

## Deaths: Preliminary Data for 2001

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### Abstract

**Objectives**—This report presents preliminary data on deaths for the year 2001 in the United States. U.S. data on deaths are shown by age, sex, race, and Hispanic origin. Death rates for 2001 are based on population estimates consistent with the April 1, 2000, census. Data on life expectancy, leading causes of death, infant mortality, and deaths resulting from September 11, 2001, terrorist attacks are also presented. For comparison, this report also presents revised final death rates for 2000, based on populations consistent with the April 1, 2000, census.

**Methods**—Data in this report are based on a large number of deaths comprising approximately 98 percent of the demographic file and 92 percent of the medical file for all deaths in the United States in 2001. The records are weighted to independent control counts of infant deaths and deaths 1 year and over received in State vital statistics offices for 2001. Unless otherwise indicated, comparisons are made with final data for 2000. For certain causes of death, preliminary data differ from final data because of the truncated nature of the preliminary file. These are, in particular, accidents, homicides, suicides, and respiratory diseases.

Populations were produced for the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS) under a collaborative arrangement with the U.S. Census Bureau. The populations reflect the results of the 2000 census. This census allowed people to report more than one race for themselves and their household members and also separated the category for Asian or Pacific Islander persons into two groups (Asian and Native Hawaiian or Other Pacific Islander). These changes reflect the Office of Management and Budget's (OMB) 1997 revisions to the standards for the classification of Federal data on race and ethnicity. Because only one race is currently reported in death certificate data, the 2000 census populations were "bridged" to the single race categories specified in OMB's 1977 guidelines for race and ethnic statistics in Federal reporting, which are still in use in the collection of vital statistics data.

**Results**—The age-adjusted death rate in 2001 for the United States decreased slightly from 869.0 deaths per 100,000 population in 2000 to 855.0 in 2001. For causes of death, declines in age-adjusted death rates occurred for Diseases of heart, Malignant neoplasms, Cerebrovascular diseases, Accidents (unintentional injuries), and

Influenza and pneumonia. Age-adjusted death rates also declined for drug-induced deaths between 2000 and 2001. Age-adjusted death rates increased between 2000 and 2001 for the following causes: Alzheimer's disease, Nephritis, nephrotic syndrome and nephrosis, Essential (primary) hypertension and hypertensive renal disease, and Assault (homicide). The increase in homicide was a direct result of the terrorist attacks of September 11, 2001.

The infant mortality rate did not change between 2000 and 2001. Life expectancy at birth rose by 0.2 years to a record high of 77.2 years.

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

### Introduction

This report presents preliminary mortality data based on vital records for a substantial proportion of deaths occurring in 2001. This report only includes data on deaths; reports previous to 1999 in the preliminary series included data for both births and deaths. Preliminary natality data for 2001 were published separately (1). Trends shown in preliminary reports for 1995–2000 deaths, for most measures, were confirmed by final statistics for each year (2–7).

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In order to provide the most accurate death rates for 2000 and 2001, publication of this report was delayed to enable NCHS to make use of population data for April 1, 2000, and July 1, 2001, based on the 2000 census. These populations were produced under a collaborative arrangement with the U.S. Census Bureau and feature race categories consistent with the U.S. Office of Management and Budget racial category standards issued in 1977, as described in the “Methods” section below.

## Sources and Methods

### Data sources

Preliminary data in this report are based on records of deaths that occurred during the year 2001 and were received and processed by the Centers for Disease Control and Prevention’s National Center for Health Statistics (NCHS) as of June 28, 2002. Compared with independent control counts of 2001 deaths received from State vital statistics offices, demographic information was available for an estimated 97 percent of infant deaths (under 1 year of age) and about 98 percent of deaths to persons aged 1 year and over. Medical or cause-of-death information was processed separately and was available for an estimated 91 percent of infant deaths and 92 percent of deaths to persons aged 1 year and over.

To produce the preliminary estimates shown in this report, records were weighted using the independent control counts of infant deaths and deaths 1 year and over for 2001 received in the State vital statistics offices. Two separate sets of weights were applied to the death records—one set for the demographic information and one set for the medical information. This results in slight inconsistencies between comparable demographic data from the mortality demographic and medical tables (see section on “Nature and sources of data” in the Technical Notes). Preliminary estimates are subject to sampling variation as well as random variation.

