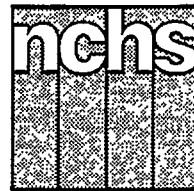


# Monthly Vital Statistics Report



Provisional Data From the National Center for Health Statistics

## Annual Summary of Births, Marriages, Divorces, and Deaths: United States, 1989

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### Highlights

The provisional number of live births for 1989 was higher than the number reported for 1988 and was the largest number reported since 1964. The birth rate per 1,000 population and the fertility rate per 1,000 women 15-44 years of age also increased in 1989 and were the highest they have been since the early 1970's.

In 1989 the provisional number of marriages increased less than 1 percent from the comparable figure for 1988. The marriage rate per 1,000 population

remained at the same level as the rate for 1988, which was the lowest since 1967.

Both the number of divorces in 1989 and the divorce rate per 1,000 population declined 2 percent from the 1988 figures.

The provisional number of deaths decreased 1 percent from 1988. The decrease in the number of deaths between 1988 and 1989 reflects lower mortality for a number of causes of death. This is the first time since 1982 that the number of deaths decreased from the previous year. The age-adjusted death rate decreased from 1988 to its lowest level ever in 1989. The infant mortality rate also declined to the lowest recorded level for the United States, and life expectancy at birth reached a new record high. Age-adjusted death rates were lower in 1989 for six leading causes of death: Diseases of heart, Cerebrovascular diseases, Accidents and adverse effects, Pneumonia and influenza, Atherosclerosis, and Septicemia. Rates were higher in 1989 than in 1988 for Diabetes mellitus and Human immunodeficiency virus infection.

Data for Human immunodeficiency virus infection reflected a 32-percent increase in the estimated number of deaths and a 28-percent increase in the age-adjusted death rate between 1988 and 1989.

### Births

An estimated 4,021,000 babies were born in the United States during 1989, 3 percent more than the number reported for 1988 (3,913,000) and the largest number reported since 1964. The birth rate was 16.2 live births per 1,000 population, 2 percent higher than the provisional 1988 rate of 15.9 (table A). The fertility rate of 68.8 live births per 1,000 women aged 15-44 years was also 2 percent higher than the 1988 rate of 67.3 (table B and figure 1). The birth and fertility rates, which increased dramatically in the 1940's and 1950's followed by rapid declines in the 1960's and early 1970's, have been fairly steady since that time. The birth and fertility rates have risen slightly in the last 2 years and are currently the highest they have been since 1971 and 1973, respectively.

The birth rates in 1989 were higher than in 1988 for 8 months, lower for 2 months (June and August), and the same for 2 months (January and September) (table B). The seasonally adjusted birth rates were higher than in 1988 for 9 months, lower for 2 months (June and August), and the same for January (table C). The fertility rates and the seasonally adjusted fertility rates in 1989 were higher than in 1988 for 10 months and lower for 2 months (June and August) (tables B and C).



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Centers for Disease Control

National Center for Health Statistics

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**Table A. Vital statistics rates: United States, 1982-89**

[Infant mortality rates per 1,000 live births; all other rates per 1,000 population]

Rate	1989 (prov.)	1988 (prov.)	1987		1986 (final)	1985 (final)	1984 (final)	1983 (final)	1982 (final)
			(prov.)	(final)					
Birth	16.2	15.9	15.7	15.7	15.6	15.8	15.5	15.5	15.9
Death	8.7	8.8	8.7	8.7	8.7	8.7	8.6	8.6	8.5
Natural increase	7.5	7.1	7.0	7.0	6.9	7.1	6.9	6.9	7.4
Marriage	9.7	9.7	9.9	9.9	10.0	10.1	10.5	10.5	10.6
Divorce	4.7	4.8	4.8	4.8	4.9	5.0	5.0	4.9	5.0
Infant mortality	9.7	9.9	10.0	10.1	10.4	10.6	10.8	11.2	11.5

