . . . (Q90)	80	1.9	87	2.0

See footnotes at end of table.

**Table 5. Infant deaths and infant mortality rates for 130 selected causes: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records from the states. Rates are per 100,000 live births. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Cause of death (based on <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> )	2009		2008	
	Number	Rate	Number	Rate
Edward's syndrome. . . . . (Q91.0–Q91.3)	530	12.8	556	13.1
Patau's syndrome. . . . . (Q91.4–Q91.7)	247	6.0	278	6.5
Other congenital malformations and deformations . . . . . (Q10–Q18,Q86–Q89)	575	13.9	535	12.6
Other chromosomal abnormalities, not elsewhere classified . . . . . (Q92–Q99)	214	5.2	200	4.7
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	3,510	85.0	3,582	84.3
Sudden infant death syndrome . . . . . (R95)	2,168	52.5	2,292	53.9
Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R53,R55–R94,R96–R99)	1,342	32.5	1,290	30.3
All other diseases. . . . . (Residual)	31	0.8	34	0.8
External causes of mortality . . . . . (*U01,V01–Y84)	1,620	39.2	1,750	41.2
Accidents (unintentional injuries) . . . . . (V01–X59)	1,158	28.0	1,299	30.6
Transport accidents. . . . . (V01–V99)	108	2.6	105	2.5
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)	106	2.6	104	2.4
Other and unspecified transport accidents . . . . . (V01,V05–V06,V09.1,V09.3–V09.9,V10–V11, V15–V18,V19.3,V19.8–V19.9,V80.0–V80.2,V80.6–V80.9,V81.2–V81.9,V82.2–V82.9, V87.9,V88.9,V89.1,V89.3,V89.9,V90–V99)	2	*	1	*
Falls . . . . . (W00–W19)	28	0.7	19	*
Accidental discharge of firearms . . . . . (W32–W34)	–	*	–	*
Accidental drowning and submersion . . . . . (W65–W74)	41	1.0	37	0.9
Accidental suffocation and strangulation in bed . . . . . (W75)	638	15.4	730	17.2
Other accidental suffocation and strangulation . . . . . (W76–W77,W81–W84)	192	4.6	249	5.9
Accidental inhalation and ingestion of food or other objects causing obstruction of respiratory tract. . . . . (W78–W80)	51	1.2	60	1.4
Accidents caused by exposure to smoke, fire and flames . . . . . (X00–X09)	24	0.6	19	*
Accidental poisoning and exposure to noxious substances. . . . . (X40–X49)	12	*	11	*
Other and unspecified accidents . . . . . (W20–W31,W35–W64,W85–W99,X10–X39,X50–X59)	64	1.5	67	1.6
Assault (homicide) . . . . . (*U01,X85–Y09)	327	7.9	337	7.9
Assault (homicide) by hanging, strangulation and suffocation. . . . . (X91)	23	0.6	31	0.7
Assault (homicide) by discharge of firearms . . . . . (*U01.4,X93–X95)	24	0.6	8	*
Neglect, abandonment and other maltreatment syndromes . . . . . (Y06–Y07)	88	2.1	99	2.3
Assault (homicide) by other and unspecified means . . . . . (*U01.0–*U01.3, *U01.5–*U01.9,X85–X90,X92,X96–X99,Y00–Y05,Y08–Y09)	192	4.6	199	4.7
Complications of medical and surgical care . . . . . (Y40–Y84)	18	*	23	0.5
Other external causes. . . . . (Y10–Y36)	117	2.8	91	2.1

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

– Quantity zero.

<sup>1</sup>Expanded ICD-10 code A09 (Diarrhea and gastroenteritis of infectious origin) was added to the category in 2009; see "Technical Notes."

<sup>2</sup>Expanded ICD-10 code J09 (Influenza due to certain identified influenza virus) was added to the category in 2009; see "Technical Notes."

NOTES: For certain causes of death such as unintentional injuries, homicides, suicides, and respiratory diseases, preliminary and final data differ because of the truncated nature of the preliminary file. Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes." Although the infant mortality rate is the preferred indicator of the risk of dying during the first year of life, another measure of infant mortality, the infant death rate, is shown elsewhere in this report. The two measures typically are similar but use different denominators. For more information on these measures of risk, see "Infant mortality" in "Technical Notes."

**Table 6. Expectation of life, by age, race, and sex: United States, preliminary 2008 and 2009**

[Data are based on a continuous file of records from the states. Calculations of life expectancy employ populations estimated as of July 1 for 2009 and 2008; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." Multiple-race data for these states were bridged to single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes"]

Age (years) and race	Both sexes		Male		Female	
	2009	2008 <sup>1</sup>	2009	2008 <sup>1</sup>	2009	2008 <sup>1</sup>
All races <sup>2</sup>						
0 . . . . .	78.2	78.0	75.7	75.5	80.6	80.5
1 . . . . .	77.7	77.6	75.3	75.1	80.0	80.0
5 . . . . .	73.8	73.7	71.4	71.2	76.1	76.1
10 . . . . .	68.8	68.7	66.4	66.2	71.2	71.1
15 . . . . .	63.9	63.8	61.5	61.3	66.2	66.1
20 . . . . .	59.0	58.9	56.7	56.5	61.3	61.2
25 . . . . .	54.3	54.2	52.0	51.9	56.4	56.4
30 . . . . .	49.5	49.4	47.3	47.2	51.6	51.5
35 . . . . .	44.8	44.7	42.7	42.6	46.8	46.7
40 . . . . .	40.1	40.0	38.0	37.9	42.0	41.9
45 . . . . .	35.5	35.4	33.5	33.4	37.3	37.2
50 . . . . .	31.1	31.0	29.1	29.0	32.8	32.7
55 . . . . .	26.8	26.7	25.0	24.9	28.4	28.3
60 . . . . .	22.7	22.6	21.1	20.9	24.1	24.0
65 . . . . .	18.8	18.7	17.3	17.2	20.0	19.9
70 . . . . .	15.1	15.0	13.8	13.7	16.1	16.0
75 . . . . .	11.7	11.7	10.7	10.6	12.5	12.5
80 . . . . .	8.8	8.8	8.0	7.9	9.4	9.4
85 . . . . .	6.4	6.5	5.8	5.8	6.8	6.8
90 . . . . .	4.6	4.6	4.1	4.1	4.8	4.8
95 . . . . .	3.2	3.2	2.9	2.9	3.3	3.3
100 . . . . .	2.2	2.3	2.0	2.1	2.2	2.3
White						
0 . . . . .	78.6	78.4	76.2	75.9	80.9	80.8
1 . . . . .	78.0	77.8	75.6	75.4	80.3	80.2
5 . . . . .	74.1	73.9	71.7	71.5	76.3	76.3
10 . . . . .	69.1	68.9	66.8	66.5	71.4	71.3
15 . . . . .	64.1	64.0	61.8	61.6	66.4	66.3
20 . . . . .	59.3	59.2	57.0	56.8	61.5	61.4
25 . . . . .	54.5	54.4	52.3	52.2	56.6	56.6
30 . . . . .	49.8	49.6	47.6	47.5	51.8	51.7
35 . . . . .	45.0	44.9	43.0	42.8	47.0	46.9
40 . . . . .	40.3	40.2	38.3	38.1	42.2	42.1
45 . . . . .	35.7	35.6	33.8	33.6	37.5	37.4
50 . . . . .	31.2	31.1	29.4	29.2	32.9	32.8
55 . . . . .	26.9	26.8	25.2	25.0	28.5	28.3
60 . . . . .	22.8	22.6	21.2	21.0	24.1	24.0
65 . . . . .	18.8	18.7	17.4	17.3	20.0	19.9
70 . . . . .	15.1	15.0	13.9	13.7	16.1	16.0
75 . . . . .	11.7	11.6	10.6	10.6	12.5	12.4
80 . . . . .	8.8	8.8	7.9	7.9	9.3	9.3
85 . . . . .	6.4	6.4	5.7	5.7	6.7	6.8
90 . . . . .	4.5	4.5	4.1	4.1	4.7	4.8
95 . . . . .	3.1	3.2	2.8	2.9	3.2	3.3
100 . . . . .	2.2	2.2	2.0	2.0	2.2	2.2

See footnotes at end of table.

**Table 6. Expectation of life, by age, race, and sex: United States, preliminary 2008 and 2009—Con.**

[Data are based on a continuous file of records from the states. Calculations of life expectancy employ populations estimated as of July 1 for 2009 and 2008; see "Technical Notes." Race categories are consistent with 1977 Office of Management and Budget (OMB) standards. Multiple-race data were reported by 34 states and the District of Columbia in 2009 and 2008; see "Technical Notes." Multiple-race data for these states were bridged to single-race categories of the 1977 OMB standards for comparability with other states; see "Technical Notes"]

Age (years) and race	Both sexes		Male		Female	
	2009	2008 <sup>1</sup>	2009	2008 <sup>1</sup>	2009	2008 <sup>1</sup>
Black						
0 . . . . .	74.3	74.3	70.9	70.9	77.4	77.4
1 . . . . .	74.2	74.3	70.9	71.0	77.2	77.4
5 . . . . .	70.3	70.5	67.0	67.1	73.3	73.5
10 . . . . .	65.4	65.5	62.1	62.2	68.4	68.5
15 . . . . .	60.5	60.6	57.1	57.2	63.5	63.6
20 . . . . .	55.7	55.8	52.4	52.6	58.6	58.7
25 . . . . .	51.0	51.1	47.9	48.0	53.7	53.9
30 . . . . .	46.3	46.5	43.3	43.5	49.0	49.1
35 . . . . .	41.7	41.8	38.8	39.0	44.2	44.3
40 . . . . .	37.1	37.3	34.3	34.5	39.6	39.6
45 . . . . .	32.7	32.8	30.0	30.1	35.0	35.1
50 . . . . .	28.5	28.6	25.8	26.0	30.7	30.8
55 . . . . .	24.5	24.6	22.0	22.2	26.6	26.7
60 . . . . .	20.9	20.9	18.6	18.7	22.7	22.7
65 . . . . .	17.5	17.5	15.5	15.5	18.9	18.9
70 . . . . .	14.3	14.3	12.6	12.6	15.4	15.4
75 . . . . .	11.3	11.3	9.9	10.0	12.2	12.2
80 . . . . .	8.8	8.8	7.7	7.8	9.4	9.5
85 . . . . .	6.7	6.8	5.9	6.0	7.1	7.1
90 . . . . .	5.0	5.1	4.4	4.6	5.2	5.3
95 . . . . .	3.7	3.8	3.3	3.5	3.8	3.8
100 . . . . .	2.7	2.8	2.5	2.6	2.7	2.8

<sup>1</sup>Life expectancies have been updated and may differ from those previously published; see "Technical Notes."

<sup>2</sup>Includes races other than white and black.

NOTE: Data are subject to sampling or random variation.

**Table 7. Deaths and death rates for the 10 leading causes of death in specified age groups: United States, preliminary 2009**

[Data based on a continuous file of records received from the states. Rates are per 100,000 population in specified group. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Rank <sup>1</sup>	Cause of death (based on the <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> ) and age	Number	Rate
All age <sup>2</sup>			
...	All causes . . . . .	2,436,652	793.7
1	Diseases of heart . . . . . (I00-I09,I11,I13,I20-I51)	598,607	195.0
2	Malignant neoplasms . . . . . (C00-C97)	568,668	185.2
3	Chronic lower respiratory diseases . . . . . (J40-J47)	137,082	44.7
4	Cerebrovascular diseases . . . . . (I60-I69)	128,603	41.9
5	Accidents (unintentional injuries) . . . . . (V01-X59,Y85-Y86)	117,176	38.2
...	Motor vehicle accidents . . (V02-V04,V09.0,V09.2,V12-V14,V19.0-V19.2,V19.4-V19.6,V20-V79,V80.3-V80.5,V81.0-V81.1,V82.0-V82.1,V83-V86,V87.0-V87.8,V88.0-V88.8,V89.0,V89.2)	36,284	11.8
...	All other accidents . . (V01,V05-V06,V09.1,V09.3-V09.9,V10-V12,V15-V18,V19.3,V19.8-V19.9,V80.0-V80.2,V80.6-V80.9,V81.2-V81.9,V82.2-V82.9,V87.9,V88.9,V89.1,V89.3,V89.9,V90-V99,W00-X59,Y85-Y86)	80,892	26.3
6	Alzheimer's disease . . . . . (G30)	78,889	25.7
7	Diabetes mellitus . . . . . (E10-E14)	68,504	22.3
8	Influenza and pneumonia . . . . . (J09-J18) <sup>3</sup>	53,582	17.5
9	Nephritis, nephrotic syndrome and nephrosis . . . . . (N00-N07,N17-N19,N25-N27)	48,714	15.9
10	Intentional self-harm (suicide) . . . . . (*U03,X60-X84,Y87.0)	36,547	11.9
...	All other causes . . . . . (residual)	600,280	195.5
1-4 years			
...	All causes . . . . .	4,448	26.1
1	Accidents (unintentional injuries) . . . . . (V01-X59,Y85-Y86)	1,446	8.5
...	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)	462	2.7
...	All other accidents . . (V01,V05-V06,V09.1,V09.3-V09.9,V10-V12,V15-V18,V19.3,V19.8-V19.9,V80.0-V80.2,V80.6-V80.9,V81.2-V81.9,V82.2-V82.9,V87.9,V88.9,V89.1,V89.3,V89.9,V90-V99,W00-X59,Y85-Y86)	984	5.8
2	Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00-Q99)	485	2.8
3	Assault (homicide) . . . . . (*U01-*U02,X85-Y09,Y87.1)	385	2.3
4	Malignant neoplasms . . . . . (C00-C97)	349	2.0
5	Diseases of heart . . . . . (I00-I09,I11,I13,I20-I51)	154	0.9
6	Influenza and pneumonia . . . . . (J09-J18) <sup>3</sup>	132	0.8
7	Septicemia . . . . . (A40-A41)	70	0.4
8	Chronic lower respiratory diseases . . . . . (J40-J47)	60	0.4
9	Certain conditions originating in the perinatal period . . . . . (P00-P96)	58	0.3
10	In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00-D48)	51	0.3
...	All other causes . . . . . (residual)	1,258	7.4
5-14 years			
...	All causes . . . . .	5,628	13.9
1	Accidents (unintentional injuries) . . . . . (V01-X59,Y85-Y86)	1,667	4.1
...	Motor vehicle accidents . (V02-V04,V09.0,V09.2,V12-V14, V19.0-V19.2,V19.4-V19.6,V20-V79,V80.3-V80.5,V81.0-V81.1, V82.0-V82.1,V83-V86,V87.0-V87.8,V88.0-V88.8,V89.0,V89.2)	950	2.3
...	All other accidents . . (V01,V05-V06,V09.1,V09.3-V09.9,V10-V12,V15-V18,V19.3,V19.8-V19.9,V80.0-V80.2,V80.6-V80.9,V81.2-V81.9,V82.2-V82.9,V87.9,V88.9,V89.1,V89.3,V89.9,V90-V99,W00-X59,Y85-Y86)	717	1.8
2	Malignant neoplasms . . . . . (C00-C97)	893	2.2
3	Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00-Q99)	350	0.9
4	Assault (homicide) . . . . . (*U01-*U02,X85-Y09,Y87.1)	319	0.8
5	Intentional self harm (suicide) . . . . . (*U03,X60-X84,Y87.0)	266	0.7
6	Influenza and pneumonia . . . . . (J09-J18) <sup>3</sup>	230	0.6
7	Diseases of heart . . . . . (I00-I09,I11,I13,I20-I51)	200	0.5
8	Chronic lower respiratory diseases . . . . . (J40-J47)	116	0.3
9	In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00-D48)	84	0.2
10	Cerebrovascular diseases . . . . . (I60-I69)	69	0.2
...	All other causes . . . . . (residual)	1,434	3.5

See footnotes at end of table.

