

Births and Deaths: Preliminary Data for 1998

by Joyce A. Martin, M.P.H.; Betty L. Smith, B.S. Ed.; T.J. Mathews, M.S.;
and Stephanie J. Ventura, M.A.; Division of Vital Statistics

Abstract

Objectives—This report presents preliminary data for 1998 on births and deaths in the United States. U.S. data on births are shown by age, race, and Hispanic origin of mother. Natality data on marital status, prenatal care, cesarean delivery, and low birthweight are also presented. Mortality data presented include life expectancy, leading causes of death, and infant mortality.

Methods—Data in this report are based on more than a 99-percent sample of births and on more than an 85-percent sample of deaths in the United States for 1998. The records are weighted to independent control counts of births, infant deaths, and deaths 1 year and over received in State vital statistics offices in 1998. Comparisons are made with 1997 final data.

Results—The birth rate for teenagers continued to decline, dropping another 2 percent for 1997–98. The rate for young teens aged 15–17 years fell 5 percent, and the rate for teens aged 18–19 years declined 2 percent. Since 1991 rates have fallen 21 percent for teens aged 15–17 years and 13 percent for teens aged 18–19 years. Birth rates for women aged 20–29 years rose slightly. Among women in their thirties, birth rates rose 3 to 4 percent to the highest levels observed in three decades. The birth rate for women aged 40–44 years was the highest level reported since 1970. The birth rate for unmarried women was 44.3 per 1,000, 1 percent higher than 1997, but below the peak level reported for 1994 (46.9). The rate of prenatal care utilization continued to improve. The total cesarean rate increased to 21.2 percent. The low birthweight rate rose from 7.5 to 7.6 percent.

In 1998 the age-adjusted death rate reached a record low, 2 percent below the rate for 1997. Human immunodeficiency virus infection (HIV infection) moved off the list of the 15 leading causes of death for the first time since 1987. Declines in age-adjusted rates occurred for Homicide and legal intervention (homicide) (14 percent) and Atherosclerosis (10 percent), while rates for Septicemia and Pneumonia and influenza increased 5 percent. Mortality also decreased for drug-induced deaths, deaths from injury by firearms, and alcohol-induced deaths. The infant mortality rate was unchanged. Life expectancy reached a record high of 76.7 in 1998.

Keywords: births • deaths • vital statistics

Introduction

This report presents preliminary data on births and deaths based on a substantial proportion of vital records for births and deaths occurring in 1998. The preliminary report series, which is published biannually by the National Center for Health Statistics (NCHS), includes detailed tabulations from the preliminary natality and mortality files. This report is the seventh in the series and shows preliminary data for 1998. Trends shown in the preliminary reports for 1995–97 births and deaths for most measures were confirmed by the final statistics for each year (1–4).

Sources and methods

The preliminary data in this series are based on records of births and deaths that occurred during 1998 and were received and had undergone quality control by NCHS as of June 2, 1999. This represents over 99 percent of the births that occurred in the United States during this 12-month period. Demographic information is available for 90 percent of infant deaths and 93 percent of deaths to

Acknowledgments

This report was prepared in the Division of Vital Statistics under the general direction of Mary Anne Freedman, Director, Division of Vital Statistics; James A. Weed, Acting Chief, Reproductive Statistics Branch; Harry M. Rosenberg, Chief, Mortality Statistics Branch (MSB); and Nicholas F. Pace, Chief, Systems, Programming, and Statistical Resources Branch (SPSRB). Jordan S. Sacks, Gail Parr, Jaleh Mousavi, Thomas D. Dunn, Manju Sharma, and David Johnson of SPSRB provided computer programming support and statistical tables. Jeffrey D. Maurer, Robert N. Anderson, Kimberley D. Peters, and Arialdi Minino of MSB provided assistance in assessing data quality and with statistical methodology. Thomas D. Dunn of SPSRB provided content review. Staff of the Data Acquisition and Evaluation Branch carried out quality evaluation and acceptance procedures for the State data on which this report is based. Staff of the Division of Data Processing were responsible for receipt and processing of the basic data files. This report was edited by Patricia Keaton-Williams, typeset by Jacqueline M. Davis, and graphics were produced by Gail Ogburn of the Publications Branch, Division of Data Services.

persons aged 1 year or older. For these death records, medical or cause-of-death information was processed separately for 85 percent of infant deaths and 88 percent of deaths to persons aged 1 year and older.

To produce the preliminary estimates shown in this report, records in each of the files were weighted using independent control counts of births, infant deaths, and deaths 1 year and over by State of occurrence. 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 [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 that come from the final mortality data. Sampling bias tends to affect certain causes of death where the cause is pending investigation, such as for homicides, suicides, accidents, and Sudden infant death syndrome (SIDS). Bias correction factors for these causes are shown in the [Technical notes, table II](#), for illustrative purposes.

Life expectancy is shown in the preliminary report for the first time for age groups 85 years and older.

In addition to national and State estimates of total births and birth rates, this report includes preliminary statistics on births by age, live-birth order, marital status, race, Hispanic origin, and selected maternal and infant health characteristics: Receipt of prenatal care, cesarean delivery, and low birthweight. Mortality data in this report include infant mortality and causes of death. Data are shown for the following race and ethnic groups: White, non-Hispanic white, black, American Indian, Asian or Pacific Islander (API), and Hispanic. Data for race and ethnic groups are based on the mother's reported race and ethnic group for births and on the decedent's reported race and ethnic group for deaths (see [Technical notes](#)). Death rates for American Indian, API, and to a lesser extent, for Hispanic persons are believed to be underreported (see [Technical notes](#)).