Cause of death is not always available when the preliminary data are sent to NCHS, but is available later for final data processing. As a result, estimates based on preliminary mortality data may differ from statistics from the final mortality data. Such differences may affect certain causes of death where the cause is pending investigation, such as for Assault (homicide), Intentional self harm (suicide), Unintentional injuries, and Sudden infant death syndrome (SIDS), or conditions that are highly seasonal, such as Influenza and pneumonia, and Chronic lower respiratory diseases (see section on “Bias estimation” in the Technical Notes).

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

The proportion of records processed by each State is shown in [table I](#) in the Technical Notes. Changes in death rates between 2000

and 2001 and differences in death rates across demographic groups for 2001 were tested for statistical significance. Unless otherwise specified, reported differences in death rates are statistically significant. Detailed information on the nature, sources, and qualifications of the preliminary data is given in the Technical Notes.

The populations used to calculate death rates were produced under a collaborative arrangement with the U.S. Census Bureau and are based on the 2000 census counts. Reflecting the new guidelines issued in 1997 by the Office of Management and Budget (OMB), the 2000 census included an option for individuals to report more than one race as appropriate for themselves and household members (8). The 1997 OMB guidelines called for the reporting of Asian persons separately from Native Hawaiians or other Pacific Islanders. Under the prior OMB standards (issued in 1977), data for Asian or Pacific Islander persons were collected as a single group (9). Death certificates currently collect only one race for the decedent in the same categories as specified in the 1977 OMB guidelines. The death certificate data do not report Asians separately from Native Hawaiians or other Pacific Islanders. The death certificate data by race (the numerators for death rates) are thus currently incompatible with the population data collected in the 2000 census (the denominators for the rates). To produce death rates for 2000 and 2001, it was necessary to “bridge” the reported population data for multiple race persons back to single race categories. The 2000 census counts were modified to be consistent with the 1977 OMB race categories, that is, to report the data for Asian persons and Native Hawaiians or other Pacific Islanders as a combined category, Asian or Pacific Islanders, and to reflect age as of the census reference date (10). The procedures used to produce the “bridged” populations are described in separate publications (11,12). It is anticipated that “bridged” population data will be used over the next few years for computing population-based rates. Beginning with deaths occurring in 2003, some States will collect information on multiple race reporting. As States gradually begin to collect data on race according to the 1997 OMB guidelines, it is expected that use of the bridged populations can be discontinued.

Readers should keep in mind 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. This is the case even for the 2000 populations that are based on the 2000 census. The estimation procedures used to develop these populations contain some error. Smaller population groups are affected much more than larger populations by this measurement error, especially American Indians (11). Over the next several years, additional information will be incorporated in the estimation procedures, possibly resulting in further revisions of the population estimates.

## Results

### Trends in numbers and rates

The preliminary number of deaths in the United States for 2001 was 2,417,762, representing an increase of 14,411 from the 2000 total. The crude death rate decreased from 854.0 per 100,000 population in 2000 to 848.9 per 100,000 in 2001. The estimated age-adjusted death rate, which accounts for changes in the age distribution of the population, reached a record low of 855.0 per 100,000 U.S. standard population, 1.6 percent lower than the 2000

rate of 869.0 (table A) (2). 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 subgroups of the population that have different age compositions. All age-adjusted death rates are standardized to the year 2000 population (see section on "Computing rates and percents" in the Technical Notes).

The age-adjusted death rate in the United States has generally trended downward since 1900 with occasional increases usually due to outbreaks of influenza, the most recent being from 1998 to 1999 (13,14). The final age-adjusted death rate for 2000 was 1.1 percent lower than the 1999 final rate despite a major influenza outbreak at the beginning of the year, resuming the downward trend in the age-adjusted death rate (14). The preliminary 2001 age-adjusted death rate continues this downward trend.

From 2000 to 2001, age-adjusted death rates decreased by 2.3 percent for males and by 1.2 percent for females. For non-Hispanic white males and females, the age-adjusted death rate decreased 2.0 percent and 1.0 percent, respectively. Reductions in the age-adjusted death rate also occurred for non-Hispanic black males (2.2 percent), non-Hispanic black females (1.9 percent), American Indian males (4.7 percent), Asian or Pacific Islander (API) males (5.0 percent), and Hispanic males (2.7 percent). American Indian, API, and Hispanic females experienced no statistically significant change in age-adjusted death rates between 2000 and 2001 (table 1).

Among the major race and Hispanic origin groups, the lowest mortality was reported for the API, Hispanic, and American Indian populations, whose preliminary age-adjusted death rates were, respectively, 42 percent, 22 percent, and 18 percent lower than those for the non-Hispanic white population. In contrast, the age-adjusted death rate for the non-Hispanic black population was 32 percent higher than that for the non-Hispanic white population (table 1). Mortality for races other than white and black may be seriously understated due to underreporting for some race groups and Hispanic origin on death certificates (15,16).