**Table 7. Deaths and death rates for the 10 leading causes of death in specified age groups: United States, preliminary 2009—Con.**

[Data based on a continuous file of records received from the states. Rates are per 100,000 population in specified group. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Rank <sup>1</sup>	Cause of death (based on the <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> ) and age	Number	Rate
15–24 years			
...	All causes	30,252	70.2
1	Accidents (unintentional injuries) (V01–X59, Y85–Y86)	12,351	28.7
...	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)	7,648	17.8
...	All other accidents (V01, V05–V06, V09.1, V09.3–V09.9, V10–V12, V15–V18, V19.3, V19.8–V19.9, V80.0–V80.2, V80.6–V80.9, V81.2–V81.9, V82.2–V82.9, V87.9, V88.9, V89.1, V89.3, V89.9, V90–V99, W00–X59, Y85–Y86)	4,703	10.9
2	Assault (homicide) (*U01–*U02, X85–Y09, Y87.1)	4,820	11.2
3	Intentional self harm (suicide) (*U03, X60–X84, Y87.0)	4,341	10.1
4	Malignant neoplasms (C00–C97)	1,659	3.9
5	Diseases of heart (I00–I09, I11, I13, I20–I51)	1,010	2.3
6	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	451	1.0
7	Influenza and pneumonia (J09–J18) <sup>§</sup>	410	1.0
8	Pregnancy, childbirth and the puerperium (O00–O99)	202	0.5
9	Cerebrovascular diseases (I60–I69)	198	0.5
10	Chronic lower respiratory diseases (J40–J47)	182	0.4
...	All other causes (residual)	4,628	10.7
25–44 years			
...	All causes	116,830	140.6
1	Accidents (unintentional injuries) (V01–X59, Y85–Y86)	28,844	34.7
...	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)	11,033	13.3
...	All other accidents (V01, V05–V06, V09.1, V09.3–V09.9, V10–V12, V15–V18, V19.3, V19.8–V19.9, V80.0–V80.2, V80.6–V80.9, V81.2–V81.9, V82.2–V82.9, V87.9, V88.9, V89.1, V89.3, V89.9, V90–V99, W00–X59, Y85–Y86)	17,811	21.4
2	Malignant neoplasms (C00–C97)	16,236	19.5
3	Diseases of heart (I00–I09, I11, I13, I20–I51)	14,053	16.9
4	Intentional self harm (suicide) (*U03, X60–X84, Y87.0)	11,871	14.3
5	Assault (homicide) (*U01–*U02, X85–Y09, Y87.1)	6,883	8.3
6	Human immunodeficiency virus (HIV) disease (B20–B24)	3,326	4.0
7	Chronic liver disease and cirrhosis (K70, K73–K74)	2,931	3.5
8	Cerebrovascular diseases (I60–I69)	2,432	2.9
9	Diabetes mellitus (E10–E14)	2,429	2.9
10	Influenza and pneumonia (J09–J18) <sup>§</sup>	2,052	2.5
...	All other causes (residual)	25,773	31.0
45–64 years			
...	All causes	490,145	617.5
1	Malignant neoplasms (C00–C97)	157,544	198.5
2	Diseases of heart (I00–I09, I11, I13, I20–I51)	103,704	130.6
3	Accidents (unintentional injuries) (V01–X59, Y85–Y86)	32,357	40.8
...	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)	9,818	12.4
...	All other accidents (V01, V05–V06, V09.1, V09.3–V09.9, V10–V12, V15–V18, V19.3, V19.8–V19.9, V80.0–V80.2, V80.6–V80.9, V81.2–V81.9, V82.2–V82.9, V87.9, V88.9, V89.1, V89.3, V89.9, V90–V99, W00–X59, Y85–Y86)	22,539	28.4
4	Chronic lower respiratory diseases (J40–J47)	18,651	23.5
5	Chronic liver disease and cirrhosis (K70, K73–K74)	17,499	22.0
6	Diabetes mellitus (E10–E14)	17,052	21.5
7	Cerebrovascular diseases (I60–I69)	16,663	21.0
8	Intentional self harm (suicide) (*U03, X60–X84, Y87.0)	14,192	17.9
9	Influenza and pneumonia (J09–J18) <sup>§</sup>	7,069	8.9
10	Nephritis, nephrotic syndrome and nephrosis (N00–N07, N17–N19, N25–N27)	7,047	8.9
...	All other causes (residual)	98,367	123.9

See footnotes at end of table.

**Table 7. Deaths and death rates for the 10 leading causes of death in specified age groups: United States, preliminary 2009—Con.**

[Data based on a continuous file of records received from the states. Rates are per 100,000 population in specified group. For explanation of asterisks (\*) preceding cause-of-death codes, see "Technical Notes." Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Rank <sup>1</sup>	Cause of death (based on the <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> ) and age	Number	Rate
	65 years and over		
...	All causes . . . . .	1,762,494	4,454.1
1	Diseases of heart . . . . . (I00–I09,I11,I13,I20–I51)	479,046	1,210.6
2	Malignant neoplasms . . . . . (C00–C97)	391,855	990.3
3	Chronic lower respiratory diseases . . . . . (J40–J47)	117,048	295.8
4	Cerebrovascular diseases . . . . . (I60–I69)	109,055	275.6
5	Alzheimer's disease . . . . . (G30)	78,058	197.3
6	Diabetes mellitus . . . . . (E10–E14)	48,811	123.4
7	Influenza and pneumonia . . . . . (J09–J18) <sup>3</sup>	43,433	109.8
8	Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07,N17–N19,N25–N27)	40,341	101.9
9	Accidents (unintentional injuries) . . . . . (V01–X59,Y85–Y86)	39,316	99.4
...	Motor vehicle accidents . . (V02–V04,V09.0,V09.2,V12–V14,V19.0–V19.2,V19.4–V19.6,V20–V79,V80.3–V80.5, V81.0–V81.1,V82.0–V82.1,V83–V86,V87.0–V87.8,V88.0–V88.8,V89.0,V89.2)	6,259	15.8
...	All other accidents . . (V01,V05–V06,V09.1,V09.3–V09.9,V10–V12,V15–V18,V19.3,V19.8–V19.9,V80.0–V80.2, V80.6–V80.9,V81.2–V81.9,V82.2–V82.9,V87.9,V88.9,V89.1,V89.3,V89.9,V90–V99,W00–X59,Y85–Y86)	33,057	83.5
10	Septicemia . . . . . (A40–A41)	26,810	67.8
...	All other causes . . . . . (residual)	388,721	982.3

... Category not applicable.

<sup>1</sup>Based on number of deaths; see "Technical Notes."

<sup>2</sup>Includes deaths under age 1 year.

<sup>3</sup>Expanded ICD–10 code J09 (Influenza due to certain identified influenza virus) was added to the category in 2009; see "Technical Notes."

NOTES: For certain causes of death such as unintentional injuries, homicides, suicides, and respiratory diseases, preliminary and final data differ because of the truncated nature of the preliminary file. Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes."

**Table 8. Infant deaths and infant mortality rates for the 10 leading causes of infant death: United States, preliminary 2009**

[Data based on a continuous file of records received from the states. Rates are per 100,000 live births. Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals]

Rank <sup>1</sup>	Cause of death (based on the <i>International Classification of Diseases, Tenth Revision, Second Edition, 2004</i> ) and age	Number	Rate
...	All causes . . . . .	26,526	642.1
1	Congenital malformations, deformations and chromosomal abnormalities. . . . . (Q00–Q99)	5,358	129.7
2	Disorders related to short gestation and low birth weight, not elsewhere classified . . . . . (P07)	4,463	108.0
3	Sudden infant death syndrome . . . . . (R95)	2,168	52.5
4	Newborn affected by maternal complications of pregnancy . . . . . (P01)	1,586	38.4
5	Accidents (unintentional injuries) . . . . . (V01–X59)	1,158	28.0
6	Newborn affected by complications of placenta, cord and membranes . . . . . (P02)	1,022	24.7
7	Bacterial sepsis of newborn . . . . . (P36)	682	16.5
8	Respiratory distress of newborn. . . . . (P22)	587	14.2
9	Diseases of the circulatory system . . . . . (I00–I99)	565	13.7
10	Neonatal hemorrhage. . . . . (P50–P52,P54)	537	13.0
...	All other causes . . . . . (residual)	8,400	203.3

... Category not applicable.

<sup>1</sup>Based on number of deaths; see "Technical Notes."

NOTES: For certain causes of death such as unintentional injuries, homicides, suicides, and sudden infant death syndrome, preliminary and final data differ because of the truncated nature of the preliminary file. Data are subject to sampling or random variation. For information regarding the calculation of standard errors and further discussion of variability of the data, see "Technical Notes." Although the infant mortality rate is the preferred indicator of the risk of dying during the first year of life, another measure of infant mortality, the infant death rate, is shown elsewhere in the report. The two measures typically are similar but use different denominators. For more information on these measures of risk, see "Infant mortality" in "Technical Notes."



## Technical Notes

### Nature and sources of data

Preliminary mortality data for 2009 are based on a continuous receipt and processing of statistical records by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) through November 5, 2010. NCHS received the data from the states' vital registration systems through the Vital Statistics Cooperative Program. Demographic information for the United States was available in calendar year 2009 for an estimated 97.4 percent of infant decedents and 98.5 percent of decedents aged 1 year and over. Medical information for the United States was available in calendar year 2009 for an estimated 94.3 percent of infant decedents and 96.5 percent of decedents aged 1 year and over. In this report, U.S. totals include only events occurring within the 50 states and the District of Columbia. Data for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas included in tables showing data by state are not included in U.S. totals. Information on reporting for the 2008 preliminary data are available elsewhere (22).

For 2009, individual records of infant deaths (deaths under age 1 year) and deaths of persons aged 1 year and over are weighted (when necessary) to independent counts of deaths occurring in each state. These state-specific counts serve as control totals and are the basis for the record weights in the preliminary file. If the number of records in the preliminary file is greater than the count received from the state, the state-specific number of records in the preliminary file is used instead and the weight is set at 1.0.

For this report, two separate files are processed. The medical file, or cause-of-death file, contains records that include both demographic and medical information used to generate tables showing cause of death. The demographic file, which includes records from the medical file as well as additional records containing demographic information only, is used to generate tables showing mortality by demographic characteristics only. A state-specific weight is computed for each file by dividing the state control total by the number of records in the preliminary sample.

Each record is assigned two weights, a state-specific weight and a U.S. weight. State weights are used for state-specific tabulations and U.S. weights are used for national tabulations. For the medical file, the state weight makes the death counts comparable with those in the demographic file. The U.S. weight combines two factors: one to make the medical file counts for the individual record's state comparable with those for the demographic file, and one to compensate for any states not represented in the file. This second factor is equivalent to zero if all states are represented in the file. Thus, when all states are represented in the preliminary files, the state and U.S. weights are the same.

Because there are two separate files, each with two separate sets of weights, slight inconsistencies may occur between the demographic and medical tables in this report. Table 1 shows the percent completeness of the preliminary files by place of occurrence for the United States and each state. The percent completeness is obtained by dividing the number of records in the preliminary files by the control total and multiplying by 100. Although data by place of occurrence are used to compute the weights, all data in this report are tabulated by place of residence. Based on a criterion of at least 75 percent completeness of

a state's demographic file for the 12-month period as a basis for providing state-specific estimates, the demographic mortality files for 2009 contained less than 71.1 percent of their records for Georgia (Table 1); therefore, data for Georgia are included in the U.S. total but are not shown separately in Table 3, which shows deaths and death rates by state. Because the preliminary 2009 data for Georgia were incomplete, additional review of the data was included to ensure that the 2009 estimates for the United States were accurate.

For selected variables in the mortality files, unknown or not-stated values are imputed. The percentage not stated was less than 1.8 percent for all variables discussed in this report. Detailed information on reporting completeness and imputation procedures may be found in "Technical Appendix, Vital Statistics of the United States: Mortality, 1999" (34).