Race and Hispanic origin are reported as separate items on the birth and death certificates. Therefore, births and deaths shown by race may be of Hispanic or non-Hispanic origin, and births and deaths of Hispanic origin may be of any race. All tabulations in this report show data separately for the non-Hispanic white population as well as for the white population as a whole. Although the overwhelming majority of Hispanic origin births (approximately 97 percent) are to white women, there are notable differences in childbearing patterns between Hispanic and non-Hispanic white women. About 1 in 5 white births are to Hispanic women. For this preliminary report, data are not shown separately for non-Hispanic black persons, because the great majority (more than 95 percent) of black births and deaths are to non-Hispanic persons and, thus, the difference in the statistics for the two groups are minimal (1,2). The reports *Births: Final Data for 1997*, and *Deaths: Final Data for 1997* show data for these groups separately.

State-specific preliminary data are shown only for those States and areas for which at least 75 percent of the records for 1998 were received and have undergone quality control (processed). (See [Technical notes](#).) The proportion of records processed is shown by State in [table I](#) in the [Technical notes](#). Because the number of death records processed for California was below the 75-percent criterion, mortality data for California are not shown in the State-specific tabulations but are included in the U.S. totals. Changes in death rates between 1997 and 1998 and differences in death rates across demographic groups for 1998 are 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](#).

Results

Natality trends and patterns

The preliminary number of **births** in the United States totaled 3,944,046 for 1998, 2 percent higher than the final number for 1997 (3,880,894) ([table A](#)). The **crude birth rate** increased from 14.5 births

Table A. Total births and percent of births with selected demographic and health characteristics, by race and Hispanic origin of mother: United States, final 1997 and preliminary 1998

Characteristic	All races ¹		White, total ²		White, non-Hispanic		Black ²		Hispanic ³	
	1998	1997	1998	1997	1998	1997	1998	1997	1998	1997
	Number									
Births	3,944,046	3,880,894	3,122,391	3,072,640	2,364,907	2,333,363	610,203	599,913	735,019	709,767
	Percent									
Births to mothers under 20 years.	12.5	12.7	11.1	11.2	9.4	9.5	21.5	22.2	16.9	17.0
Births to unmarried mothers	32.8	32.4	26.3	25.8	21.9	21.5	69.0	69.2	41.6	40.9
Low birthweight ⁴	7.6	7.5	6.5	6.5	6.6	6.5	13.0	13.0	6.4	6.4
Very low birthweight ⁵	1.45	1.42	1.15	1.13	1.15	1.12	3.08	3.04	1.15	1.13
Births delivered by cesarean	21.2	20.8	21.0	20.7	21.2	20.9	22.4	21.8	20.6	20.2
Prenatal care beginning in first trimester	82.8	82.5	84.8	84.7	87.9	87.9	73.3	72.3	74.3	73.7
Prenatal care beginning in third trimester or no care	3.9	3.9	3.3	3.2	2.4	2.4	7.0	7.3	6.3	6.2

¹Includes races other than white and black.

²Race and Hispanic origin are reported separately on the birth certificate. Data for persons of Hispanic origin are included in the data for each race group according to the mother's reported race; see [Technical notes](#).

³Includes all persons of Hispanic origin of any race; see [Technical notes](#).

⁴Birthweight of less than 2,500 grams (5 pounds, 8 ounces).

⁵Birthweight of less than 1,500 grams (3 pounds, 4 ounces).

per 1,000 population in 1997 to a preliminary rate of 14.6 in 1998, the second lowest rate in the last 20 years. The **fertility rate**—defined as the number of births per 1,000 women aged 15–44 years—was 65.6 for 1998, an increase of 1 percent from 1997 (65.0). (See [tables 1–4](#) for births, birth rates, and fertility rates.) Crude birth rates per 1,000 population increased in 34 States and declined in 7 States and the District of Columbia; there was no change in 9 States. State-specific fertility rates per 1,000 women aged 15–44 years increased in 43 States and declined in 6 States and the District of Columbia; there was no change in New York.

The 1998 fertility rate for American Indian women (70.5) increased 2 percent compared with the 1997 rate, the rate for white (64.7) and non-Hispanic white women (57.8) increased 1 percent each, and the rate for black women (71.0) increased very slightly. The rate for Asian or Pacific Islander (API) women (63.5) decreased 4 percent to its lowest level since first reported in 1980. The fertility rate for Hispanic women dropped 2 percent, to 101.1, the lowest rate reported since 1989 when national data became available for this group (1). Despite the decline in the Hispanic fertility rate, births to Hispanic women comprised 19 percent of all births in the United States for 1998, compared with 18 percent in 1997 and 14 percent in 1989.

The **birth rate for teenagers** in 1998 was 51.1 births per 1,000 women aged 15–19 years, 2 percent lower than the rate for 1997 (52.3) ([table B](#), [table 1](#), and [figure 1](#)). Birth rates for teenagers have been declining steadily since 1991. Overall, the rate fell 18 percent from 1991 (62.1) to 1998 ([table B](#)). The rate for the youngest group, **10–14 years**, was 1.0 per 1,000 for 1998, the lowest level since 1969. The number of births to females aged 10–14 years of age declined 6 percent from 10,121 to 9,481 for 1997–98, the lowest number in 30 years; this number has fallen 27 percent since 1994. (1, 5, 6). **Rates for teenage**

subgroups 15–17 and 18–19 years continued to fall in 1998. The rate for teenagers aged 15–17 years dropped 5 percent from 32.1 per 1,000 in 1997 to 30.4 in 1998, a record low. The rate for teenagers 18–19 years declined 2 percent, from 83.6 in 1997 to 82.0 per 1,000 in 1998. The decrease in the rates from 1991 was 21 percent for 15–17-year-olds and 13 percent for 18–19-year-olds.