The general decrease in mortality between 2000 and 2001 resulted from decreases in the death rate for age groups under 1 year, 5–14 years, 55–64 years, 65–74 years, 75–84 years, and 85 years and over. The greatest increase, 3.3 percent, in the death rate occurred for the age group 25–34 years.

The preliminary estimate of life expectancy at birth for the total population in 2001 reached a record high of 77.2 years. This represents an increase of 0.2 years relative to 2000 (see tables A and 6). The gap between male and female life expectancy was 5.4 years in 2001. The difference between male and female life expectancy at birth has been generally decreasing since its peak of 7.8 years in 1979 (17). Life expectancy for males increased by 0.1 year, reaching a record 74.4 years. Female life expectancy also increased by 0.1 year, increasing from 79.7 years to 79.8 years between 2000 and 2001. Record-high life expectancies were reached for white and black males (75.0 years and 68.6 years, respectively), as well as for white and black females (80.2 years and 75.5 years, respectively).

### Causes of death

The 15 leading causes of death in 2001 were 1) Diseases of heart; 2) Malignant neoplasms; 3) Cerebrovascular diseases; 4) Chronic lower respiratory diseases; 5) Accidents (unintentional injuries); 6) Diabetes mellitus; 7) Influenza and pneumonia; 8) Alzheimer's disease; 9) Nephritis, nephrotic syndrome and nephrosis; 10) Septicemia; 11) Intentional self-harm (suicide); 12) Chronic liver disease and cirrhosis; 13) Assault (homicide); 14) Essential (primary) hypertension and hypertensive renal disease; and 15) Pneumonitis due to solids and liquids (table B). The 15 leading causes remained the same for 2000 and 2001, although homicide changed places with Essential (primary) hypertension and hypertensive renal disease, becoming the 13th leading cause of death in 2001 from 14th in 2000. The increase in rank of homicide was due to the addition of deaths that resulted from the September 11th terrorist attacks.

**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, final 2000 and preliminary 2001**

[Death rates are based on populations enumerated in the 2000 census as of April 1 for 2000 and estimated as of July 1 for 2001. Death rates and life expectancies for 2000 have been revised for this report and may differ from final figures previously published; see Technical Notes]

Measure and sex	All races <sup>1</sup>		White		Black	
	2001	2000	2001	2000	2001	2000
All deaths . . . . .	2,417,762	2,403,351	2,081,842	2,071,287	287,110	285,826
Age-adjusted death rate <sup>2</sup> . . . . .	855.0	869.0	837.3	849.8	1,098.8	1,121.4
Male . . . . .	1,029.5	1,053.8	1,006.9	1,029.4	1,372.4	1,403.5
Female . . . . .	722.4	731.4	707.5	715.3	910.4	927.6
Life expectancy at birth <sup>3</sup> . . . . .	77.2	77.0	77.7	77.6	72.2	71.9
Male . . . . .	74.4	74.3	75.0	74.9	68.6	68.3
Female . . . . .	79.8	79.7	80.2	80.1	75.5	75.2
All infant deaths . . . . .	27,801	28,035	18,094	18,144	8,563	8,771
Infant mortality rate <sup>4</sup> . . . . .	6.9	6.9	5.7	5.7	14.2	14.1

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

<sup>2</sup>Age-adjusted death rates are per 100,000 U.S. standard population, based on the year 2000 standard; see Technical Notes.

<sup>3</sup>Life expectancy at birth stated in years.

<sup>4</sup>Infant mortality rates are deaths under 1 year per 1,000 live births in specified group.

**Table 6. Expectation of life by age, race, and sex: United States, final 2000 and preliminary 2001**

[Data are based on a continuous file of records received from the States. Calculations of life expectancy employ populations enumerated in the 2000 census as of April 1 for 2000 and estimated as of July 1 for 2001; see Technical notes]