### 2003 revision of U.S. Standard Certificate of Death

Between 2008 and 2009, no changes occurred in the number of states implementing the 2003 revision of the U.S. Standard Certificate of Death. In this report, the 30 states that implemented the 2003 revision along with the District of Columbia are: Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Michigan, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York (including New York City), North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, and Wyoming. (Vermont implemented the 2003 revision of the U.S. Standard Certificate of Death in July 2008, so a portion of that state's data for 2008 is based on the 1989 revision of the certificate.) The remaining 20 states collected and reported death data in 2009 based on the 1989 revision of the U.S. Standard Certificate of Death. The 2003 revision is described in detail elsewhere (15,16). Because the items presented in this report appear largely comparable despite changes to item wording and format in the 2003 revision, data from both groups of states are combined.

### 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) (15). This change was implemented to reflect the increasing diversity of the population of the United States, to be consistent with the decennial census, and to reflect standards issued in 1997 by the Office of Management and Budget (OMB). OMB standards mandate the collection of more than one race for federal data (see "Population denominators") (21). In addition, the new certificate is compliant with the OMB-mandated minimum set of five races to be reported for federal data. These are white, black or African American, American Indian or Alaska Native (AIAN), Asian, and Native Hawaiian or Other Pacific Islander (NHOPi).

For 2009 mortality data, multiple races were reported on the revised death certificates of Arkansas, California, Connecticut, Delaware, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Michigan, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York (including New York City), North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, and Wyoming. Multiple races were also reported on the unrevised certificates of Hawaii, Maine, Minnesota,

**Table I. Total count of records and percent completeness of preliminary files of infant deaths and deaths to those aged 1 year and over: United States, and each state and territory, preliminary 2009**

[By place of occurrence]

Area	Infant deaths (under age 1 year)			Deaths to those aged 1 year and over		
	Count of records	Percent completeness		Count of records	Percent completeness	
		Demographic file	Medical file		Demographic file	Medical file
United States <sup>1</sup>	26,610	97.4	94.3	2,414,435	98.5	96.5
Alabama	522	100.0	100.0	46,311	100.0	100.0
Alaska	67	100.0	100.0	3,500	99.9	99.9
Arizona	552	100.0	93.5	45,899	100.0	98.6
Arkansas	297	100.0	100.0	28,111	100.0	100.0
California	2,621	93.7	93.7	230,778	94.3	94.3
Colorado	456	100.0	100.0	31,135	100.0	100.0
Connecticut	210	100.0	100.0	28,402	100.0	100.0
Delaware	103	100.0	100.0	7,468	100.0	100.0
District of Columbia	197	100.0	93.9	5,802	100.0	95.3
Florida	1,542	100.0	100.0	169,764	100.0	100.0
Georgia	1,164	59.8	7.2	68,977	71.3	12.9
Hawaii	116	100.0	100.0	9,829	100.0	100.0
Idaho	116	100.0	100.0	10,821	100.0	100.0
Illinois	1,138	99.7	98.4	95,972	99.9	99.9
Indiana	662	100.0	99.7	55,889	100.0	99.7
Iowa	161	100.0	100.0	27,208	100.0	100.0
Kansas	254	100.0	100.0	22,989	100.0	100.0
Kentucky	316	99.1	98.7	40,584	100.0	99.9
Louisiana	580	100.0	99.0	39,785	100.0	99.5
Maine	72	95.8	94.4	12,408	96.4	96.1
Maryland	484	100.0	100.0	43,163	100.0	100.0
Massachusetts	394	95.9	88.6	52,716	96.0	94.1
Michigan	889	99.9	99.9	84,375	100.0	100.0
Minnesota	343	100.0	97.7	37,506	100.0	97.7
Mississippi	378	100.0	100.0	27,331	100.0	100.0
Missouri	642	100.0	100.0	55,506	100.0	100.0
Montana	63	100.0	100.0	8,674	100.0	100.0
Nebraska	156	100.0	100.0	14,919	100.0	100.0
Nevada	219	99.5	83.6	19,651	100.0	96.3
New Hampshire	58	100.0	100.0	9,936	100.0	100.0
New Jersey	480	100.0	99.8	66,535	100.0	100.0
New Mexico	137	100.0	100.0	15,083	100.0	100.0
New York	1,335	100.0	100.0	144,041	100.0	100.0
New York excluding New York City	667	100.0	100.0	91,826	100.0	100.0
New York City	668	100.0	100.0	52,215	100.0	100.0
North Carolina	1,030	100.0	99.3	76,848	100.0	100.0
North Dakota	54	100.0	100.0	6,387	100.0	99.7
Ohio	1,160	99.7	99.0	106,085	100.0	99.8
Oklahoma	419	100.0	100.0	34,242	100.0	100.0
Oregon	243	99.6	99.6	31,381	99.1	99.1
Pennsylvania	1,118	100.0	98.9	124,879	100.0	100.0
Rhode Island	88	100.0	100.0	9,520	100.0	100.0
South Carolina	412	96.4	95.4	39,268	100.0	99.0
South Dakota	87	100.0	100.0	7,053	100.0	100.0
Tennessee	744	100.0	100.0	60,377	100.0	100.0
Texas	2,437	99.9	99.9	162,991	100.0	100.0
Utah	308	100.0	100.0	14,298	100.0	100.0
Vermont	29	100.0	100.0	4,955	100.0	100.0
Virginia	694	100.0	99.7	57,285	100.0	100.0
Washington	447	100.0	100.0	47,897	100.0	100.0
West Virginia	164	100.0	78.7	20,855	100.0	80.2
Wisconsin	427	100.0	100.0	45,085	100.0	100.0
Wyoming	25	100.0	100.0	3,962	100.0	100.0
Puerto Rico	356	96.9	96.9	28,636	96.8	96.8
Virgin Islands	8	0.0	0.0	690	0.0	0.0
Guam	36	0.0	0.0	813	0.0	0.0
American Samoa	15	100.0	100.0	298	100.0	100.0
Northern Marianas	2	100.0	100.0	194	100.0	99.0

0.0 Quantity more than zero but less than 0.05.

<sup>1</sup>Excludes data for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas.

NOTE: Percent completeness equals 100 times the number of records in the preliminary file divided by the count of records.

and Wisconsin. Data from the vital records of the remaining 16 states are based on the 1989 revision of the U.S. Standard Certificate of Death, which follows the 1977 OMB standards, allowing only a single race to be reported (16,17). In addition, these 16 states report a minimum set of four races as stipulated in the 1977 standards. These are white, black or African American, AIAN, and Asian or Pacific Islander (API).

In order to provide uniformity and comparability of data during the transition period, before all or most of the data becomes available in the new multiple-race format, it is necessary to adjust the data for those states reporting multiple race by “bridging” the multiple-race information reported for decedents to a single race. The bridging procedure used for mortality numerators is similar to the procedure used to bridge multiracial population estimates (see “Population denominators”) (19,20). Multiracial decedents are imputed to a single race (white, black, AIAN, or API) according to the combination of races, Hispanic origin, sex, and age indicated on the death certificate. The imputation procedure is described in detail at [http://www.cdc.gov/nchs/data/dvs/Multiple\\_race\\_docu\\_5-10-04.pdf](http://www.cdc.gov/nchs/data/dvs/Multiple_race_docu_5-10-04.pdf).

Because race and Hispanic origin are reported separately on the death certificate, data shown by race include persons of Hispanic or non-Hispanic origin, and data for Hispanic origin include persons of any race. In this report, unless otherwise specified, deaths of persons of Hispanic origin are included in the totals for each race group—white, black, AIAN, and API—according to the decedent’s race as reported on the death certificate. Data shown for Hispanic persons include all persons of Hispanic origin of any race. Mortality data on the Hispanic origin population are based on deaths in all states. Death rates for Hispanic, AIAN, and API persons should be interpreted with caution because of inconsistencies in reporting race on death certificates compared with such reporting on censuses, surveys, and birth certificates. Studies have shown underreporting on death certificates of AIAN, API, and Hispanic decedents, as well as undercounts of these groups in censuses (23–25).

## Injury at work

Information on deaths attributed to injuries at work is derived from a separate item on the death certificate that asks the medical certifier whether the death resulted from an injury sustained at work. The item is on the death certificate of all states. Number of deaths, crude death rates, and age-adjusted death rates for injury at work for those aged 15 and over, excluding age not stated, are shown in [Table 2](#). Age-adjusted death rates presented in this report for injury at work were computed using age-specific death rates and the U.S. standard population based on the year 2000 standard for ages 15 and over, excluding age not stated ([Table V](#)). If the estimated “employed” population aged 15 and over had been used instead in the denominator, higher death rates would have resulted, especially for population groups with lower employment rates (see “Computing rates and percentages”).

## Cause-of-death classification

Mortality statistics are compiled in accordance with World Health Organization (WHO) regulations specifying that member nations classify and code causes of death in accordance with the current revision of the *International Statistical Classification of Diseases, and*

*Related Health Problems* (ICD). The ICD provides the basic guidance used in virtually all countries to code and classify causes of death. It provides not only disease, injury, and poisoning categories but also the rules used to select the single underlying cause of death for tabulation from the several diagnoses that may be reported on a single death certificate, as well as definitions, tabulation lists, the format of the death certificate, and regulations on the use of the classification. Causes of death for data presented in this report were coded according to ICD guidelines, which are described in annual issues of part 2a of the “NCHS Instruction Manual” (35).

Effective with deaths occurring in 1999, the United States began using the Tenth Revision of the ICD, or ICD–10 (36). In 2004, the Second Edition of ICD–10 was adopted (37). During 1979–1998, causes of death were coded and classified according to the Ninth Revision (ICD–9) (38). The change from ICD–9 to ICD–10 resulted in discontinuities for selected cause-of-death trends. These discontinuities are measured using comparability ratios derived from a comparability study (39).

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 categories Assault (homicide) and Intentional self-harm (suicide) for the 113 causes-of-death list ([Table 2](#)) and Assault (homicide) in the 130 causes-of-infant death list ([Table 5](#)). Additional information on the new terrorism categories can be found at [http://www.cdc.gov/nchs/icd/terrorism\\_code.htm](http://www.cdc.gov/nchs/icd/terrorism_code.htm). No deaths occurring in 2008 and 2009 were classified to the terrorism categories.

*Enterocolitis due to Clostridium difficile* (*C. difficile*)—Due to growing concerns about the number of deaths from Enterocolitis due to *Clostridium difficile* (ICD–10 code A04.7), beginning in 2006, *C. difficile* deaths are included separately as a rankable cause of death in tables showing data for 113 selected causes of death ([Table 2](#)). The number of deaths due to this cause decreased by 2.6 percent from 7,483 in 2008 to 7,285 in 2009. The age-adjusted death rate for this cause decreased significantly (by 4.3 percent) from 2.3 per 100,000 standard population in 2008 to 2.2 in 2009.

*Codes for drug-induced deaths*—The list of codes included in drug-induced causes was expanded in data year 2003 to be more comprehensive. The following 37 ICD–10 codes were added to the previous list of drug-induced codes: D52.1, D59.0, D59.2, D61.1, D64.2, E06.4, E16.0, E23.1, E24.2, E27.3, E66.1, G21.1, G24.0, G25.1, G25.4, G25.6, G44.4, G62.0, G72.0, I95.2, J70.2, J70.3, J70.4, L10.5, L27.0, L27.1, M10.2, M32.0, M80.4, M81.4, M83.5, M87.1, R78.1, R78.2, R78.3, R78.4, and R78.5. In addition to expansion of the list in 2003, ICD codes K85.3 (Drug-induced acute pancreatitis) and R50.2 (Drug-induced fever) were added to the list of drug-induced codes in 2006. Two deaths were assigned to K85.3 in 2008; no deaths were classified to these two new codes in 2009.

*Codes for alcohol-induced deaths*—The list of codes included in alcohol-induced causes was expanded in data year 2003 to be more comprehensive. Three ICD–10 codes were added to the previous list of alcohol-induced codes: E24.4, G72.1, and K86.0. Additionally, K85.2 (Alcohol-induced acute pancreatitis) was added to the list in 2006. In 2008, 405 deaths were classified to K85.2; in 2009, 400 deaths were classified to K85.2.

*Recently added codes*—Beginning with data for 2009, NCHS added five new WHO ICD–10 codes: A09.0, Other and unspecified gastroenteritis and colitis of infectious origin; A09.9, Gastroenteritis and colitis of unspecified origin; K52.3, Indeterminate colitis; R26.3, Immobility; and R63.6, Insufficient intake of food and water due to self neglect. Deaths classified to codes A09.0 and A09.9 are included in the category Certain other intestinal infections in the list of 113 selected causes of death (Table 2) and in the category Diarrhea and gastroenteritis of infectious origin in the list of 130 selected causes of infant death (Table 5). Deaths classified to the code K52.3 are included in the Residual category of the list of 113 selected causes of death and in the category Gastritis, duodenitis, and noninfective enteritis and colitis in the list of 130 selected causes of infant death. Deaths classified to codes R26.3 and R63.6 are included in the category Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified in both the 113 and 130 cause lists. Additional information on these new categories is available from: <http://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2009.pdf> (39).

In 2009, ICD–10 code A09 was expanded from a three-digit code to two four-digit codes (A09.0 and A09.9). This expansion allowed for greater specificity, resulting in an increase in the number of deaths classified to A09. This directly affected the category Certain other intestinal infections in the list of 113 selected causes of death in Table 2 (7,883 deaths in 2008 compared with 10,242 deaths in 2009) and the category Diarrhea and gastroenteritis of infectious origin in the list of 130 selected causes of infant death in Table 5 (no deaths in 2008 compared with 328 deaths in 2009). The effect of this change will be examined with final data.

In 2009, the title for ICD–10 code J09 was changed from Influenza due to identified avian influenza virus to Influenza due to certain identified influenza virus. The reason for this change was to accommodate deaths from influenza A (H1N1) virus in code J09 for the 2009 data year. In April 2009, the new influenza A (H1N1) virus was determined to be a cause of influenza illness in the United States (40). In 2009, 1,486 deaths were classified to code J09.