Birth rates for 15–19-year-olds by race and Hispanic origin fell 4 percent for Hispanic teenagers (93.7 per 1,000), 3 percent for black (85.3) and API teenagers (23.1), and 2 percent for non-Hispanic white (35.2) and total white teenagers (45.4) between 1997 and 1998. The rate for American Indian teenagers (71.8) did not change. During the 1991–98 period, declines in teenage birth rates were largest for non-Hispanic white and black teenagers, 19 and 26 percent, respectively.

Birth rates for women in their twenties, the primary childbearing ages, rose in 1998. The birth rate for women aged 20–24 years increased 1 percent to 111.2 per 1,000 women, and the rate for women aged 25–29 increased 2 percent to 116.0. Rates for non-Hispanic white, black, and American Indian women aged 20–24 and 25–29 years rose 1 to 3 percent in 1998, while rates for Hispanic and API women in their twenties declined 1 to 3 percent ([table 1](#)).

The birth rate for women aged 30–34 years increased 3 percent to 87.5 per 1,000, and the rate for women **35–39 years** rose 4 percent, to 37.4. Birth rates for women in their thirties were higher in 1998 than any rate observed in about the past three decades (1,5). The **birth rate for women aged 40–44 years** increased from 7.1 to 7.3 per 1,000, the highest rate since 1970 (1).

The birth rate for women aged 45–54 years remained unchanged at 0.4 per 1,000, but the number of births to women in this age group increased 8 percent (from 3,477 in 1997 to 3,769 in 1998).

Table B. Birth rates for women aged 15–19 years, by age, race, and Hispanic origin: United States, final 1990–97 and preliminary 1998, and percent change in rates, 1991–98

[Rates per 1,000 women in specified group]

Age, race and Hispanic origin of mother	1998	1997	1996	1995	1994	1993	1992	1991	1990	Percent change 1991–98
15–19 years										
All races ¹	51.1	52.3	54.4	56.8	58.9	59.6	60.7	62.1	59.9	–17.7
White, total ²	45.4	46.3	48.1	50.1	51.1	51.1	51.8	52.8	50.8	–14.0
White, non-Hispanic	35.2	36.0	37.6	39.3	40.4	40.7	41.7	43.4	42.5	–18.9
Black, total ²	85.3	88.2	91.4	96.1	104.5	108.6	112.4	115.5	112.8	–26.1
Hispanic ³	93.7	97.4	101.8	106.7	107.7	106.8	107.1	106.7	100.3	–12.2
15–17 years										
All races ¹	30.4	32.1	33.8	36.0	37.6	37.8	37.8	38.7	37.5	–21.4
White, total ²	25.9	27.1	28.4	30.0	30.7	30.3	30.1	30.7	29.5	–15.6
White, non-Hispanic	18.4	19.4	20.6	22.0	22.8	22.7	22.7	23.6	23.2	–22.0
Black, total ²	56.8	60.8	64.7	69.7	76.3	79.8	81.3	84.1	82.3	–32.5
Hispanic ³	62.3	66.3	69.0	72.9	74.0	71.7	71.4	70.6	65.9	–11.8
18–19 years										
All races ¹	82.0	83.6	86.0	89.1	91.5	92.1	94.5	94.4	88.6	–13.1
White, total ²	74.7	75.9	78.4	81.2	82.1	82.1	83.8	83.5	78.0	–10.5
White, non-Hispanic	60.6	61.9	63.7	66.1	67.4	67.7	69.8	70.5	66.6	–14.0
Black, total ²	126.8	130.1	132.5	137.1	148.3	151.9	157.9	158.6	152.9	–20.1
Hispanic ³	140.2	144.3	151.1	157.9	158.0	159.1	159.7	158.5	147.7	–11.5

¹Includes races other than white and black.

²Race and Hispanic origin are reported separately on the birth certificate. Data for persons of Hispanic origin are included in the data for each race group according to the mother's reported race; see Technical notes.

³Includes all persons of Hispanic origin of any race; see Technical notes.

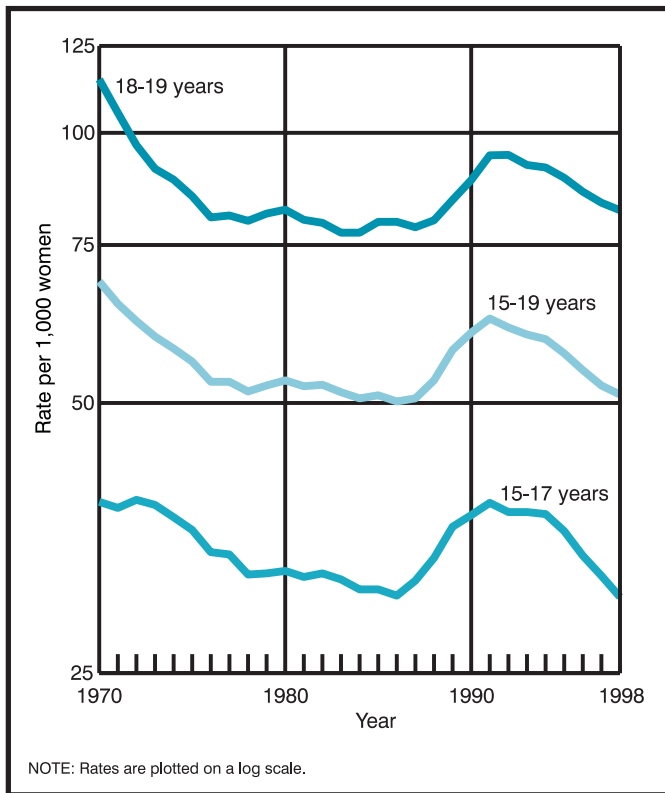


Figure 1. Birth rates for teenagers by age: United States, 1970–98

As a result of the declines in teenage birth rates and increases in birth rates for women aged 20 years and over, the proportion of all births occurring to women under age 20 years declined from 12.7 to 12.5 percent (table A). The proportions of births to teenagers by State for 1997 and 1998 are shown in table 5.