**Table B. Live births, birth rates, and fertility rates, by month: United States, 1988 and 1989**

[Data are provisional. Rates on an annual basis. Birth rates per 1,000 population and fertility rates per 1,000 women 15-44 years. Due to rounding, figures may not add to totals. Figures include revisions and, therefore, may differ from those previously published]

Month	Number		Birth rate		Fertility rate	
	1989	1988	1989	1988	1989	1988
Total	4,021,000	3,913,000	16.2	15.9	68.8	67.3
January	311,000	306,000	14.8	14.8	62.9	62.2
February	296,000	302,000	15.6	15.5	66.1	65.5
March	330,000	320,000	15.7	15.4	66.6	65.1
April	317,000	297,000	15.6	14.8	66.0	62.3
May	352,000	332,000	16.7	16.0	70.9	67.4
June	327,000	333,000	16.1	16.5	68.2	69.9
July	372,000	353,000	17.6	17.0	74.9	71.6
August	358,000	359,000	17.0	17.2	72.1	72.8
September	348,000	342,000	17.0	17.0	72.4	71.7
October	348,000	336,000	16.4	16.1	69.9	68.2
November	322,000	311,000	15.7	15.4	66.9	65.2
December	341,000	323,000	16.1	15.5	68.5	65.5

**Table C. Seasonally adjusted birth and fertility rates, by month: United States, 1988 and 1989**

[Data are provisional. Rates on an annual basis. Birth rates per 1,000 population and fertility rates per 1,000 women 15-44 years. For method of seasonal adjustment, see Technical notes. Figures include revisions and, therefore, may differ from those previously published]

Month	Birth rate		Fertility rate	
	1989	1988	1989	1988
January	15.5	15.5	65.8	65.2
February	16.0	15.9	67.6	66.9
March	16.0	15.7	67.9	66.3
April	15.9	15.2	67.3	64.0
May	16.9	16.3	71.9	68.8
June	16.1	16.6	68.3	70.1
July	16.8	16.2	71.6	68.6
August	16.1	16.3	68.4	68.8
September	15.9	15.8	67.7	67.0
October	16.3	16.0	69.4	67.5
November	16.2	15.8	68.9	66.9
December	16.5	15.9	70.2	67.1

Changes in the annual number of births are affected by two factors: changes in age-specific birth rates and in the number of women in the childbearing ages. The 2-percent increase in the general fertility rate between 1988 and 1989 indicates that there were increases in at least some of the age-specific birth rates. These increases, coupled with a small (less than 1 percent) increase in the number of women in the childbearing ages (15-44 years), resulted in the 3-percent rise in the number of births.

According to projections prepared by the U.S. Bureau of the Census (1), the total number of women in the childbearing ages will continue to increase by less than 1 percent annually between 1989 and 1991 and will drop by less than 1 percent in 1992. Thus, in order for the number of births to increase substantially during these years, some age-specific birth rates will have to increase.

Provisional data by place of occurrence indicate that the number of births increased 3-5 percent between 1988

and 1989 in four geographic divisions (New England, Middle Atlantic, South Atlantic, and Pacific), increased by less than 2 percent in the East North Central and Mountain divisions, and declined in three geographic divisions (West North Central, East South Central, and West South Central). Birth rates per 1,000 total population increased 1-3 percent in five divisions (New England, Middle Atlantic, East North Central, South Atlantic, and Pacific) and declined in the remaining four divisions.

Between 1988 and 1989 the provisional number of births increased in 31 States and the District of Columbia and declined in 19 States. Birth rates increased in 29 States and the District of Columbia, declined in 20 States, and remained the same in 1 State.