## Nonsampling error

Causes of death in this report are subject to nonsampling error because the preliminary file is processed before a full year's worth of data is available. The file is thus subject to the seasonality of certain causes of death that may not be equally distributed throughout the year. It is known, for example, that external causes such as unintentional injuries occur disproportionately during the summer months and that fatal respiratory conditions are more prevalent during the winter months. Accordingly, the truncated nature of the preliminary file may systematically overemphasize or underemphasize causes with pronounced seasonality, particularly when these deaths cluster at the end of the year. However, in years where the preliminary file completeness is more than 90 percent, it is unlikely that seasonality is a major factor.

Furthermore, for some deaths, especially those subject to medicolegal investigation such as unintentional injuries, homicides, suicides, and sudden infant death syndrome (SIDS), the final cause may not be available at the time the preliminary file is processed. In those cases, the causes of death may be reported in the preliminary file as unknown or pending investigation and coded to the category Other ill-defined and

unspecified causes of mortality (ICD–10 code R99), a subcategory of Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (ICD–10 codes R00–R99). In the final data, some of the deaths of unknown cause in the preliminary file will be reassigned to specific causes if further, more specific cause-of-death information is provided.

A quantitative assessment of the degree of the nonsampling error can be made by comparing final data and preliminary data for the same year. A comparison of such data for the selected 113 causes of death for the total U.S. population for 2005–2007 indicates that preliminary estimates for some causes of death are sometimes underestimated and sometimes overestimated in the preliminary file (Table II). Thus, the number of deaths for unintentional injuries was underestimated in the preliminary file by 2.5 percent in 2005, 3.2 percent in 2006, and 5.4 percent in 2007. Similar undercounts occurred for suicide with preliminary underestimates of 2.7 percent in 2005, 3.3 percent in 2006, and 4.1 percent in 2007; and for homicide, which showed a 2.4 percent underestimate in the preliminary file in 2005, 2.9 percent in 2006, and 4.6 percent in 2007.

Comparisons showing nonsampling error in preliminary estimates for causes of infant death are shown in Table III, where Disorders related to short gestation and low birth weight, not elsewhere classified (P07) was underestimated by 0.1 percent in 2005, overestimated by 0.1 percent in 2006, and underestimated by 3.6 percent in 2007. Unintentional injuries (V01–X59) and SIDS (R95) were underestimated in the preliminary data for each of the three years from 2005 through 2007, with unintentional injuries being underestimated between 1.3 percent and 3.7 percent, and SIDS between 5.5 percent and 13.7 percent (Table III).

## Tabulation lists and cause-of-death ranking

Tabulation lists for ICD–10 are published in the “NCHS Instruction Manual, Part 9, ICD–10 Cause-of-Death Lists for Tabulating Mortality Statistics, Updated March 2009” (41). For this report, two tabulation lists are used: the List of 113 Selected Causes of Death used for deaths of all ages, and the List of 130 Selected Causes of Infant Death used for infants. Modifications in the lists reflecting changes in ICD codes are footnoted in the report tables. These lists are also used to rank leading causes of death for the two population groups (42). For the List of 113 Selected Causes of Death, the group titles Major cardiovascular diseases (ICD–10 codes I00–I78) and Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (ICD–10 codes 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 (ICD–10 codes A16–A19)], its component parts are not ranked [in this case, Respiratory tuberculosis (ICD–10 code A16) and Other tuberculosis (ICD–10 codes A17–A19)]. For the List of 130 Selected Causes of Infant Death, the same ranking procedures are used, except that the category Major cardiovascular diseases is not on the list.

## Infant mortality

The infant mortality rate is the most commonly used index for measuring the risk of dying during the first year of life. The rates

**Table II. Ratios of preliminary to final reported numbers of deaths from 113 selected causes: United States, 2005–2007**

[For explanation of asterisk preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision</i> (ICD–10), Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
All causes	2,424,059	2,423,712	1.0001	2,425,901	2,426,264	0.9999	2,447,910	2,448,017	1.0000
Salmonella infections (A01–A02)	30	30	1.0000	33	34	0.9706	30	30	1.0000
Shigellosis and amebiasis (A03,A06)	4	4	1.0000	4	6	0.6667	9	10	0.9000
Certain other intestinal infections (A04,A07–A09)	6,822	6,758	1.0095	6,671	6,639	1.0048	5,694	5,667	1.0048
Tuberculosis (A16–A19)	541	554	0.9765	644	652	0.9877	646	648	0.9969
Respiratory tuberculosis (A16)	410	424	0.9670	485	490	0.9898	477	480	0.9938
Other tuberculosis (A17–A19)	131	130	1.0077	159	162	0.9815	169	168	1.0060
Whooping cough (A37)	11	9	1.2222	9	9	1.0000	32	31	1.0323
Scarlet fever and erysipelas (A38,A46)	3	3	1.0000	2	2	1.0000	3	3	1.0000
Meningococcal infection (A39)	73	87	0.8391	103	105	0.9810	119	123	0.9675
Septicemia (A40–A41)	34,851	34,828	1.0007	34,031	34,234	0.9941	34,142	34,136	1.0002
Syphilis (A50–A53)	50	42	1.1905	35	38	0.9211	46	47	0.9787
Acute poliomyelitis (A80)	–	–	...	–	–	...	4	–	...
Arthropod-borne viral encephalitis (A83–A84,A85.2)	2	3	0.6667	5	5	1.0000	6	6	1.0000
Measles (B05)	–	–	...	–	–	...	1	1	1.0000
Viral hepatitis (B15–B19)	7,313	7,407	0.9873	6,021	7,250	0.8305	5,524	5,529	0.9991
Human immunodeficiency virus (HIV) disease (B20–B24)	11,061	11,295	0.9793	12,045	12,113	0.9944	12,456	12,543	0.9931
Malaria (B50–B54)	4	5	0.8000	9	9	1.0000	6	6	1.0000
Other and unspecified infectious and parasitic diseases and their sequelae (A00,A05, A20–A36,A42–Aa44,A48–A49,A54–A79,A81–82,A85.0–A85.1,A85.8,A86–B04,B06–B09, B25–B49,B55–B99)	5,774	5,825	0.9912	7,110	5,897	1.2057	7,695	7,727	0.9959
Malignant neoplasms (C00–C97)	560,187	562,875	0.9952	560,102	559,888	1.0004	559,300	559,312	1.0000
Malignant neoplasms of lip, oral cavity and pharynx (C00–C14)	7,950	8,067	0.9855	7,727	7,720	1.0009	7,775	7,773	1.0003
Malignant neoplasm of esophagus (C15)	13,488	13,592	0.9923	13,674	13,686	0.9991	13,512	13,499	1.0010
Malignant neoplasm of stomach (C16)	11,308	11,388	0.9930	11,354	11,345	1.0008	11,473	11,514	0.9964
Malignant neoplasms of colon, rectum and anus (C18–C21)	53,100	53,586	0.9909	53,465	53,549	0.9984	53,228	53,252	0.9995
Malignant neoplasms of liver and intrahepatic bile ducts (C22)	17,033	17,146	0.9934	16,447	16,525	0.9953	16,049	16,076	0.9983
Malignant neoplasm of pancreas (C25)	34,032	34,117	0.9975	33,437	33,454	0.9995	32,741	32,760	0.9994
Malignant neoplasm of larynx (C32)	3,680	3,634	1.0127	3,824	3,821	1.0008	3,790	3,797	0.9982
Malignant neoplasms of trachea, bronchus and lung (C33–C34)	158,258	158,760	0.9968	158,525	158,664	0.9991	159,415	159,292	1.0008
Malignant melanoma of skin (C43)	8,499	8,461	1.0045	8,487	8,441	1.0054	8,368	8,345	1.0028
Malignant neoplasm of breast (C50)	40,514	40,970	0.9889	41,223	41,210	1.0003	41,471	41,491	0.9995
Malignant neoplasm of cervix uteri (C53)	3,942	4,021	0.9804	3,926	3,976	0.9874	3,914	3,924	0.9975
Malignant neoplasms of corpus uteri and uterus, part unspecified (C54–C55)	7,319	7,456	0.9816	7,374	7,384	0.9986	7,070	7,096	0.9963
Malignant neoplasm of ovary (C56)	14,535	14,621	0.9941	14,906	14,857	1.0033	14,770	14,787	0.9989
Malignant neoplasm of prostate (C61)	28,823	29,093	0.9907	28,331	28,372	0.9986	28,916	28,905	1.0004
Malignant neoplasms of kidney and renal pelvis (C64–C65)	12,569	12,703	0.9895	12,376	12,379	0.9998	12,513	12,517	0.9997
Malignant neoplasm of bladder (C67)	13,827	13,843	0.9988	13,492	13,474	1.0013	13,258	13,253	1.0004
Malignant neoplasms of meninges, brain and other parts of central nervous system (C70–C72)	13,172	13,234	0.9953	12,853	12,886	0.9974	13,149	13,152	0.9998
Malignant neoplasms of lymphoid, hematopoietic and related tissue (C81–C96)	54,950	54,991	0.9993	55,241	55,045	1.0036	55,023	55,028	0.9999
Hodgkin's disease (C81)	1,251	1,271	0.9843	1,331	1,327	1.0030	1,272	1,272	1.0000
Non-Hodgkin's lymphoma (C82–C85)	20,537	20,528	1.0004	20,663	20,594	1.0034	20,863	20,873	0.9995
Leukemia (C91–C95)	21,696	21,825	0.9941	22,022	21,944	1.0036	21,616	21,623	0.9997
Multiple myeloma and immunoproliferative neoplasms (C88,C90)	11,420	11,307	1.0100	11,153	11,111	1.0038	11,213	11,200	1.0012

See footnotes at end of table.

**Table II. Ratios of preliminary to final reported numbers of deaths from 113 selected causes: United States, 2005–2007—Con.**

[For explanation of asterisk preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision</i> (ICD–10), Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Other and unspecified malignant neoplasms of lymphoid, hematopoietic and related tissue . . . . . (C96)	47	60	0.7833	71	69	1.0290	60	60	1.0000
All other and unspecified malignant neoplasms . . . . . (C17,C23–C24,C26–C31,C37–C41,C44–C49,C51–C52,C57–C60,C62–C63,C66,C68–C69,C73–C80,C97)	63,186	63,192	0.9999	63,441	63,100	1.0054	62,865	62,851	1.0002
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior . . . . . (D00–D48)	14,151	14,204	0.9963	14,101	14,122	0.9985	13,732	13,710	1.0016
Anemias . . . . . (D50–D64)	4,848	4,829	1.0039	4,007	3,996	1.0028	4,611	4,624	0.9972
Diabetes mellitus . . . . . (E10–E14)	70,905	71,382	0.9933	72,507	72,449	1.0008	74,817	75,119	0.9960
Nutritional deficiencies . . . . . (E40–E64)	2,810	2,852	0.9853	2,568	2,556	1.0047	3,185	3,183	1.0006
Malnutrition . . . . . (E40–E46)	2,600	2,644	0.9834	2,383	2,377	1.0025	3,004	3,003	1.0003
Other nutritional deficiencies . . . . . (E50–E64)	210	208	1.0096	185	179	1.0335	181	180	1.0056
Meningitis . . . . . (G00,G03)	626	655	0.9557	632	634	0.9968	652	669	0.9746
Parkinson’s disease . . . . . (G20–G21)	20,136	20,058	1.0039	19,660	19,566	1.0048	19,547	19,544	1.0002
Alzheimer’s disease . . . . . (G30)	74,944	74,632	1.0042	72,914	72,432	1.0067	71,696	71,599	1.0014
Major cardiovascular diseases . . . . . (I00–I78)	803,504	806,156	0.9967	821,494	823,746	0.9973	853,188	856,030	0.9967
Diseases of heart . . . . . (I00–I09,I11,I13,I20–I51)	615,651	616,067	0.9993	629,191	631,636	0.9961	649,399	652,091	0.9959
Acute rheumatic fever and chronic rheumatic heart diseases . . . . . (I00–I09)	3,188	3,201	0.9959	3,257	3,257	1.0000	3,359	3,365	0.9982
Hypertensive heart disease . . . . . (I11)	30,354	30,780	0.9862	29,217	29,788	0.9808	28,902	29,282	0.9870
Hypertensive heart and renal disease . . . . . (I13)	2,954	2,987	0.9890	2,919	2,918	1.0003	3,148	3,172	0.9924
Ischemic heart diseases . . . . . (I20–I25)	403,741	406,351	0.9936	424,892	425,425	0.9987	443,891	445,687	0.9960
Acute myocardial infarction . . . . . (I21–I22)	132,841	132,968	0.9990	141,965	141,462	1.0036	150,852	151,004	0.9990
Other acute ischemic heart diseases . . . . . (I24)	4,046	4,092	0.9888	3,938	3,932	1.0015	3,556	3,565	0.9975
Other forms of chronic ischemic heart disease . . . . . (I20,I25)	266,854	269,291	0.9910	278,988	280,031	0.9963	289,483	291,118	0.9944
Atherosclerotic cardiovascular disease, so described . . . . . (I25.0)	57,639	59,051	0.9761	59,734	61,030	0.9788	61,864	62,799	0.9851
All other forms of chronic ischemic heart disease . . . . . (I20,I25.1–I25.9)	209,215	210,240	0.9951	219,254	219,001	1.0012	227,619	228,319	0.9969
Other heart diseases . . . . . (I26–I51)	175,413	172,748	1.0154	168,906	170,248	0.9921	170,099	170,585	0.9972
Acute and subacute endocarditis . . . . . (I33)	1,206	1,225	0.9845	1,209	1,216	0.9942	1,203	1,209	0.9950
Diseases of pericardium and acute myocarditis . . . . . (I30–I31,I40)	843	867	0.9723	784	816	0.9608	836	864	0.9676
Heart failure . . . . . (I50)	57,235	56,565	1.0118	60,315	60,337	0.9996	59,001	58,933	1.0012
All other forms of heart disease . . . . . (I26–I28,I34–I38,I42–I49,I51)	116,129	114,091	1.0179	106,598	107,879	0.9881	109,059	109,579	0.9953
Essential hypertension and hypertensive renal disease . . . . . (I10,I12,I15)	23,769	23,965	0.9918	23,985	23,855	1.0054	24,865	24,902	0.9985
Cerebrovascular diseases . . . . . (I60–I69)	133,990	135,952	0.9856	137,265	137,119	1.0011	143,497	143,579	0.9994
Atherosclerosis . . . . . (I70)	8,223	8,232	0.9989	8,619	8,652	0.9962	11,833	11,841	0.9993
Other diseases of circulatory system . . . . . (I71–I78)	21,872	21,940	0.9969	22,435	22,484	0.9978	23,594	23,617	0.9990
Aortic aneurysm and dissection . . . . . (I71)	12,887	12,986	0.9924	13,178	13,238	0.9955	13,811	13,843	0.9977
Other diseases of arteries, arterioles and capillaries . . . . . (I72–I78)	8,985	8,954	1.0035	9,258	9,246	1.0013	9,783	9,774	1.0009
Other disorders of circulatory system . . . . . (I80–I99)	3,981	4,101	0.9707	3,941	3,995	0.9865	4,777	4,813	0.9925
Influenza and pneumonia . . . . . (J09–J18) <sup>1</sup>	52,847	52,717	1.0025	56,247	56,326	0.9986	62,804	63,001	0.9969
Influenza . . . . . (J09–J11) <sup>1</sup>	457	411	1.1119	860	849	1.0130	1,806	1,812	0.9967
Pneumonia . . . . . (J12–J18)	52,389	52,306	1.0016	55,387	55,477	0.9984	60,998	61,189	0.9969
Other acute lower respiratory infections . . . . . (J20–J22,U04) <sup>2</sup>	268	255	1.0510	289	297	0.9731	403	404	0.9975
Acute bronchitis and bronchiolitis . . . . . (J20–J21)	225	213	1.0563	203	214	0.9486	281	283	0.9929
Unspecified acute lower respiratory infection . . . . . (J22,U04) <sup>2,3</sup>	43	42	1.0238	86	83	1.0361	121	121	1.0000
Chronic lower respiratory diseases . . . . . (J40–J47)	129,311	127,924	1.0108	124,614	124,583	1.0002	130,957	130,933	1.0002
Bronchitis, chronic and unspecified . . . . . (J40–J42)	704	667	1.0555	740	740	1.0000	860	866	0.9931
Emphysema . . . . . (J43)	12,963	12,790	1.0135	12,570	12,551	1.0015	13,982	14,002	0.9986
Asthma . . . . . (J45–J46)	3,355	3,447	0.9733	3,563	3,613	0.9862	3,857	3,884	0.9930