The **first birth rate** declined less than 1 percent in 1998 to 26.4 first births per 1,000 women aged 15–44 years (table 3). This was the lowest rate ever recorded. The first birth rate for teenagers 15–19 years fell 2 percent in 1998 to 39.9 per 1,000, the lowest level reported since 1987.

The **total fertility rate (TFR)** indicates the number of births that a hypothetical group of 1,000 women would have if they experienced throughout their childbearing years the age-specific birth rates observed in a given year. The TFR for 1998 was 2,059.5, 1 percent higher than the rate for 1997, 2,032.5. The TFR increased 1 percent for black women (2,171.5), and increased 2 percent each for total white (2,044.0), non-Hispanic white (1,839.5), and American Indian (2,086.0) women. The TFR declined for Hispanic women by 2 percent (2,949.0) and by 4 percent for API women (1,852.5) (tabular data not shown).

The **preliminary number of births to unmarried women** for 1998 was 1,292,534 about 3 percent higher than the number for 1997 (1,257,444) (table C). The **preliminary birth rate for unmarried women** in 1998 was 44.3 births per 1,000 unmarried women aged 15–44 years, about 1 percent higher than the rate in 1997 (44.0), but still nearly 6 percent lower than its highest level, 46.9 in 1994 (1). The number of births for 1998 is the highest ever reported in the United States, due mostly to continued increases in the number of unmarried women of childbearing age (up 6 percent since 1994) (7).

Table C. Number and percent of births to unmarried women, all ages and women under 20 years: United States, final 1997 and preliminary 1998

[Figures for 1998 are based on weighted data rounded to the nearest individual, so categories may not add to totals]

Age of mother	Number		Percent	
	1998	1997	1998	1997
All ages	1,292,534	1,257,444	32.8	32.4
Under 20 years	389,721	385,802	78.8	78.2
Under 15 years	9,152	9,685	96.5	95.7
15–19 years	380,569	376,117	78.5	77.8
15–17 years	151,445	156,253	87.4	86.7
18–19 years	229,124	219,864	73.5	72.5

The **proportion of all births to unmarried women** in 1998 increased to 32.8 percent, compared with 32.4 percent in 1997. This proportion has been relatively stable since 1994, ranging from 32.2 to 32.8 percent. The proportion for all white births increased from 25.8 to 26.3 percent, for non-Hispanic white births from 21.5 to 21.9 percent, and for Hispanic births from 40.9 to 41.6 percent. The proportion declined slightly for black births from 69.2 to 69.0 percent.

The preliminary number of births to unmarried teenagers (total under 20 years) was 1 percent higher in 1998 than in 1997 (table C). However, the numbers declined 6 percent for births to teenagers under 15 years and by 3 percent for births to teenagers 15–17 years. Births to older unmarried teenagers, 18–19 years, rose by 4 percent.

The percent of all teenage births that occurred to unmarried teenagers was higher in 1998 (78.8 percent) than in 1997 (78.2 percent). Increases in the percent unmarried were found for each teenage subgroup, even for age groups reporting fewer nonmarital births. The percent unmarried increased for births to teenagers under age 18 because total births to these teenagers declined even more than nonmarital births. Birth rates for unmarried teenagers for 1998 are not yet available; see [Technical notes](#).

The procedures for reporting mother's marital status changed in only one State between 1997 and 1998. Connecticut added a direct question on marital status to the birth certificate in June 1998. Previously, Connecticut inferred the mother's marital status from information on the birth certificate (see [Technical notes](#)). Because the change in Connecticut was not implemented until June 1998 and because Connecticut accounts for only 1 percent of U.S. births, the change has essentially no impact on the national data. As of 1998 birth data on marital status for all but two States are based on a direct question on each State's birth certificate or electronic birth registration system (see [Technical notes](#)).

The percent of infants born **low birthweight (LBW)**, or less than 2,500 grams, rose from 7.5 to 7.6 percent for 1997–98. Low birthweight levels had declined during the 1970's and early 1980's but have risen 12 percent (from 6.8 percent) since 1986. The current level is the highest reported since 1972. The rate of **very low birthweight (VLBW)** also increased slightly from 1.42 to 1.45 percent between 1997 and 1998. Very low birthweight has also risen moderately during the 1980's and 1990's (from 1.15 percent in 1980). (See [tables A and 7](#) for 1997 and 1998 data.)

The overall increase in LBW is largely the result of the continued increase in LBW among non-Hispanic white mothers (6.5 to 6.6 percent

for 1998–97); LBW levels among black (13.0 percent) and Hispanic infants (6.4 percent) were unchanged for 1998.

The downtrend in the rate of **cesarean deliveries**, observed for 1989–96, appears to have ended. For 1997–98, the rate of cesarean delivery rose from 20.8 to 21.2 percent as the result of an increase in the **primary cesarean rate** and a decline in the **rate of vaginal births after previous cesarean delivery (VBAC)** (see [tables A](#) and [8](#)). The primary cesarean rate (the proportion of first cesareans among women with no previous cesarean) increased by 2 percent (from 14.6 to 14.9 percent) for 1997–98, the first such increase since these data have been reported on birth certificates (1989). The VBAC rate dropped 4 percent (from 27.4 to 26.3 percent), and has fallen 7 percent in only 2 years. The VBAC rate had risen 50 percent between 1989 and 1996 (from 18.9 percent) (1).