### Natural increase

During 1989 an estimated 1,866,000 persons were added to the population as a result of natural increase, the excess of births over deaths. The rate of natural increase was 7.5 persons per 1,000 population, 6 percent

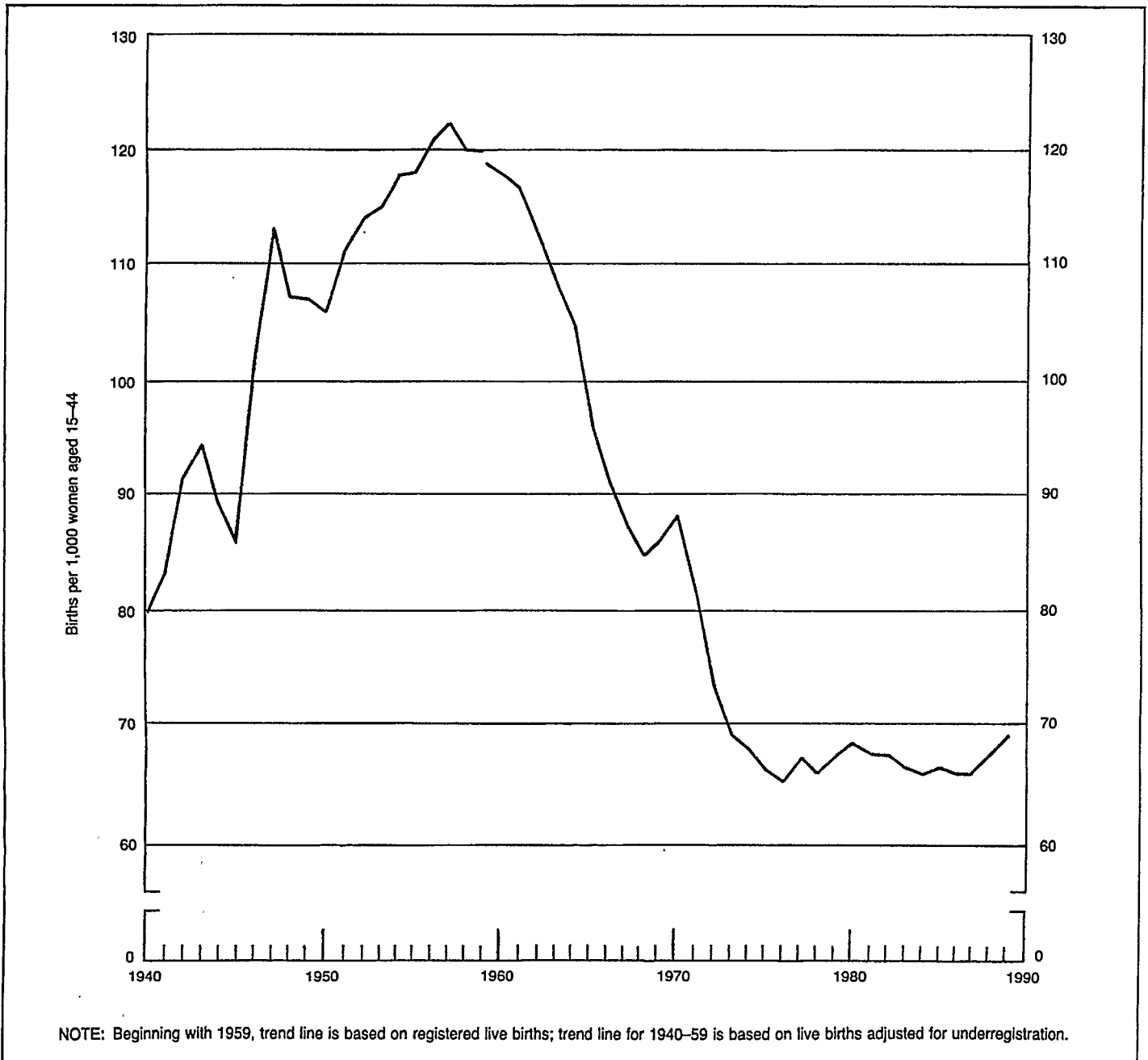


Figure 1. Fertility rates: United States, 1940-89

above the rate for 1988 (7.1). The increase was due to a decrease in the death rate and an increase in the birth rate.

### Marriages

According to provisional data, the number of marriages in 1989 (2,404,000) increased less than 1 percent from 1988 (2,389,000) (table D). The 1989 marriage rate was 9.7 per 1,000 population, the same as for 1988.