See footnotes at end of table.

**Table II. Ratios of preliminary to final reported numbers of deaths from 113 selected causes: United States, 2005–2007—Con.**

[For explanation of asterisk preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision (ICD-10)</i> , Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Other chronic lower respiratory diseases . . . . . (J44,J47)	112,289	111,020	1.0114	107,741	107,679	1.0006	112,259	112,181	1.0007
Pneumoconioses and chemical effects . . . . . (J60–J66,J68)	907	915	0.9913	923	924	0.9989	999	1,007	0.9921
Pneumonitis due to solids and liquids . . . . . (J69)	17,302	16,988	1.0185	16,961	16,887	1.0044	17,351	17,279	1.0042
Other diseases of respiratory system . . . . . (J00–J06,J30–J39,J67,J70–J98)	28,773	28,508	1.0093	27,676	27,644	1.0012	27,065	27,056	1.0003
Peptic ulcer . . . . . (K25–K28)	3,000	3,045	0.9852	3,286	3,323	0.9889	3,453	3,478	0.9928
Diseases of appendix . . . . . (K35–K38)	413	426	0.9695	429	424	1.0118	434	439	0.9886
Hernia . . . . . (K40–K46)	1,663	1,698	0.9794	1,738	1,744	0.9966	1,629	1,639	0.9939
Chronic liver disease and cirrhosis . . . . . (K70,K73–K74)	28,504	29,165	0.9773	27,299	27,555	0.9907	27,393	27,530	0.9950
Alcoholic liver disease . . . . . (K70)	13,891	14,406	0.9643	12,925	13,050	0.9904	12,865	12,928	0.9951
Other chronic liver disease and cirrhosis . . . . . (K73–K74)	14,613	14,759	0.9901	14,374	14,505	0.9910	14,529	14,602	0.9950
Cholelithiasis and other disorders of gallbladder . . . . . (K80–K82)	3,178	3,237	0.9818	3,123	3,114	1.0029	3,062	3,072	0.9967
Nephritis, nephrotic syndrome and nephrosis . . . . . (N00–N07,N17–N19,N25–N27)	46,095	46,448	0.9924	44,791	45,344	0.9878	43,679	43,901	0.9949
Acute and rapidly progressive nephritic and nephrotic syndrome . . . . . (N00–N01,N04)	191	206	0.9272	135	138	0.9783	137	137	1.0000
Chronic glomerulonephritis, nephrosis and nephropathy not specified as acute or chronic, and renal sclerosis unspecified . . . . . (N02–N03,N05–N07,N26)	2,821	2,958	0.9537	1,365	1,841	0.7414	588	867	0.6782
Renal failure . . . . . (N17–N19)	43,064	43,263	0.9954	43,270	43,344	0.9983	42,925	42,868	1.0013
Other disorders of kidney . . . . . (N25,K27)	19	21	0.9048	20	21	0.9524	29	29	1.0000
Infections of kidney . . . . . (N10–N12,N13.6,N15.1)	612	628	0.9745	661	673	0.9822	767	767	1.0000
Hyperplasia of prostate . . . . . (N40)	498	491	1.0143	518	514	1.0078	527	525	1.0038
Inflammatory diseases of female pelvic organs . . . . . (N70–N76)	100	116	0.8621	113	112	1.0089	120	120	1.0000
Pregnancy, childbirth and the puerperium . . . . . (O00–O99)	762	769	0.9909	787	760	1.0355	678	760	0.8921
Pregnancy with abortive outcome . . . . . (O00–O07)	28	31	0.9032	21	26	0.8077	32	33	0.9697
Other complications of pregnancy, childbirth and the puerperium . . . . . (O10–O99)	734	738	0.9946	765	734	1.0422	646	727	0.8886
Certain conditions originating in the perinatal period . . . . . (P00–P96)	14,293	14,599	0.9790	14,384	14,442	0.9960	14,539	14,549	0.9993
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	10,277	10,421	0.9862	10,434	10,489	0.9948	10,349	10,410	0.9941
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	49,960	33,500	1.4913	40,759	31,725	1.2848	40,962	31,999	1.2801
All other diseases . . . . . (residual)	237,037	238,192	0.9952	236,614	237,421	0.9966	217,020	217,632	0.9972
Accidents (unintentional injuries) . . . . . (V01–X59,Y85–Y86)	117,075	123,706	0.9464	117,748	121,599	0.9683	114,876	117,809	0.9751
Transport accidents . . . . . (V01–V99,Y85)	45,832	46,844	0.9784	47,601	48,412	0.9832	48,140	48,441	0.9938
Motor vehicle accidents . . . . . (V02–04,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)	43,098	43,945	0.9807	44,572	45,316	0.9836	45,053	45,343	0.9936
Other land transport accidents . . . . . (V01,V05–V06,V09.1,V09.3–V09.9,V10–V11,V15–V18,V19.3,V19.8–V19.9,V80.0–V80.2,V80.6–V80.9,V81.2–V81.9,V82.2–V82.9,V87.9,V88.9,V89.1,V89.3,V89.9)	1,017	1,083	0.9391	1,177	1,181	0.9966	1,251	1,241	1.0081
Water, air and space, and other and unspecified transport accidents and their sequelae . . . . . (V90–V99,Y85)	1,716	1,816	0.9449	1,852	1,915	0.9671	1,837	1,857	0.9892
Nontransport accidents . . . . . (W00–X59,Y86)	71,244	76,862	0.9269	70,147	73,187	0.9585	66,736	69,368	0.9621
Falls . . . . . (W00–W19)	22,736	22,631	1.0046	20,533	20,823	0.9861	19,488	19,656	0.9915
Accidental discharge of firearms . . . . . (W32–W34)	721	613	1.1762	777	642	1.2103	810	789	1.0266
Accidental drowning and submersion . . . . . (W65–W74)	3,237	3,443	0.9402	3,483	3,579	0.9732	3,468	3,582	0.9682
Accidental exposure to smoke, fire and flames . . . . . (X00–X09)	3,276	3,286	0.9970	3,066	3,109	0.9862	3,144	3,197	0.9834
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	24,313	29,846	0.8146	24,702	27,531	0.8972	21,416	23,618	0.9068
Other and unspecified nontransport accidents and their sequelae . . . . . (W20–W31,W35–W64, W75–W99,X10–X39,X50–X59,Y86)	16,961	17,043	0.9952	17,586	17,503	1.0047	18,409	18,526	0.9937

See footnotes at end of table.

**Table II. Ratios of preliminary to final reported numbers of deaths from 113 selected causes: United States, 2005–2007—Con.**

[For explanation of asterisk preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision (ICD–10)</i> , Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Intentional self-harm (suicide) . . . . . (*U03,X60–X84,Y87.0)	33,185	34,598	0.9592	32,185	33,300	0.9665	31,769	32,637	0.9734
Intentional self-harm (suicide) by discharge of firearms. . . . . (X72–X74)	17,348	17,352	0.9998	16,650	16,883	0.9862	16,932	17,002	0.9959
Intentional self-harm (suicide) by other and unspecified means and their sequelae . . . . . (*U03,X60–X71,X75–X84,Y87.0)	15,837	17,246	0.9183	15,535	16,417	0.9463	14,838	15,635	0.9490
Assault (homicide). . . . . (*U01–*U02,X85–Y09,Y87.1)	17,520	18,361	0.9542	18,029	18,573	0.9707	17,694	18,124	0.9763
Assault (homicide) by discharge of firearms . . . . . (*U01.4,X93–X95)	12,129	12,632	0.9602	12,509	12,791	0.9780	12,121	12,352	0.9813
Assault (homicide) by other and unspecified means and their sequelae. . . . . (*U01.0–*U01.3,*U01.5–*U01.9,*U02,X85–X92,X96–Y09,Y87.1)	5,391	5,729	0.9410	5,520	5,782	0.9547	5,573	5,772	0.9655
Legal intervention . . . . . (Y35,Y89.0)	371	412	0.9005	411	434	0.9470	377	414	0.9106
Events of undetermined intent. . . . . (Y10–Y34,Y87.2,Y89.9)	4,888	5,381	0.9084	4,706	5,131	0.9172	4,423	4,742	0.9327
Discharge of firearms, undetermined intent . . . . . (Y22–Y24)	256	276	0.9275	214	220	0.9727	215	221	0.9729
Other and unspecified events of undetermined intent and their sequelae. . . . . (Y10–Y21,Y25–Y34,Y87.2,Y89.9)	4,632	5,105	0.9073	4,492	4,911	0.9147	4,209	4,521	0.9310
Operations of war and their sequelae . . . . . (Y36,Y89.1)	19	21	0.9048	30	28	1.0714	27	27	1.0000
Complications of medical and surgical care . . . . . (Y40–Y84,Y88)	2,566	2,597	0.9881	2,492	2,521	0.9885	2,630	2,653	0.9913

– Quantity zero.

. . . Category not applicable.

<sup>1</sup>New ICD–10 code J09 (Influenza due to identified avian influenza virus) was added to the category in 2007.

<sup>2</sup>New ICD–10 code U04 [Severe acute respiratory syndrome (SARS)] was added to the category in 2007.

<sup>3</sup>Cause-of-death title was changed in 2007 to reflect the addition of SARS (ICD–10 code U04).

SOURCE: CDC/NCHS, National Vital Statistics System, preliminary and final data.