Timely prenatal care continued to improve in 1998; 82.8 percent of women began care in the first trimester of pregnancy, compared with 82.5 percent for 1997. First trimester care has risen steadily during the 1990's, from 75.5 percent in 1989 (1). No change was reported in the proportion of non-Hispanic white women with first trimester care (87.9), but utilization rose among black (73.3 percent) and Hispanic women (74.3 percent) for 1997–98. Since 1989 first trimester care has risen 22 and 25 percent, respectively, among these latter two racial/ethnic groups.

The overall percent of women with **late care** (beginning in the third trimester of pregnancy) or **no care prenatal care** was 3.9, unchanged from 1997. Since 1989 the proportion of women with late or no care prenatal care has declined from 6.4. For the current year, the percent of black women with late or no care declined slightly to 7.0; late or no care among Hispanic women was up very slightly to 6.3 percent. (See [tables A](#) and [9](#) for 1997 and 1998 data.)

Mortality trends and patterns

The **preliminary number of deaths** in the United States for 1998 totaled 2,338,070, an increase of 23,825 from the 1997 total. The **crude death rate** of 865.0 per 100,000 population was essentially the same as the rate of 864.7 per 100,000 in 1997. The estimated **age-adjusted death rate**, which accounts for changes in the age distribution of the population, was 470.8 per 100,000 U.S.

standard population, a record low for the United States and 2 percent below the rate for 1997. 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. The final age-adjusted death rate for 1997 was 479.1 (2). (See [tables D, E, F, and 10–18](#) and [figure 2](#) for mortality data.)

The decline in the U.S. age-adjusted death rate continues the long-term downward trend in mortality and reflects reductions in mortality for males and females of most **race and ethnic groups**. Age-adjusted death rates for API males declined by 6 percent, for black males by 4 percent, for Hispanic males by 3 percent, and for white males by 2 percent. The decline for API and Hispanic females was 5 percent, for black females 2 percent, and for white females less than 1 percent. Changes in the age-adjusted death rate for non-Hispanic white females and American Indians of either sex were not statistically significant.

Reductions in mortality for all ages combined between 1997 and 1998 resulted from declines in the death rate for **age groups** from 1–74 years and 85 years and over. The greatest declines (6 percent) occurred in the 15–24-year and 25–34-year age groups. The decline of less than 1 percent for the age group 75–84 years was not statistically significant. The only increase in the age-specific rates—the 2-percent increase shown in the death rate for under 1 year of age—is in contrast to absence of change between 1997 and 1998 in the **infant mortality rates** ([tables 14](#) and [15](#)). Infant death rates, whose denominators are population estimates, differ from infant mortality rates, whose denominators are live births. Infant mortality rates are the more commonly used and preferred index for measuring the risk of dying during the first year of life.

Preliminary estimates of **life expectancy** at birth in 1998 increased to another record high of 76.7 years, surpassing the previous record high of 76.5 recorded in 1997 ([tables D](#) and [16](#)). Record high life expectancies were reached for white and black males and for black females (74.6 years, 67.8 years, and 75.0 years, respectively). For white females 1998 life expectancy was unchanged from the record high of 79.9 reached in 1997.

Table D. Deaths, age-adjusted death rates, and life expectancy at birth, by race and sex; and infant mortality rates, by race: United States, final 1997 and preliminary 1998

Measure and sex	All races ¹		White		Black	
	1998	1997	1998	1997	1998	1997
All deaths	2,338,070	2,314,245	2,020,230	1,996,393	275,469	276,520
Age-adjusted death rate ²	470.8	479.1	450.4	456.5	683.2	705.3
Male	587.9	602.8	561.9	573.8	874.6	911.9
Female	372.3	375.7	355.7	358.0	535.0	545.5
Life expectancy at birth ³	76.7	76.5	77.3	77.1	71.5	71.1
Male	73.9	73.6	74.6	74.3	67.8	67.2
Female	79.4	79.4	79.9	79.9	75.0	74.7
All infant deaths	28,486	28,045	18,795	18,539	8,579	8,496
Infant mortality rate ⁴	7.2	7.2	6.0	6.0	14.1	14.2

¹Includes races other than white and black.

²Age-adjusted death rates are per 100,000 U.S. standard population. For method of computation, see Technical notes.

³Life expectancy at birth stated in years.

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

Table E. Deaths and death rates for 1998 and age-adjusted death rates and percent changes in age-adjusted rates from 1997 to 1998 for the 15 leading causes of death: United States, final 1997 and preliminary 1998

[Data are based on a continuous file of records received from the States. Rates per 100,000 population; age-adjusted rates per 100,000 U.S. standard population; see Technical notes. For explanation of asterisks preceding cause-of-death categories, see Technical notes. Figures for 1998 are based on weighted data rounded to the nearest individual, so categories may not add to the totals]