Over the last 50 years, the annual marriage rates have varied substantially (figure 2). The marriage rates of the 1940's were the most diverse of the 5 decades. In a 6-year period, the rate jumped from 10.9 (1944) to the all-time peak of 16.4 (1946) and then declined to 10.6 (1949). Despite minor fluctuations, the rates generally declined during the 1950's, from 11.1 to 8.5. The marriage rates for 1960-62 remained steady at 8.5 but then increased each

year from 1963-69. In the last 20 years, the marriage rates have gone through two cycles. In the early 1970's, the rates increased slightly to 10.9 in 1972, the highest rate since 1950, and then declined to a low of 9.9 in 1976-77. The rates again increased to 10.6 in 1980-82 and then declined to the current level.

The month with the most marriages was June (291,000) and the month with the fewest was January

**Table D. Marriages and marriage rates, by month: United States, 1988 and 1989**

[Data are provisional. Rates on an annual basis per 1,000 population. Due to rounding, figures may not add to totals. Figures include revisions and, therefore, may differ from those previously published]

Month	Number		Rate	
	1989	1988	1989	1988
Total . . . . .	2,404,000	2,389,000	9.7	9.7
January . . . . .	117,000	120,000	5.6	5.8
February . . . . .	126,000	121,000	6.7	6.3
March . . . . .	159,000	175,000	7.6	8.4
April . . . . .	185,000	181,000	9.1	9.0
May . . . . .	228,000	223,000	10.8	10.7
June . . . . .	291,000	277,000	14.3	13.8
July . . . . .	217,000	226,000	10.3	10.9
August . . . . .	245,000	243,000	11.6	11.6
September . . . . .	231,000	229,000	11.3	11.3
October . . . . .	210,000	218,000	9.9	10.5
November . . . . .	188,000	176,000	9.2	8.7
December . . . . .	208,000	200,000	9.8	9.6

**Table E. Divorces and divorce rates, by month: United States, 1988 and 1989**

[Data are provisional. Includes reported annulments. Rates on an annual basis per 1,000 population. Data are estimated for some States; see Technical notes. Due to rounding, figures may not add to totals. Figures include revisions and, therefore, may differ from those previously published]

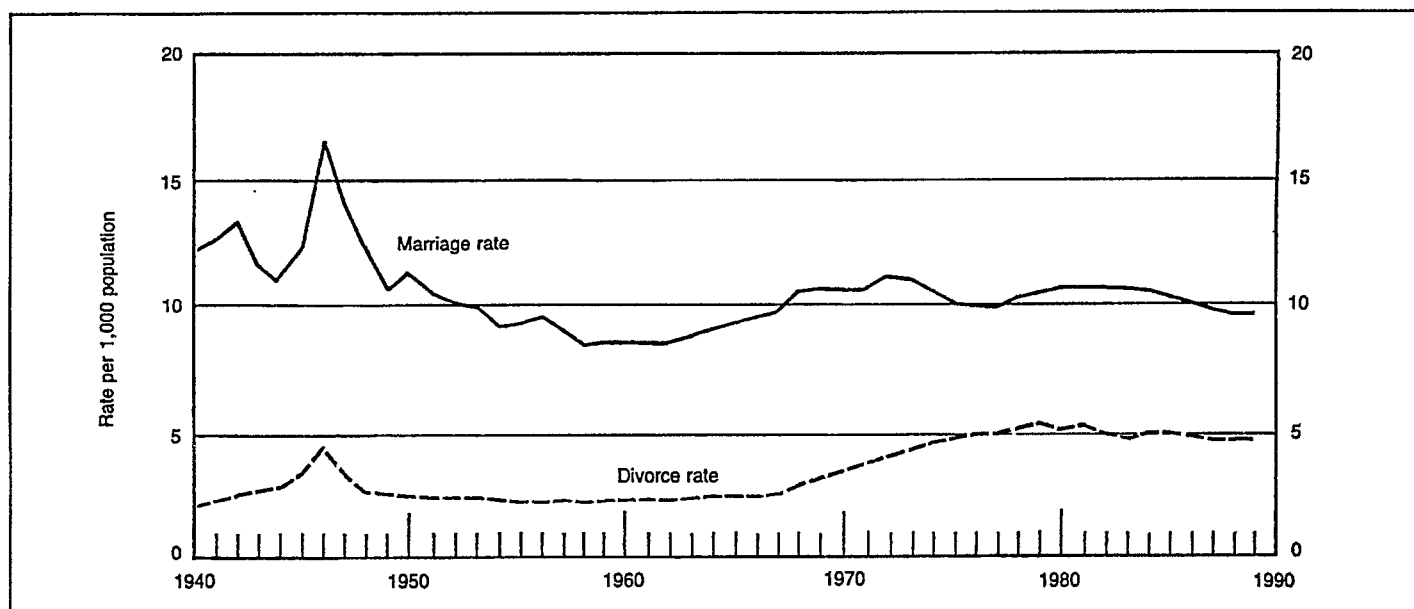
Month	Number		Rate	
	1989	1988	1989	1988
Total . . . . .	1,163,000	1,183,000	4.7	4.8
January . . . . .	98,000	93,000	4.7	4.5
February . . . . .	89,000	84,000	4.7	4.3
March . . . . .	98,000	100,000	4.7	4.8
April . . . . .	89,000	92,000	4.4	4.6
May . . . . .	99,000	108,000	4.7	5.2
June . . . . .	108,000	104,000	5.3	5.2
July . . . . .	90,000	100,000	4.3	4.8
August . . . . .	97,000	106,000	4.6	5.1
September . . . . .	93,000	98,000	4.6	4.8
October . . . . .	96,000	98,000	4.6	4.7
November . . . . .	98,000	91,000	4.8	4.5
December . . . . .	107,000	108,000	5.1	5.2