**Table III. Ratios of preliminary to final reported numbers of deaths from 130 selected causes of infant death: United States, 2005–2007**

[For explanation of asterisks preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision</i> (ICD–10), Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
All causes	29,241	29,138	1.0035	28,609	28,527	1.0029	28,534	28,440	1.0033
Certain infectious and parasitic diseases (A00–B99)	484	482	1.0041	500	479	1.0438	528	530	0.9962
Certain intestinal infectious diseases (A00–A08)	20	13	1.5385	15	16	0.9375	8	9	0.8889
Diarrhea and gastroenteritis of infectious origin (A09)	–	–	...	2	1	2.0000	1	1	1.0000
Tuberculosis (A16–A19)	2	2	1.0000	1	–	...	2	2	1.0000
Tetanus (A33,A35)	–	–	...	–	–	...	–	–	...
Diphtheria (A36)	–	–	...	–	–	...	–	–	...
Whooping cough (A37)	8	8	1.0000	8	8	1.0000	28	28	1.0000
Meningococcal infection (A39)	9	11	0.8182	10	11	0.9091	17	17	1.0000
Septicemia (A40–A41)	271	283	0.9576	293	269	1.0892	301	302	0.9967
Congenital syphilis (A50)	4	5	0.8000	–	–	...	–	–	...
Gonococcal infection (A54)	–	–	...	–	–	...	–	–	...
Viral diseases (A80–B34)	112	115	0.9739	116	120	0.9667	113	119	0.9496
Acute poliomyelitis (A80)	–	–	...	–	–	...	–	–	...
Varicella (chickenpox) (B01)	–	–	...	–	–	...	–	–	...
Measles (B05)	–	–	...	–	–	...	–	–	...
Human immunodeficiency virus (HIV) disease (B20–B24)	7	5	1.4000	7	7	1.0000	2	2	1.0000
Mumps (B26)	–	–	...	–	–	...	–	–	...
Other and unspecified viral diseases (A81–B00,B02–B04,B06–B19,B25,B27–B34)	105	110	0.9545	109	113	0.9646	111	117	0.9487
Candidiasis (B37)	15	13	1.1538	15	15	1.0000	21	20	1.0500
Malaria (B50–B54)	–	–	...	–	–	...	–	–	...
Pneumocystosis (B59)	1	1	1.0000	–	1	...	2	2	1.0000
All other and unspecified infectious and parasitic diseases (A20–A32,A38,A42–A49,A51–A53,A55–A79,B35–B36,B38–B49,B55–B58,B60–B99)	42	31	1.3548	38	38	1.0000	34	30	1.1333
Neoplasms (C00–D48)	149	131	1.1374	139	141	0.9858	141	134	1.0522
Malignant neoplasms (C00–C97)	92	72	1.2778	77	76	1.0132	78	75	1.0400
Hodgkin's disease and non-Hodgkin's lymphomas (C81–C85)	6	2	3.0000	1	1	1.0000	1	1	1.0000
Leukemia (C91–C95)	20	21	0.9524	31	31	1.0000	22	22	1.0000
Other and unspecified malignant neoplasms (C00–C80,C88–C90,C96–C97)	66	49	1.3469	45	44	1.0227	54	52	1.0385
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	57	59	0.9661	62	65	0.9538	63	59	1.0678
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89)	108	116	0.9310	104	102	1.0196	94	94	1.0000
Anemias (D50–D64)	16	17	0.9412	10	11	0.9091	19	19	1.0000
Hemorrhagic conditions and other diseases of blood and blood-forming organs (D65–D76)	72	77	0.9351	63	62	1.0161	60	60	1.0000
Certain disorders involving the immune mechanism (D80–D89)	20	22	0.9091	31	29	1.0690	15	15	1.0000
Endocrine, nutritional and metabolic diseases (E00–E88)	255	252	1.0119	200	207	0.9662	222	226	0.9823
Short stature, not elsewhere classified (E34.3)	3	5	0.6000	8	11	0.7273	8	8	1.0000
Nutritional deficiencies (E40–E64)	4	7	0.5714	7	9	0.7778	5	5	1.0000
Cystic fibrosis (E84)	11	11	1.0000	10	11	0.9091	5	5	1.0000
Volume depletion, disorders of fluid, electrolyte and acid-base balance (E86–E87)	62	60	1.0333	56	53	1.0566	65	63	1.0317
All other endocrine, nutritional and metabolic diseases (E00–E32,E34.0–E34.2,E34.4–E34.9,E65–E83,E85,E88)	175	169	1.0355	118	123	0.9593	139	145	0.9586
Diseases of the nervous system (G00–G98)	424	413	1.0266	361	373	0.9678	348	354	0.9831

See footnotes at end of table.

**Table III. Ratios of preliminary to final reported numbers of deaths from 130 selected causes of infant death: United States, 2005–2007—Con.**

[For explanation of asterisks preceding cause-of-death codes, see "Technical Notes"]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision (ICD-10)</i> , Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Meningitis . . . . . (G00,G03)	88	82	1.0732	57	61	0.9344	56	57	0.9825
Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) . . . . . (G12.0)	15	13	1.1538	9	8	1.1250	15	15	1.0000
Infantile cerebral palsy . . . . . (G80)	11	11	1.0000	8	7	1.1429	7	8	0.8750
Anoxic brain damage, not elsewhere classified . . . . . (G93.1)	53	64	0.8281	55	60	0.9167	40	42	0.9524
Other diseases of nervous system . . . . . (G04,G06–G11,G12.1–G12.9,G20–G72,G81–G92,G93.0,G93.2–G93.9,G95–G98)	257	243	1.0576	232	237	0.9789	229	232	0.9871
Diseases of the ear and mastoid process . . . . . (H60–H93)	3	3	1.0000	2	3	0.6667	7	7	1.0000
Diseases of the circulatory system . . . . . (I00–I99)	612	624	0.9808	539	543	0.9926	523	529	0.9887
Pulmonary heart disease and diseases of pulmonary circulation . . . . . (I26–I28)	96	100	0.9600	81	81	1.0000	98	98	1.0000
Pericarditis, endocarditis and myocarditis . . . . . (I30,I33,I40)	17	21	0.8095	7	9	0.7778	13	13	1.0000
Cardiomyopathy . . . . . (I42)	117	120	0.9750	109	115	0.9478	82	82	1.0000
Cardiac arrest . . . . . (I46)	34	29	1.1724	14	15	0.9333	23	24	0.9583
Cerebrovascular diseases . . . . . (I60–I69)	136	132	1.0303	145	142	1.0211	127	126	1.0079
All other diseases of circulatory system . . . . . (I00–I25,I31,I34–I38,I44–I45,I47–I51,I70–I99)	212	222	0.9550	181	181	1.0000	181	186	0.9731
Diseases of the respiratory system . . . . . (J00–J98,U04) <sup>1</sup>	641	640	1.0016	644	692	0.9306	650	669	0.9716
Acute upper respiratory infections . . . . . (J00–J06)	15	14	1.0714	11	11	1.0000	10	10	1.0000
Influenza and pneumonia . . . . . (J09–J18) <sup>2</sup>	218	222	0.9820	244	263	0.9278	255	265	0.9623
Influenza . . . . . (J09–J11) <sup>2</sup>	9	13	0.6923	17	18	0.9444	17	19	0.8947
Pneumonia . . . . . (J12–J18)	209	209	1.0000	228	245	0.9306	238	246	0.9675
Acute bronchitis and acute bronchiolitis . . . . . (J20–J21)	44	45	0.9778	45	52	0.8654	48	50	0.9600
Bronchitis, chronic and unspecified . . . . . (J40–J42)	23	24	0.9583	19	19	1.0000	22	25	0.8800
Asthma . . . . . (J45–J46)	5	4	1.2500	5	6	0.8333	3	4	0.7500
Pneumonitis due to solids and liquids . . . . . (J69)	11	10	1.1000	9	11	0.8182	17	17	1.0000
Other and unspecified diseases of respiratory system . . . . . (J22,J30–J39,J43–J44,J47–J68,J70–J98,U04) <sup>1</sup>	324	321	1.0093	311	330	0.9424	294	298	0.9866
Diseases of the digestive system . . . . . (K00–K92)	650	677	0.9601	588	582	1.0103	630	626	1.0064
Gastritis, duodenitis, and noninfective enteritis and colitis . . . . . (K29,K50–K55)	394	413	0.9540	326	323	1.0093	344	341	1.0088
Hernia of abdominal cavity and intestinal obstruction without hernia . . . . . (K40–K46,K56)	68	68	1.0000	70	67	1.0448	76	77	0.9870
All other and unspecified diseases of digestive system . . . . . (K00–K28,K30–K38,K57–K92)	189	196	0.9643	192	192	1.0000	209	208	1.0048
Diseases of the genitourinary system . . . . . (N00–N98)	169	169	1.0000	181	180	1.0056	181	180	1.0056
Renal failure and other disorders of kidney . . . . . (N17–N19,N25,N27)	137	138	0.9928	159	154	1.0325	152	151	1.0066
Other and unspecified diseases of genitourinary system . . . . . (N00–N15,N20–N23,N26,N28–N98)	32	31	1.0323	22	26	0.8462	29	29	1.0000
Certain conditions originating in the perinatal period . . . . . (P00–P96)	14,141	14,466	0.9775	14,223	14,321	0.9932	14,405	14,423	0.9988
Newborn affected by maternal factors and by complications of pregnancy, labor and delivery . . . . . (P00–P04)	3,280	3,274	1.0018	3,125	3,150	0.9921	3,230	3,228	1.0006
Newborn affected by maternal hypertensive disorders . . . . . (P00.0)	96	89	1.0787	85	84	1.0119	89	88	1.0114
Newborn affected by other maternal conditions which may be unrelated to present pregnancy . . . . . (P00.1–P00.9)	99	91	1.0879	68	80	0.8500	69	70	0.9857
Newborn affected by maternal complications of pregnancy . . . . . (P01)	1,770	1,769	1.0006	1,694	1,683	1.0065	1,786	1,776	1.0056
Newborn affected by incompetent cervix . . . . . (P01.0)	505	488	1.0348	444	444	1.0000	498	496	1.0040
Newborn affected by premature rupture of membranes . . . . . (P01.1)	852	851	1.0012	830	824	1.0073	842	837	1.0060
Newborn affected by multiple pregnancy . . . . . (P01.5)	222	238	0.9328	213	214	0.9953	256	255	1.0039
Newborn affected by other maternal complications of pregnancy . . . . . (P01.2–P01.4,P01.6–P01.9)	191	192	0.9948	207	201	1.0299	189	188	1.0053

See footnotes at end of table.

**Table III. Ratios of preliminary to final reported numbers of deaths from 130 selected causes of infant death: United States, 2005–2007—Con.**

[For explanation of asterisks preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision (ICD–10)</i> , Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Newborn affected by complications of placenta, cord and membranes . . . . . (P02)	1,139	1,135	1.0035	1,123	1,140	0.9851	1,111	1,110	1.0009
Newborn affected by complications involving placenta . . . . . (P02.0–P02.3)	586	579	1.0121	561	563	0.9964	586	585	1.0017
Newborn affected by complications involving cord . . . . . (P02.4–P02.6)	46	43	1.0698	54	54	1.0000	50	50	1.0000
Newborn affected by chorioamnionitis . . . . . (P02.7)	503	511	0.9843	507	522	0.9713	471	471	1.0000
Newborn affected by other and unspecified abnormalities of membranes . . . . . (P02.8–P02.9)	4	2	2.0000	1	1	1.0000	4	4	1.0000
Newborn affected by other complications of labor and delivery . . . . . (P03)	120	127	0.9449	97	102	0.9510	131	134	0.9776
Newborn affected by noxious influences transmitted via placenta or breast milk . . . . . (P04)	55	63	0.8730	58	61	0.9508	44	50	0.8800
Disorders related to length of gestation and fetal malnutrition . . . . . (P05–P08)	4,782	4,961	0.9639	4,943	4,940	1.0006	4,793	4,798	0.9990
Slow fetal growth and fetal malnutrition . . . . . (P05)	105	104	1.0096	102	99	1.0303	84	83	1.0120
Disorders related to short gestation and low birth weight, not elsewhere classified . . . . . (P07)	4,678	4,857	0.9631	4,841	4,841	1.0000	4,709	4,714	0.9989
Extremely low birth weight or extreme immaturity . . . . . (P07.0,P07.2)	3,573	3,706	0.9641	3,678	3,683	0.9986	3,644	3,645	0.9997
Other low birth weight or preterm . . . . . (P07.1,P07.3)	1,104	1,151	0.9592	1,163	1,158	1.0043	1,064	1,069	0.9953
Disorders related to long gestation and high birth weight . . . . . (P08)	–	–	...	–	–	...	1	1	1.0000
Birth trauma . . . . . (P10–P15)	14	12	1.1667	23	22	1.0455	25	26	0.9615
Intrauterine hypoxia and birth asphyxia . . . . . (P20–P21)	349	356	0.9803	344	344	1.0000	522	529	0.9868
Intrauterine hypoxia . . . . . (P20)	108	106	1.0189	109	109	1.0000	116	119	0.9748
Birth asphyxia . . . . . (P21)	241	250	0.9640	236	235	1.0043	406	410	0.9902
Respiratory distress of newborn . . . . . (P22)	735	789	0.9316	801	825	0.9709	861	860	1.0012
Other respiratory conditions originating in the perinatal period . . . . . (P23–P28)	1,077	1,117	0.9642	1,199	1,207	0.9934	1,163	1,160	1.0026
Congenital pneumonia . . . . . (P23)	102	103	0.9903	89	104	0.8558	103	104	0.9904
Neonatal aspiration syndromes . . . . . (P24)	50	51	0.9804	49	50	0.9800	45	46	0.9783
Interstitial emphysema and related conditions originating in the perinatal period . . . . . (P25)	131	124	1.0565	155	150	1.0333	122	121	1.0083
Pulmonary hemorrhage originating in the perinatal period . . . . . (P26)	154	161	0.9565	179	178	1.0056	183	181	1.0110
Chronic respiratory disease originating in the perinatal period . . . . . (P27)	225	243	0.9259	262	258	1.0155	271	270	1.0037
Atelectasis . . . . . (P28.0–P28.1)	354	366	0.9672	396	398	0.9950	379	377	1.0053
All other respiratory conditions originating in the perinatal period . . . . . (P28.2–P28.9)	61	69	0.8841	69	69	1.0000	61	61	1.0000
Infections specific to the perinatal period . . . . . (P35–P39)	1,039	1,057	0.9830	979	998	0.9810	1,033	1,039	0.9942
Bacterial sepsis of newborn . . . . . (P36)	790	820	0.9634	786	807	0.9740	834	834	1.0000
Omphalitis of newborn with or without mild hemorrhage . . . . . (P38)	5	4	1.2500	–	–	...	6	6	1.0000
All other infections specific to the perinatal period . . . . . (P35,P37,P39)	244	233	1.0472	193	191	1.0105	193	199	0.9698
Hemorrhagic and hematological disorders of newborn . . . . . (P50–P61)	723	711	1.0169	708	725	0.9766	782	782	1.0000
Neonatal hemorrhage . . . . . (P50–P52,P54)	614	597	1.0285	598	618	0.9676	664	665	0.9985
Hemorrhagic disease of newborn . . . . . (P53)	–	–	...	1	1	...	–	–	...
Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice . . . . . (P55–P59)	20	15	1.3333	10	13	0.7692	16	16	1.0000
Hematological disorders . . . . . (P60–P61)	89	99	0.8990	99	93	1.0645	102	101	1.0099
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus . . . . . (P70.0–P70.2)	12	14	0.8571	16	12	1.3333	19	19	1.0000
Necrotizing enterocolitis of newborn . . . . . (P77)	529	554	0.9549	528	530	0.9962	549	546	1.0055
Hydrops fetalis not due to hemolytic disease . . . . . (P83.2)	195	177	1.1017	171	168	1.0179	168	165	1.0182
Other perinatal conditions . . . . . (P29,P70.3–P76,P78–P81,P83.0–P83.1,P83.3–P96)	1,405	1,444	0.9730	1,385	1,400	0.9893	1,258	1,271	0.9898
Congenital malformations, deformations and chromosomal abnormalities . . . . . (Q00–Q99)	5,769	5,785	0.9972	5,827	5,819	1.0014	5,562	5,552	1.0018
Anencephaly and similar malformations . . . . . (Q00)	306	321	0.9533	332	336	0.9881	313	313	1.0000

See footnotes at end of table.