Rank ¹	Causes of death (Based on the <i>Ninth Revision, International Classification of Diseases, 1975</i>)	Number	Death rate	Age-adjusted death rate		
				1998	1997	Percent change
...	All causes	2,338,075	865.0	470.6	479.1	-1.8
1	Diseases of heart (390-398, 402, 404-429)	724,269	268.0	126.0	130.5	-3.4
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208)	538,947	199.4	122.9	125.6	-2.1
3	Cerebrovascular diseases (430-438)	158,060	58.5	25.0	25.9	-3.4
4	Chronic obstructive pulmonary diseases and allied conditions (490-496)	114,381	42.3	21.6	21.1	2.3
5	Pneumonia and influenza (480-487)	94,828	35.1	13.5	12.9	4.6
6	Accidents and adverse effects. (E800-E949)	93,207	34.5	28.5	30.1	-5.3
	Motor vehicle accidents (E810-E825)	41,826	15.5	15.0	15.9	-5.6
	All other accidents and adverse effects (E800-E807, E826-E949)	51,382	19.0	13.5	14.2	-4.9
7	Diabetes mellitus (250)	64,574	23.9	13.6	13.5	0.7
8	Suicide (E950-E959)	29,264	10.8	10.0	10.6	-5.6
9	Nephritis, nephrotic syndrome, and nephrosis (580-589)	26,295	9.7	4.5	4.4	2.2
10	Chronic liver disease and cirrhosis (571)	24,936	9.2	7.1	7.4	-4.0
11	Septicemia (038)	23,643	8.7	4.4	4.2	4.7
12	Alzheimer's disease. (331.0)	22,824	8.4	2.7	2.7	-
13	Homicide and legal intervention. (E960-E978)	17,350	6.4	6.9	8.0	-13.7
14	Atherosclerosis. (440)	15,424	5.7	1.9	2.1	-9.5
15	Hypertension with or without renal disease (401, 403)	14,216	5.3	2.4	2.3	4.3
...	All other causes	375,857	139.1	---	---	---

... Category not applicable.

- Quantity zero.

--- Data not available.

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

Table F. Age-specific death rates and percent change by race and sex for Human immunodeficiency virus infection: United States, final 1997 and preliminary 1998

	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years
White male					
1998	0.3	6.5	12.5	8.2	3.9
1997	0.5	9.8	16.1	10.2	4.7
Percent change	-40.0	-33.7	-22.4	-19.6	-17.0
White female					
1998	*	1.6	2.2	1.1	0.6
1997	0.2	2.2	2.6	1.3	0.7
Percent change	*	-27.3	-15.4	-15.4	-14.3
Black male					
1998	2.1	38.8	77.1	75.3	38.6
1997	2.7	53.3	100.1	86.5	47.0
Percent change	-22.2	-27.2	-23.0	-12.9	-17.9
Black female					
1998	2.9	20.9	30.0	19.2	9.9
1997	3.5	23.1	35.3	23.0	9.2
Percent change	-17.1	-9.5	-15.0	-16.5	7.6

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

The list of 15 **leading causes of death** changed between 1997 and 1998. HIV infection moved off the list for the first time since 1987, when NCHS introduced categories *042-*044 for classifying and coding HIV infection (8). The other 14 leading causes, which were on the list for 1997 and 1998, were joined by Hypertension with or without renal disease (hypertension). Among the leading causes, the rank order

changed somewhat between the two years. Pneumonia and influenza rose from sixth to fifth, while accidents dropped to sixth. Septicemia rose from 12th to 11th; Alzheimer's disease dropped to 12th. Atherosclerosis replaced HIV infection as 14th leading cause of death, and hypertension was 15th. In order the 15 leading causes in 1998 were heart disease, 1st; cancer, 2d; stroke, 3d; Chronic obstructive pulmonary disease and

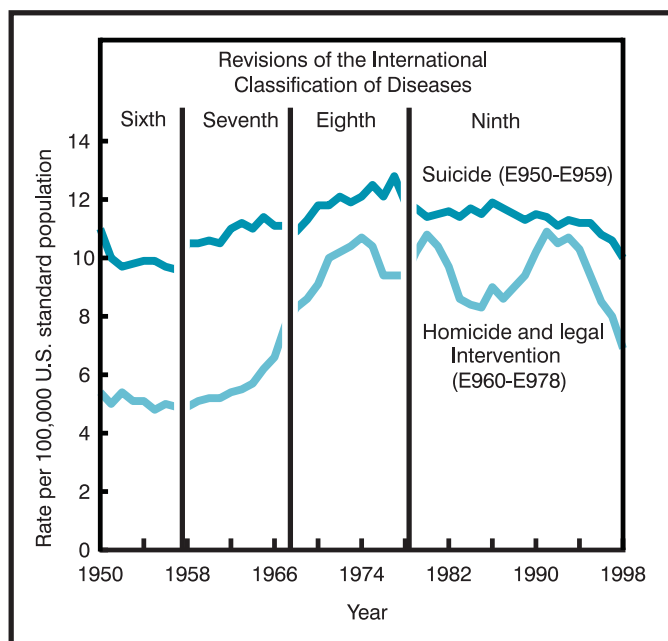


Figure 2. Age-adjusted death rates for suicide and homicide: United States, final 1950–97 and preliminary 1998

allied conditions (COPD), 4th; Pneumonia and influenza, 5th; accidents, 6th; Diabetes mellitus, 7th; Suicide, 8th; Nephritis, nephrotic syndrome, and nephrosis, 9th; Chronic liver disease and cirrhosis, 10th; Septicemia, 11th; Alzheimer's disease, 12th; homicide, 13th; Atherosclerosis, 14th; and hypertension, 15th.

Reductions in mortality occurred in a number of the leading causes of death. From 1997 to 1998, the preliminary age-adjusted death rate for **heart disease** declined by about 3 percent, while the age-adjusted death rate for **cancer** declined by 2 percent (tables E and 11). Deaths from these two diseases combined accounted for more than 1.2 million deaths, which is more than one-half of the total deaths that occurred in 1998. While heart disease mortality has exhibited a downward trend since 1950, cancer mortality has declined only since 1990.

The preliminary age-adjusted death rate for **HIV infection** again decreased substantially, by an estimated 21 percent from 1997 to 1998, the third consecutive decline for this cause. The rate decreased 29 percent from 1995 to 1996 and 48 percent from 1996 to 1997. In 1995 the rate for HIV infection was not significantly different from 1994. From 1987 until 1994, HIV infection mortality increased an average of 16 percent annually. Between 1997 and 1998 most age groups between 15–24 years and 55–64 years experienced sharp reductions in HIV infection mortality (table F). The pronounced declines were among the younger age groups. Despite the overall decline in mortality for HIV infection, this cause is still a ranking cause for the age group 25–44 years; it remains the leading cause of death for black men, the third for black women, and the fifth for white men.