(117,000) (table D). Both the number of marriages and the marriage rate for June were more than twice the comparable figures for January.

Marriage rates by place of occurrence varied by geographic division. The marriage rates for the following regions were lower than the national rate of 9.7: New England (9.0), Middle Atlantic (8.2), East and West North Central (8.4 and 8.8, respectively), and Pacific (8.5). In contrast, the marriage rates for the South Atlantic (10.4), East and West South Central (11.8 and 10.4, respectively), and Mountain (17.9) divisions were higher than the U.S. rate. The Middle Atlantic division had the lowest marriage rate and also contained the State with the lowest rate, Pennsylvania (7.1). Likewise, the Mountain division had the highest marriage rate and contained Nevada, the State with the highest marriage rate (106.3). Only three States had the same marriage rate in 1989 as in 1988. The rates in 30 States and the District of Columbia declined from the previous year, whereas the rates in 17 States increased.

**Divorces**

The number of divorces in 1989 totaled 1,163,000, 20,000 fewer than the previous year (1,183,000) (table E).



**Figure 2. Marriage and divorce rates: United States, 1940-89**

The divorce rate was 4.7 per 1,000 population, a 2-percent decline from 1988 (4.8). The 1989 rate was the lowest rate since 1974, when the rate was 4.6.

The annual divorce rates for 1940-67 varied between 2.0 and 2.7, except for a 5-year period of increase during and after World War II (1944-48) (figure 2). From 1968 to 1979, the rate increased from 2.9 to the all-time peak of 5.3. The rate again reached 5.3 in 1981 and then fluctuated between 4.9 and 5.0 from 1982-86. The rate dropped to 4.8 for 1987 and 1988 and then dropped again, to the current rate of 4.7.

Divorce rates by place of occurrence varied by geographic division and State. The rates were lowest in the New England and Middle Atlantic divisions

(3.3) and highest in the Mountain division (6.2). State divorce rates ranged from 2.6 in Massachusetts to 11.9 in Nevada. Compared with 1988, the 1989 divorce rates were lower in 27 States and the District of Columbia, unchanged in 12 States, and higher in 9 States. Provisional divorce data are not available from Indiana and Louisiana; the provisional total for the United States includes estimated divorces for these two States.