**Table III. Ratios of preliminary to final reported numbers of deaths from 130 selected causes of infant death: United States, 2005–2007—Con.**

[For explanation of asterisks preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision (ICD–10)</i> , Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Congenital hydrocephalus . . . . . (Q03)	92	93	0.9892	82	88	0.9318	92	90	1.0222
Spina bifida . . . . . (Q05)	21	19	1.1053	24	23	1.0435	22	22	1.0000
Other congenital malformations of nervous system . . . . . (Q01–Q02,Q04,Q06–Q07)	408	393	1.0382	389	390	0.9974	318	314	1.0127
Congenital malformations of heart . . . . . (Q20–Q24)	1,345	1,363	0.9868	1,399	1,396	1.0021	1,378	1,377	1.0007
Other congenital malformations of circulatory system . . . . . (Q25–Q28)	256	254	1.0079	232	236	0.9831	246	245	1.0041
Congenital malformations of respiratory system . . . . . (Q30–Q34)	393	410	0.9585	449	437	1.0275	599	598	1.0017
Congenital malformations of digestive system . . . . . (Q35–Q45)	129	132	0.9773	109	108	1.0093	103	105	0.9810
Congenital malformations of genitourinary system . . . . . (Q50–Q64)	495	514	0.9630	523	518	1.0097	377	375	1.0053
Congenital malformations and deformations of musculoskeletal system, limbs and integument . . . . . (Q65–Q85)	608	623	0.9759	627	619	1.0129	552	558	0.9892
Down’s syndrome . . . . . (Q90)	78	82	0.9512	93	97	0.9588	123	123	1.0000
Edward’s syndrome . . . . . (Q91.0–Q91.3)	547	525	1.0419	518	509	1.0177	413	405	1.0198
Patau’s syndrome . . . . . (Q91.4–Q91.7)	302	295	1.0237	327	322	1.0155	314	310	1.0129
Other congenital malformations and deformations . . . . . (Q10–Q18,Q86–Q89)	575	552	1.0417	523	538	0.9721	519	526	0.9867
Other chromosomal abnormalities, not elsewhere classified . . . . . (Q92–Q99)	216	209	1.0335	200	202	0.9901	190	191	0.9948
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R99)	4,162	3,617	1.1507	3,749	3,462	1.0829	3,760	3,589	1.0476
Sudden infant death syndrome . . . . . (R95)	2,118	2,453	0.8634	2,145	2,323	0.9234	2,107	2,230	0.9448
Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified . . . . . (R00–R53,R55–R94,R96–R99)	2,044	1,164	1.7560	1,604	1,139	1.4083	1,653	1,359	1.2163
All other diseases . . . . . (Residual)	27	16	1.6875	42	25	1.6800	19	15	1.2667
External causes of mortality . . . . . (*U01,V01–Y84)	1,646	1,747	0.9422	1,510	1,598	0.9449	1,463	1,512	0.9676
Accidents (unintentional injuries) . . . . . (V01–X59)	1,238	1,285	0.9634	1,119	1,147	0.9756	1,069	1,083	0.9871
Transport accidents . . . . . (V01–V99)	136	127	1.0709	136	142	0.9577	148	147	1.0068
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)	133	124	1.0726	133	140	0.9500	147	146	1.0068
Other and unspecified transport accidents . . . . . (V01,V05–V06,V09.1,V09.3–V09.9,V10–V11,V15–V18,V19.3,V19.8–V19.9,V80.0–V80.2,V80.6–V80.9,V81.2–V81.9,V82.2–V82.9,V87.9,V88.9,V89.1,V89.3,V89.9,V90–V99)	4	3	1.3333	2	2	1.0000	1	1	1.0000
Falls . . . . . (W00–W19)	33	24	1.3750	22	23	0.9565	15	16	0.9375
Accidental discharge of firearms . . . . . (W32–W34)	2	1	2.0000	–	–	–	1	1	1.0000
Accidental drowning and submersion . . . . . (W65–W74)	54	57	0.9474	51	51	1.0000	64	64	1.0000
Accidental suffocation and strangulation in bed . . . . . (W75)	628	669	0.9387	559	588	0.9507	504	514	0.9805
Other accidental suffocation and strangulation . . . . . (W76–W77,W81–W84)	203	220	0.9227	193	193	1.0000	181	186	0.9731
Accidental inhalation and ingestion of food or other objects causing obstruction of respiratory tract . . . . . (W78–W80)	62	70	0.8857	64	62	1.0323	45	48	0.9375
Accidents caused by exposure to smoke, fire and flames . . . . . (X00–X09)	38	38	1.0000	27	27	1.0000	34	34	1.0000
Accidental poisoning and exposure to noxious substances . . . . . (X40–X49)	16	19	0.8421	15	16	0.9375	20	20	1.0000
Other and unspecified accidents . . . . . (W20–W31,W35–W64,W85–W99,X10–X39,X50–X59)	66	60	1.1000	51	45	1.1333	56	53	1.0566

See footnotes at end of table.

**Table III. Ratios of preliminary to final reported numbers of deaths from 130 selected causes of infant death: United States, 2005–2007**

[For explanation of asterisks preceding cause-of-death codes, see “Technical Notes”]

Cause of death (based on the <i>International Classification of Diseases, Tenth Revision</i> (ICD–10), Second Edition, 2004)	Preliminary number of deaths 2007	Final number of deaths 2007	Ratio of preliminary to final 2007	Preliminary number of deaths 2006	Final number of deaths 2006	Ratio of preliminary to final 2006	Preliminary number of deaths 2005	Final number of deaths 2005	Ratio of preliminary to final 2005
Assault (homicide). . . . . (*U01,X85–Y09)	322	352	0.9148	292	336	0.8690	281	306	0.9183
Assault (homicide) by hanging, strangulation and suffocation . . . . . (X91)	32	30	1.0667	23	34	0.6765	24	27	0.8889
Assault (homicide) by discharge of firearms . . . . . (*U01.4,X93–X95)	13	15	0.8667	6	6	1.0000	7	6	1.1667
Neglect, abandonment and other maltreatment syndromes . . . . . (Y06–Y07)	74	86	0.8605	67	75	0.8933	93	99	0.9394
Assault (homicide) by other and unspecified means . . . . . (*U01.0–*U01.3, *U01.5–*U01.9,X85–X90,X92,X96–X99,Y00–Y05,Y08–Y09)	203	221	0.9186	195	221	0.8824	157	174	0.9023
Complications of medical and surgical care . . . . . (Y40–Y84)	24	22	1.0909	21	23	0.9130	20	19	1.0526
Other external causes and their sequelae. . . . . (Y10–Y36)	62	88	0.7045	78	92	0.8478	94	104	0.9038

– Quantity zero.

. . . Category not applicable.

<sup>1</sup>New ICD–10 code U04 [Severe acute respiratory syndrome (SARS), unspecified] was added to the category in 2007.

<sup>2</sup>New ICD–10 code J09 (Influenza due to identified avian influenza virus) was added to the category in 2007.

SOURCE: CDC/NCHS, National Vital Statistics System, preliminary and final data.

presented in this report are calculated by dividing the preliminary number of infant deaths that occurred during 2009 by the number of live births for the same period and are presented as rates per 1,000 or per 100,000 live births. For preliminary birth figures used in the denominator for infant mortality rates, see “Births: Preliminary Data for 2009” (32). In contrast to infant mortality rates based on live births, infant death rates are based on the estimated population under age 1 year (Table 1). Infant death rates that appear in tabulations of age-specific death rates in this report are calculated by dividing the number of infant deaths in 2009 by the estimated population of persons under age 1 on July 1, 2009, and are presented as rates per 100,000 population in this age group. Because of differences in their denominators, infant death rates may differ from infant mortality rates. Information on infant deaths can also be obtained from a file where the infant’s death certificate is linked to the birth certificate. The linked birth/infant death data set (linked file) is a better source of data for infant deaths and mortality rates by race and ethnicity because the race of the mother as reported by the mother on the birth certificate is used in both the numerator and denominator of the infant mortality rate. In contrast, for infant deaths and mortality rates in this report, race information for the denominator is the race of the mother as reported on the birth certificate, but the race information for the numerator is the race of the infant decedent as reported on the death certificate. Race information reported on the birth certificate is considered to be more accurate than that on the death certificate, because the race of each parent is usually reported on the birth certificate by the mother at the time of delivery, whereas on the death certificate, the race of the deceased infant is reported by the funeral director based on information provided by an informant or by observation. This difference in the method of reporting race data has a larger impact for races other than white and black and can lead to differences in race-specific infant mortality rates between the two data sources (31).

## Life tables

The period life table provides a measure of the effect of current 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. Beginning with final data reported for 1997, the life table methodology was changed from previous annual reports. Previously, U.S. life tables were abridged and constructed by reference to a standard table (43). In addition, the age range for these life tables was limited to 5-year age groups ending with the age group 85 and over.

For 1997–1999 mortality data, a revised life table methodology was used to construct complete life tables by single years of age that extend to age 100 (44) using a methodology similar to that of the decennial life tables (45). The advantages of the new methodology over the previous methodology are its comparability with decennial life table methodology, greater accuracy, and greater age detail. A comparison of the two methods shows small differences in resulting values for life expectancy (44). Although the new method produces complete life tables, that is, life tables by single years of age, life table data shown in this report are summarized in 5-year age groupings. To calculate the probability of dying at each age, the revised methodology uses vital statistics death rates for ages under 85 and mortality data from the

Medicare program for ages 85 and over. Medicare data were used to model the probability of dying at ages 85 and over because the data on decedents’ age are shown to be significantly more reliable than vital statistics data at the oldest ages (46).

The methodology for constructing life tables was revised once more starting with mortality data for the year 2000. Life table data shown in this report for 2008 and 2009 (Table 6) are based on this revised methodology. Complete life tables by single years of age that extend to age 100 were constructed using a methodology similar to that developed for the 1999–2001 decennial life tables (47). To calculate the probability of dying at each age, two major changes were made to the methodology: 1) Probabilities for ages 66–100 were based on blended vital statistics and Medicare probabilities of dying (probabilities of death for ages 65 and under were based on vital statistics data as before); and 2) Smoothing and extrapolation of death rates for ages 66–100 was performed using a mathematical model (47). In the previous method, Medicare probabilities were modeled for ages 85 and over; no blending or smoothing was done. The newly revised methodology, along with a more comprehensive description of the methodology, was published in “United States Life Tables, 2005” (48).

The life expectancy data shown in this report for the 2008 data year have been updated and may differ from those published in “Deaths: Preliminary Data for 2008” (22). The data were updated due to an error found in the original population data during tabulation of the life tables for the 2008 report.

## Population denominators

The rates in this report use population estimates based on the 2000 census and are estimated as of July 1, 2008, and July 1, 2009. These population estimates are available on the NCHS website (14,49).

The population estimates have been produced under a collaborative arrangement with the U.S. Census Bureau and are based on the 2000 census counts. Reflecting the new standards issued in 1997 by OMB, the 2000 census included an option for persons to report more than one race as appropriate for themselves and household members (21). In addition, the 1997 OMB standards called for reporting of Asian persons separately from NHOPI. In the 1977 OMB standards, data for API persons were collected as a single group (17). Death certificates for 16 states currently collect only one race in the same categories as specified in the 1977 OMB standards (see “2003 revision of U.S. Standard Certificate of Death”). In addition, those death certificate data do not report Asians separately from NHOPI. Thus, for nearly one-third of the states, the death certificate data by race (numerators for death rates) are incompatible with population data collected in the 2000 census (denominators for the rates).

In order to produce national death rates for 2008 and 2009, the reported population data for multiple-race persons had to be “bridged” back to single-race categories. In addition, the census counts were modified to be consistent with the 1977 OMB racial categories, that is, to report the data for Asian persons and NHOPI as one combined category, API, and to reflect age as of the census reference date. The procedures used to produce the bridged populations are described in separate publications (19,20). Bridged data are anticipated to be used over the next few years for computing population-based rates. As more states collect data on race according to the 1997 OMB standards (21), use of the bridged populations is expected to be discontinued.

## Computing rates and percentages

Death 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.

Age-adjusted death 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 (relative age distribution of year 2000 projected population of the United States); see the following formula for age-adjusted death rate, and the table of U.S. standard population (Table IV).

**Table IV. United States year 2000 standard population**

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

**Table V. United States year 2000 standard population for ages 15 years and over**

Age	Population
15 years and over . . . . .	215,670,503
15–24 years . . . . .	38,076,743
25–34 years . . . . .	37,233,437
35–44 years . . . . .	44,659,185
45–54 years . . . . .	37,030,152
55–64 years . . . . .	23,961,506
65 years and over . . . . .	34,709,480

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

where

$P_{si}$  = standard population for age group  $i$

$P_s$  = total U.S. standard population [all ages combined (Table IV)].

Age-adjusted death rates for injury at work were computed by applying the age-specific death rates to the U.S. standard population for ages 15 and over. The year 2000 standard population used for computing age-adjusted rates and standard errors for injury at work is shown in Table V.