The preliminary age-adjusted death rate dropped for **homicide** by 14 percent, the largest decline in over 40 years (figure 2). For the black and white populations, most age groups shared in the reduction of mortality from this cause. Homicide remained the leading cause of death for black males 15–24 years of age and the second leading cause for black males 25–44 years and black females 15–24 years. **Suicide**

declined by 6 percent. Virtually all race/sex groups participated in this decline. This cause of death remained second for white males aged 15–24 years and dropped from second to third for those aged 25–44 years. Suicide also dropped from second to third for white females 15–24 years of age. The decline in mortality due to homicide and suicide continued the downward trend reported in the final 1996 and 1997 data (figure 2) (2,4). The rate for **accidents** declined by 5 percent, continuing the general downward trend in accident mortality since the 1980's. Declines for homicide, suicide, and accidents may be somewhat overstated because of possible reporting biases in the preliminary data (see [Technical notes](#)).

The age-adjusted death rate for **atherosclerosis** was down 10 percent. Declines also occurred for **Chronic liver disease and cirrhosis** (4 percent) and **stroke** (3 percent). Increases in the age-adjusted rate occurred for **septicemia** (5 percent), **pneumonia and influenza** (5 percent), and **COPD** (2 percent). The 5-percent increase for pneumonia and influenza reflected the effect of the influenza outbreak during the 1997–98 winter season (9).

Preliminary age-adjusted death rates decreased appreciably for **drug-induced deaths** (14 percent), **firearm injuries** (11 percent), and **alcohol-induced causes** (6 percent). The rate for **injuries at work** did not change significantly between 1997 and 1998 (table 11).

The lowest mortality among the major **race and ethnic groups** was reported for the API and Hispanic populations; preliminary age-adjusted death rates were 43 and 26 percent lower, respectively, than those of the non-Hispanic white population. In contrast, the age-adjusted death rate for the black population was 51 percent higher than that of the non-Hispanic white population. However, mortality for races other than white and black and for Hispanic origin may be understated because of underreporting of race and Hispanic origin on death certificates and to undercounts of those population groups in the census (10,11).

The preliminary **infant mortality rate** for 1998 was 7.2 infant deaths per 1,000 live births, the same as 1997 (tables D and 14). Changes in the rates for the race and Hispanic origin groups were not statistically significant. Because of inconsistencies in reporting for some races and for Hispanic origin, infant mortality rates for some groups are likely to be underestimated (10,11). The linked birth/infant death data set (linked file) provides a better source of data for infant deaths and mortality rates by race and ethnicity (12).

The infant mortality rate for the leading cause of infant mortality, **Congenital anomalies**, which accounted for 22 percent of all infant deaths, declined less than 1 percent between 1997 and 1998 (table 15). The rate for **Disorders relating to short gestation and unspecified low birthweight**, the second leading cause of death for all infants (accounting for 14.1 percent of infant deaths), also declined by less than 1 percent for 1998. Changes in infant mortality rates between the two periods for Congenital anomalies and for Disorders relating to short gestation and unspecified low birthweight were not statistically significant. While deaths due to SIDS have been declining since 1988 (2), the sharp downturn of 17 percent in 1998 may be largely attributable to the absence of a more accurate final diagnosis in the preliminary file, rather than to a real reduction in risk from SIDS (see [Technical notes](#)).

By place of residence, **Hawaii** had the lowest mortality, with an age-adjusted death rate of 370.1 deaths per 100,000 U.S. standard population. Mortality was the highest for the **District of Columbia**, with an age-adjusted death rate of 672.5 per 100,000 U.S. standard population (table 13); however, inasmuch as the District of Columbia

is a metropolitan area, its rates are not comparable with those of States. The State with the highest rate was Mississippi with a rate of 606.9 (table 13).