### Deaths

During 1989 an estimated 2,155,000 deaths occurred in the United States. This number is 1 percent lower than 2,171,000 deaths for 1988, the highest number ever recorded. This is the first time since 1982 that the

number of deaths decreased from the previous year. The decrease in the number of deaths between 1988 and 1989 reflects lower mortality for a number of causes of death (see below).

The provisional death rate for 1989 was 868.1 deaths per 100,000 population, 2 percent lower than the provisional rate for 1988 of 883.0. As a result of the decline in death rates for most age groups, the provisional age-adjusted death rate declined from 536.3 deaths per 100,000 population in 1988 to 524.1 in 1989, the lowest age-adjusted rate ever in the United States (figure 3). Age-adjusted death rates control for changes and variations in the age composition of the population; therefore, they are better indicators than crude death rates for showing

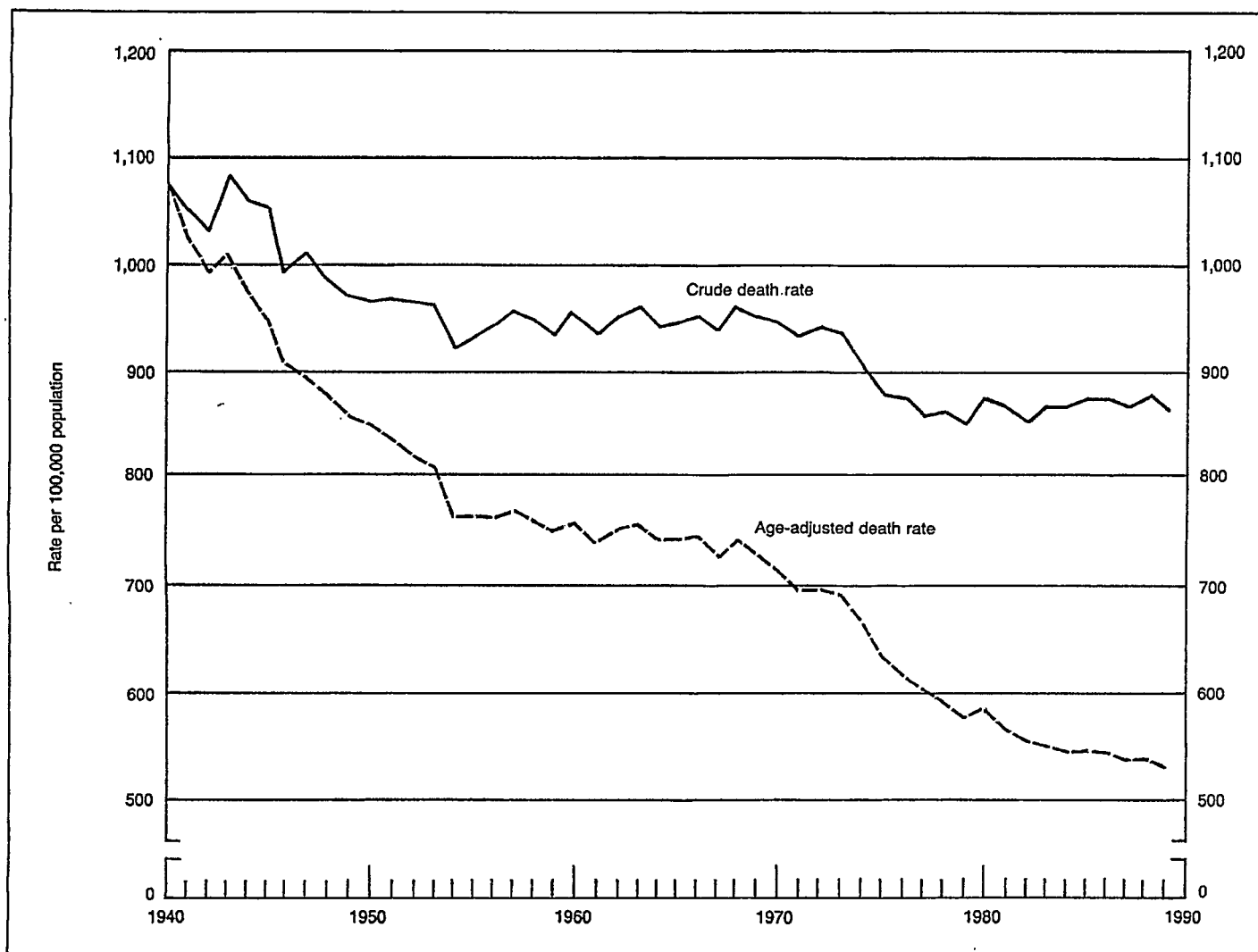


Figure 3. Crude and age-adjusted death rates: United States, 1940-89

**Table F. Deaths and death rates, by month: United States, 1988 and 1989**

[Data are provisional. Rates on an annual basis per 1,000 population. Due to rounding, figures may not add to totals. Figures include revisions and, therefore, may differ from those previously published]

Month	Number		Rate	
	1989	1988	1989	1988
Total . . . . .	2,155,000	2,171,000	8.7	8.8
January . . . . .	194,000	196,000	9.2	9.5
February . . . . .	186,000	195,000	9.8	10.0
March . . . . .	194,000	202,000	9.2	9.7
April . . . . .	182,000	184,000	9.0	9.2
May . . . . .	183,000	180,000	8.7	8.7
June . . . . .	166,000	170,000	8.1	8.5
July . . . . .	176,000	175,000	8.4	8.4
August . . . . .	166,000	170,000	7.9	8.2
September . . . . .	164,000	168,000	8.0	8.3
October . . . . .	177,000	179,000	8.4	8.6
November . . . . .	169,000	168,000	8.2	8.3
December . . . . .	198,000	185,000	9.3	8.8

**Table G. Estimated death rates by age for 1988 and 1989 and percent difference between 1988 and 1989: United States**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. Figures may differ from those previously published. For information on standard errors of the estimates and further discussion, see Technical notes]

Age	1989	1988	Percent difference