Age-adjusted rates for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas were computed by applying age-specific death rates to the U.S. standard population. Age groups for 75 and over were combined because population counts were unavailable by age group for ages over 79. The year 2000 standard

**Table VI. United States year 2000 standard population for the territories**

Age	Population
All ages . . . . .	274,633,642
Under 1 year . . . . .	3,794,901
1–4 years . . . . .	15,191,619
5–14 years . . . . .	39,976,619
15–24 years . . . . .	38,076,743
25–34 years . . . . .	37,233,437
35–44 years . . . . .	44,659,185
45–54 years . . . . .	37,030,152
55–64 years . . . . .	23,961,506
65–74 years . . . . .	18,135,514
75 years and over . . . . .	16,573,966

population used for computing age-adjusted rates and standard errors for the territories is shown in Table VI.

Effective with 1999 data, the standard population was changed from 1940 to the year 2000 population in accordance with the new statistical policy promulgated by the Secretary of Health and Human Services in August 1998 (50). The new population standard affects levels of mortality and, to some extent, trends and group comparisons. Of particular note are the effects on race comparison of mortality; see “Age Standardization of Death Rates: Implementation of the Year 2000 Standard” (50). 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. The effect of the change is negligible and does not significantly affect comparability with age-adjusted rates calculated using the previous method.

Death rates for the Hispanic population are based only on events to persons reported as Hispanic. Rates for non-Hispanic white persons are based on the sum of all events to white decedents reported as non-Hispanic and white decedents with origin not stated. Similarly, rates for non-Hispanic black persons are based on the sum of all events to black decedents reported as non-Hispanic and black decedents with origin not stated. Hispanic origin is not imputed if it is not reported. For calculating death rates, deaths with age not stated are not distributed. The number of deaths with age not stated in 2009 was 315, approximately 0.01 percent of all deaths.

For statistics shown in tables throughout this report, an asterisk (\*) indicates that the figure does not meet standards of reliability or precision. In this report two sets of criteria determine whether a figure meets these standards:

- Reporting for any particular variable is at least 80 percent complete. In this report, no data were suppressed based on this criterion.
- A rate or percentage is based on at least 20 deaths. Rates based on fewer than 20 deaths have a relative standard error (RSE) of about 23 percent or more and, therefore, are considered highly variable. For age-adjusted death rates, this criterion is applied to the sum of the age-specific deaths. However, some death rates (based on data files that are less than 100 percent complete and on 20–31 deaths) may have RSEs of 23 percent or more but are still shown instead of asterisks. As a result, caution should be exercised in analyzing rates based on 20–31 events. Additional

information on random variation in numbers of events, rates, ratios, and percentages may be found in "Reliability of estimates."

### Reliability of estimates

Because the preliminary estimates of deaths in this report are based on files that may not be complete, they are subject to sampling variability. This concept is reflected in the fact that record weights are used to adjust record counts to independent control totals. The lack of completeness of the vital statistics files is due to delays in receiving and processing the death records. Although the proportion of records making up the preliminary file does not constitute a veritable random sample, for the sake of convenience the variability associated with this error (sampling variability) is treated as if it were from a random sample.

Even where the number of vital events in this report is 100 percent complete and not subject to sampling variability, it might be affected by random variation. Thus, when the number of events is small and the probability of such an event is small, considerable caution must be observed in interpreting the data. Such infrequent events may be assumed to follow a Poisson probability distribution. The first column of Table VII shows the estimated RSEs of a file that is nearly 100 percent complete.

Data in a file that is less than 100 percent complete are affected by sampling variation as well as by random variation. The estimated

RSEs in columns 2–6 of Table VII for various levels of file completeness are measures of the sampling errors and the random errors of the estimates. They do not include nonsampling error.

The estimated RSEs in Table VII were computed using this formula:

$$1. RSE = 100 \sqrt{\frac{1}{X} + \frac{(1-f)(N-X)}{fX(N-(1/f))}}$$

where

- $f$  = sampling fraction or percent of file completeness/100 from Table I. For mortality data based on deaths under age 1 year, use  $f$  for "infant deaths" for either the demographic or medical file as appropriate. For mortality data based on all ages combined or any age group that is 1 year and over, use  $f$  for "deaths 1 year of age and over" for either the demographic or medical files as appropriate.
- $X$  = estimated number of infant deaths or deaths.
- $N$  = total count of infant deaths or deaths for the United States or any state. (NOTE: RSEs shown in Table VII are based on  $N = 4,000,000$ . If  $N$  is smaller, RSEs may be slightly smaller than those shown.)

**Table VII. Relative standard errors for preliminary number of deaths by percent of file completeness**

[Relative standard errors are expressed as a percentage of the estimate]

Estimated number of deaths	Percent of file completeness					
	100	95	90	80	70	60
	Relative standard error (percent)					
1 . . . . .	100.0	102.6	105.4	111.8	119.5	129.1
5 . . . . .	44.7	45.9	47.1	50.0	53.5	57.7
10 . . . . .	31.6	32.4	33.3	35.4	37.8	40.8
20 . . . . .	22.4	22.9	23.6	25.0	26.7	28.9
30 . . . . .	18.3	18.7	19.2	20.4	21.8	23.6
40 . . . . .	15.8	16.2	16.7	17.7	18.9	20.4
50 . . . . .	14.1	14.5	14.9	15.8	16.9	18.3
60 . . . . .	12.9	13.2	13.6	14.4	15.4	16.7
70 . . . . .	12.0	12.3	12.6	13.4	14.3	15.4
80 . . . . .	11.2	11.5	11.8	12.5	13.4	14.4
90 . . . . .	10.5	10.8	11.1	11.8	12.6	13.6
100 . . . . .	10.0	10.3	10.5	11.2	12.0	12.9
200 . . . . .	7.1	7.3	7.5	7.9	8.5	9.1
300 . . . . .	5.8	5.9	6.1	6.5	6.9	7.5
400 . . . . .	5.0	5.1	5.3	5.6	6.0	6.5
500 . . . . .	4.5	4.6	4.7	5.0	5.3	5.8
600 . . . . .	4.1	4.2	4.3	4.6	4.9	5.3
700 . . . . .	3.8	3.9	4.0	4.2	4.5	4.9
800 . . . . .	3.5	3.6	3.7	4.0	4.2	4.6
900 . . . . .	3.3	3.4	3.5	3.7	4.0	4.3
1,000 . . . . .	3.2	3.2	3.3	3.5	3.8	4.1
2,000 . . . . .	2.2	2.3	2.4	2.5	2.7	2.9
5,000 . . . . .	1.4	1.5	1.5	1.6	1.7	1.8
10,000 . . . . .	1.0	1.0	1.1	1.1	1.2	1.3
20,000 . . . . .	0.7	0.7	0.7	0.8	0.8	0.9
50,000 . . . . .	0.4	0.5	0.5	0.5	0.5	0.6
100,000 . . . . .	0.3	0.3	0.3	0.4	0.4	0.4
200,000 . . . . .	0.2	0.2	0.2	0.2	0.3	0.3
500,000 . . . . .	0.1	0.1	0.1	0.2	0.2	0.2
1,000,000 . . . . .	0.1	0.1	0.1	0.1	0.1	0.1
2,000,000 . . . . .	0.1	0.1	0.1	0.1	0.1	0.1
4,000,000 . . . . .	0.1	0.1	0.1	0.1	0.1	0.1



RSEs may be used to compute 95 percent confidence intervals for the number of events ( $X$ ), for a rate ( $R$ ), or for a percentage ( $P$ ), and to compute statistical tests concerning the equality of two rates ( $R_1$  and  $R_2$ ) or two percentages ( $P_1$  and  $P_2$ ).

For the number of deaths, the 95 percent confidence interval may be computed as:

$$2. \text{ Lower limit: } X_1 - \left( 1.96 \cdot X_1 \cdot \frac{\text{RSE}(X_1)}{100} \right)$$

$$3. \text{ Upper limit: } X_1 + \left( 1.96 \cdot X_1 \cdot \frac{\text{RSE}(X_1)}{100} \right)$$

As a hypothetical example, assume the number of deaths,  $X_1$ , is 70 from a file with 80 percent completeness. Then

$$\text{Lower limit: } 70 - \left( 1.96 \cdot 70 \cdot \frac{13.4}{100} \right) = 51.6$$

$$\text{Upper limit: } 70 + \left( 1.96 \cdot 70 \cdot \frac{13.4}{100} \right) = 88.4$$

This means that the chances are 95 out of 100 that the confidence interval (51.6–88.4) will cover the “true” number of deaths.

For rates based on population estimates in the denominator, the 95 percent confidence interval may be computed as:

$$4. \text{ Lower limit: } R_1 - \left( 1.96 \cdot R_1 \cdot \frac{\text{RSE}(R_1)}{100} \right)$$

$$5. \text{ Upper limit: } R_1 + \left( 1.96 \cdot R_1 \cdot \frac{\text{RSE}(R_1)}{100} \right)$$

As a hypothetical example, assume the death rate,  $R_1$ , is 20.0, which is based on 70 deaths from a file with 80 percent completeness. Then

$$\text{Lower limit: } 20.0 - \left( 1.96 \cdot 20.0 \cdot \frac{13.4}{100} \right) = 14.7$$

$$\text{Upper limit: } 20.0 + \left( 1.96 \cdot 20.0 \cdot \frac{13.4}{100} \right) = 25.3$$

This means that the chances are 95 out of 100 that the confidence interval (14.7–25.3) will cover the “true” rate.

For age-adjusted death rates,  $R'$ , the 95 percent confidence interval may be computed as:

$$6. \text{ Lower limit: } R' - \left( 1.96 \cdot R' \cdot \frac{\text{RSE}(R')}{100} \right)$$

$$7. \text{ Upper limit: } R' + \left( 1.96 \cdot R' \cdot \frac{\text{RSE}(R')}{100} \right)$$

where

$$8. \text{ RSE}(R') = 100 \sqrt{\frac{\sum_i \left( w_i^2 R_i^2 \left[ \frac{1}{X_i} + \frac{(1-f_i)(N_i-X_i)}{f_i X_i \left( N_i - \frac{1}{f_i} \right)} \right] \right)}{R'^2}}$$

where

$i$  = each age group where  $i=1$  for infant deaths,  $i=2$  for 1–4 years,  $i=3$  for 5–14 years, . . . and  $i=11$  for 85 years and over.

$R_i$  = age-specific rate for the  $i$ th age group.

$w_i$  =  $i$ th age-specific U.S. standard population such that  $\sum w_i = 1.000000$  (see “Computing rates and percentages”).

$X_i$  = estimated number of deaths for the  $i$ th age group.

$N_i$  = total count of deaths from Table I for each  $i$ th age group (for infant deaths, use the count of records as shown; for all age groups 1–4 through 85 years and over, use the count of records as shown for deaths at ages 1 year and over).

$f_i$  = percentage of file completeness/100 from Table I (for infant deaths, use the percent completeness for the demographic or medical file as appropriate for deaths under age 1 year; for all age groups 1–4 through 85 years and over, use the percent completeness for the demographic or medical file as appropriate for deaths at ages 1 year and over).

For testing the equality of two rates,  $R_1$  and  $R_2$ , the following z-test may be used to define a significance test statistic:

$$9. z = \frac{R_1 - R_2}{\sqrt{R_1^2 \left( \frac{\text{RSE}(R_1)}{100} \right)^2 + R_2^2 \left( \frac{\text{RSE}(R_2)}{100} \right)^2}}$$

The two-tailed 0.95 critical value for a z statistic is 1.96. Therefore, if  $|z| \geq 1.96$ , the difference is significant at the 0.05 level. If  $|z| < 1.96$ , then the difference would be considered not statistically significant at the 0.05 level.

As a hypothetical example, assume  $R_1$  is the same as the above example for the current 12-month period and that  $R_2$ , 15.0, is based on 50 deaths occurring in the prior 12-month period (which implies that the file is approximately 100 percent complete for  $R_2$ ). The z-test may be determined as:

$$z = \frac{20.0 - 15.0}{\sqrt{(20.0)^2 \left( \frac{13.4}{100} \right)^2 + (15.0)^2 \left( \frac{14.1}{100} \right)^2}} = 1.46$$

Because  $|z| < 1.96$ , there is not a statistically significant difference between the two rates at the 0.05 level of significance.

For rates or percentages based on denominators having random variation only or random and sampling variation, the RSE must take into account the variation in both the numerator and denominator. For example, for a rate,  $R_3$ , based on the number of live births in the denominator, the RSE is computed as:

$$10. \text{ RSE}(R_3) = 100 \sqrt{\left( \frac{\text{RSE}(D)}{100} \right)^2 + \left( \frac{\text{RSE}(B)}{100} \right)^2}$$

where

$\text{RSE}(D)$  = RSE of the number of deaths,  $D$

$RSE(B)$  = RSE of the number of births,  $B$

The 95 percent confidence interval of  $R_3$  may be computed as:

$$11. \text{ Lower limit: } R_3 - \left( 1.96 \cdot R_3 \cdot \frac{RSE(R_3)}{100} \right)$$

$$12. \text{ Upper limit: } R_3 + \left( 1.96 \cdot R_3 \cdot \frac{RSE(R_3)}{100} \right)$$

As a hypothetical example, assume the infant mortality rate,  $R_3$ , is 15.0, which is based on 30 infant deaths ( $D$ ) from a file with 70 percent completeness and 2,000 live births ( $B$ ) from a file with 80 percent completeness. Then

$$RSE(R_3) = 100 \sqrt{\left(\frac{21.8}{100}\right)^2 + \left(\frac{2.5}{100}\right)^2} = 21.9$$

$$\text{Lower limit: } 15.0 - \left( 1.96 \cdot 15.0 \cdot \frac{21.9}{100} \right) = 8.6$$

$$\text{Upper limit: } 15.0 + \left( 1.96 \cdot 15.0 \cdot \frac{21.9}{100} \right) = 21.4$$

This means the chances are 95 out of 100 that the confidence interval (8.6–21.4) will cover the “true” rate. The same formulas are applicable to a percentage ( $P_1$ ) that has variation in both the numerator and denominator. To compare the equality of two infant mortality rates or two percentages that have variation in the numerator and denominator, the above-mentioned z-test may be used.

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