Age (Years) and race	Both sexes		Male		Female	
	2001	2000	2001	2000	2001	2000
<b>All races <sup>1</sup></b>						
0 .....	77.2	77.0	74.4	74.3	79.8	79.7
1 .....	76.7	76.6	74.0	73.8	79.3	79.2
5 .....	72.8	72.7	70.1	69.9	75.4	75.3
10 .....	67.9	67.7	65.2	65.0	70.4	70.3
15 .....	62.9	62.8	60.2	60.1	65.5	65.4
20 .....	58.1	58.0	55.5	55.3	60.6	60.5
25 .....	53.4	53.2	50.9	50.7	55.7	55.6
30 .....	48.6	48.5	46.2	46.0	50.9	50.8
35 .....	43.9	43.7	41.5	41.3	46.0	46.0
40 .....	39.2	39.1	37.0	36.7	41.3	41.2
45 .....	34.7	34.5	32.5	32.3	36.6	36.5
50 .....	30.2	30.1	28.2	27.9	32.1	32.0
55 .....	26.0	25.8	24.0	23.8	27.7	27.5
60 .....	21.9	21.7	20.1	19.9	23.4	23.3
65 .....	18.1	18.0	16.4	16.2	19.4	19.3
70 .....	14.6	14.5	13.1	13.0	15.7	15.7
75 .....	11.5	11.4	10.2	10.1	12.3	12.3
80 .....	8.8	8.7	7.7	7.6	9.3	9.3
85 .....	6.5	6.4	5.7	5.6	6.9	6.8
90 .....	4.8	4.7	4.2	4.1	5.0	5.0
95 .....	3.6	3.5	3.2	3.1	3.7	3.7
100 .....	2.7	2.7	2.5	2.4	2.8	2.8
<b>White</b>						
0 .....	77.7	77.6	75.0	74.9	80.2	80.1
1 .....	77.1	77.0	74.5	74.3	79.6	79.6
5 .....	73.2	73.1	70.6	70.4	75.7	75.6
10 .....	68.3	68.1	65.7	65.5	70.8	70.7
15 .....	63.3	63.2	60.7	60.6	65.8	65.7
20 .....	58.5	58.4	56.0	55.8	60.9	60.9
25 .....	53.8	53.6	51.3	51.2	56.0	56.0
30 .....	49.0	48.9	46.6	46.4	51.2	51.1
35 .....	44.2	44.1	41.9	41.7	46.3	46.3
40 .....	39.5	39.4	37.3	37.1	41.6	41.5
45 .....	34.9	34.8	32.8	32.6	36.9	36.8
50 .....	30.5	30.3	28.4	28.2	32.3	32.2
55 .....	26.1	26.0	24.2	24.0	27.8	27.7
60 .....	22.0	21.8	20.2	20.0	23.5	23.4
65 .....	18.1	18.0	16.5	16.3	19.5	19.4
70 .....	14.6	14.5	13.2	13.0	15.7	15.7
75 .....	11.4	11.4	10.2	10.1	12.3	12.3
80 .....	8.7	8.6	7.7	7.5	9.3	9.2
85 .....	6.4	6.3	5.6	5.5	6.7	6.7
90 .....	4.6	4.6	4.1	4.0	4.8	4.8
95 .....	3.4	3.3	3.0	2.9	3.4	3.4
100 .....	2.4	2.4	2.2	2.2	2.5	2.5
<b>Black</b>						
0 .....	72.2	71.9	68.6	68.3	75.5	75.2
1 .....	72.2	71.9	68.7	68.4	75.5	75.2
5 .....	68.4	68.1	64.8	64.5	71.6	71.3
10 .....	63.4	63.1	59.9	59.6	66.6	66.4
15 .....	58.5	58.2	55.0	54.7	61.7	61.4
20 .....	53.7	53.5	50.3	50.0	56.8	56.6
25 .....	49.1	48.9	45.9	45.6	52.0	51.8
30 .....	44.5	44.2	41.4	41.1	47.3	47.0
35 .....	40.0	39.7	37.0	36.7	42.6	42.3
40 .....	35.5	35.2	32.6	32.3	38.0	37.8
45 .....	31.2	30.9	28.4	28.1	33.6	33.4
50 .....	27.1	26.9	24.5	24.2	29.4	29.1
55 .....	23.3	23.1	20.8	20.6	25.3	25.1
60 .....	19.7	19.5	17.5	17.3	21.5	21.2
65 .....	16.4	16.2	14.4	14.2	17.9	17.7
70 .....	13.5	13.3	11.7	11.5	14.7	14.5
75 .....	10.8	10.7	9.3	9.2	11.8	11.6
80 .....	8.6	8.5	7.4	7.3	9.2	9.1
85 .....	6.7	6.6	5.8	5.7	7.0	6.9
90 .....	5.1	5.0	4.5	4.4	5.3	5.2
95 .....	3.9	3.9	3.6	3.5	4.0	3.9
100 .....	3.0	3.0	2.9	2.8	3.0	3.0

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

NOTE: Data are subject to sampling and/or random variation.