References

- Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Births: Final data for 1997. National vital statistics reports; vol 47 no 18. Hyattsville, Maryland: National Center for Health Statistics. 1999.
- Hoyert DL, Kochanek KD, Murphy SL. Deaths: Final Data for 1997. National vital statistics reports; vol 47 no 19. Hyattsville, Maryland: National Center for Health Statistics. 1999.
- Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Report of final natality statistics, 1996. Monthly vital statistics reports; vol 46 no 11, supp. Hyattsville, Maryland: National Center for Health Statistics. 1998.
- Peters KD, Kochanek KD, Murphy SL. Deaths: Final Data for 1996. National vital statistics reports; vol 47 no 9. Hyattsville, Maryland: National Center for Health Statistics. 1998.
- National Center for Health Statistics. Vital statistics of the United States, vol 1, Natality. Washington: Public Health Service. 1999. Annual volumes.
- Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Report of final natality statistics, 1994. Monthly vital statistics report; vol 45 no 11, supp. 2 Hyattsville, Maryland: National Center for Health Statistics. 1997.
- Lugaila TA. Marital status and living arrangements: March 1998 (update). U.S. Bureau of the Census. Current population reports, P20-514. Washington: U.S. Department of Commerce. 1998.
- National Center for Health Statistics. Technical Appendix. Vital statistics of the United States: Mortality, 1995. Available on the NCHS web site at <http://www.cdc.gov/nchswww/about/major/dvs/mortdata.htm>
- Centers for Disease Control and Prevention. Morbidity and mortality weekly report; vol 47 no 14. Washington: Public Health Service. 1998.
- Rosenberg HM, Maurer JD, Sorlie PD, Johnson NJ, MacDorman M, Hoyert DL, Spiller JF, Scott C. Quality of death rates by race and Hispanic origin: a summary of current research. Vital and Health Statistics 2(128). Hyattsville, Maryland: National Center for Health Statistics (forthcoming in 1999).
- Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. Epidemiology 3(2):181-4. 1992.
- MacDorman MF, Atkinson JO. Infant mortality statistics from the 1997 period, linked birth/infant death data set. National Vital Statistics Reports; vol 47 no 23. Hyattsville, Maryland: National Center for Health Statistics. 1999.
- National Center for Health Statistics. Technical appendix. Vital statistics of the United States: Natality, 1997. Available on the NCHS web site at <http://www.cdc.gov/nchswww/about/major/natalty/natalty.htm> and included on the CD-ROM entitled "Vital statistics of the United States, Natality, 1997."
- U.S. Bureau of the Census. Unpublished Census file NESTV98.WK1 consistent with populations published in: U.S. Bureau of the Census. Population estimates of the United States by age, sex, race, and Hispanic origin: 1990 to 1998. Washington, DC: U.S. Bureau of the Census. <http://www.census.gov/population/www/estimates/uspop.html> Internet release, June 4, 1999.
- Ventura SJ. Births to unmarried mothers: United States, 1980-92. National Center for Health Statistics. Vital Health Stat 21(53). 1995.
- World Health Organization. Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, based on the recommendations of the Ninth Revision Conference, 1975. Geneva: World Health Organization. 1977.
- National Center for Health Statistics. Vital statistics, instructions for classifying the underlying cause of death. NCHS instruction manual: part 2a. Hyattsville, Maryland: Public Health Service. Published annually.
- Sirken MG. Comparison of two methods of constructing abridged life tables by reference to a "standard" table. National Center for Health Statistics. Vital Health Stat 2(4). 1966.
- Anderson RN. A methodology for constructing complete life tables for the United States. Vital and Health Statistics (In preparation).
- National Center for Health Statistics. U.S. decennial life tables for 1989-91, vol 1, no. 2, methodology of the national and State life tables. Hyattsville, Maryland. 1998.
- Kestenbaum B. A description of the extreme aged population based on improved Medicare enrollment data. Demography 29:565-580. 1992.
- U.S. Bureau of the Census. U.S. population estimates, by age, sex, race and Hispanic origin: 1990 to 1997. PPL-91R. Unpublished census file NESTV97.WK1 consistent with populations published in PPL-91R.
- U.S. Bureau of the Census. Estimates of the population for States by age and sex: 1990 to 1998. Unpublished Census file STRES981.txt, published as: U.S. Bureau of the Census. Internet release date June 15, 1998. <http://www.census.gov/population/www/estimates/statepop.html>
- U.S. Bureau of the Census. Estimates of the resident population for states by age and sex: 1990-1997. Unpublished Census file STRES97.TXT consistent with populations published in Product Announcement CB97-64.

List of detailed tables

- | | |
|--|----|
| 1. Births and birth rates, by age, race and Hispanic origin of mother: United States, final 1997 and preliminary 1998. | 10 |
| 2. Live births by age of mother, live-birth order, and race and Hispanic origin of mother: United States, preliminary 1998. | 12 |
| 3. Birth rates by age of mother, live-birth order, and race and Hispanic origin of mother: United States, preliminary 1998. | 13 |
| 4. Live births by race and Hispanic origin of mother: United States, each State, Puerto Rico, Virgin Islands, and Guam, preliminary 1998, and birth and fertility rates, final 1997 and preliminary 1998 | 14 |
| 5. Percent of live births to mothers under 20 years of age by race and Hispanic origin of mother: United States, each State, Puerto Rico, Virgin Islands, and Guam, final 1997 and preliminary 1998 | 15 |
| 6. Percent of live births to unmarried mothers by race and Hispanic origin of mother: United States, each State, Puerto Rico, Virgin Islands, and Guam, final 1997 and preliminary 1998. | 16 |
| 7. Percent low birthweight by race and Hispanic origin of mother: United States, each State, Puerto Rico, Virgin Islands, and Guam, final 1997 and preliminary 1998 | 17 |
| 8. Percent of live births by cesarean delivery by race and Hispanic origin of mother: United States, each State, Puerto Rico, Virgin Islands, and Guam, final 1997 and preliminary 1998. | 18 |
| 9. Percent of mothers receiving prenatal care in first trimester of pregnancy by race and Hispanic origin of mother: United States, each State, Puerto Rico, Virgin Islands, and Guam, final 1997 and preliminary 1998 | 19 |
| 10. 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, final 1997 and preliminary 1998 | 20 |
| 11. Deaths, death rates, and age-adjusted death rates for 72 selected causes, Human immunodeficiency virus infection, Alzheimer's disease, Injury by firearms, Drug-induced deaths, | |

Alcohol-induced deaths, and Injury at work: United States, final 1997 and preliminary 1998.	27
12. Deaths, death rates, and age-adjusted death rates for 16 selected subcategories of Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues: United States, final 1997 and preliminary 1998	29
13. Deaths, death rates, and age-adjusted death rates: United States, each State, Puerto Rico, Virgin Islands, and Guam, final 1997 and preliminary 1998.	30
14. Infant deaths and infant mortality rates, by age and race and Hispanic origin: United States, final 1997 and preliminary 1998	31
15. Infant deaths and infant mortality rates for 61 selected causes and Human immunodeficiency virus infection: United States, final 1997 and preliminary 1998	32
16. Expectation of life by age, race, and sex: United States, final 1997 and preliminary 1998	34
17. Deaths and death rates for the 10 leading causes of death in specified age groups: United States, preliminary 1998	35
18. Infant deaths and infant mortality rates for the 10 leading causes of infant death, by race and Hispanic origin: United States, preliminary 1998.	37