All ages <sup>1</sup> . . . . .	868.1	883.0	-1.7
Under 1 year <sup>2</sup> . . . . .	986.0	1,001.9	-1.6
1-4 years . . . . .	43.8	50.7	-13.6
5-14 years . . . . .	26.6	26.2	1.5
15-24 years . . . . .	103.5	104.8	-1.2
25-34 years . . . . .	139.7	133.6	4.6
35-44 years . . . . .	221.0	217.6	1.6
45-54 years . . . . .	479.1	486.4	-1.5
55-64 years . . . . .	1,210.0	1,246.3	-2.9
65-74 years . . . . .	2,628.2	2,731.2	-3.8
75-84 years . . . . .	6,167.5	6,324.4	-2.5
85 years and over . . . . .	15,083.2	15,577.7	-3.2

<sup>1</sup> Figures for age not stated are included in "All ages" but are not distributed among age groups.  
<sup>2</sup> Death rates under 1 year (based on population estimates) differ from infant mortality rates (based on live births); see table 11 for infant mortality rates and Technical notes for discussion of the difference.

changes in mortality risk over time and for showing differences between race-sex groups within the population.

Unadjusted death rates per 1,000 population were higher for December 1989 than for December 1988. Rates for May and July were the same; for all other months of 1989, death rates were lower than the previous year (table F).

**Death rates by race and sex, and by age**

Age-adjusted death rates for 1989 for the major race-sex groups were the lowest on record. The lowest estimated age-adjusted death rate was for white females (378.8 deaths per 100,000 population), followed by black females (564.6), white males (647.9), and black males (1,010.0).

Rates declined for each of the major race-sex groups between 1988 and 1989. However, for black males and black females the declines were not statistically significant. Between 1988 and 1989 provisional death rates by age decreased for children aged 1-4 years and at the older ages for each 10-year age group beginning with 55-64 years, and increased for those aged 25-34 years. The increase for ages 25-34 years reflects in part increases in mortality associated with HIV infection (see below). Death rates for other age groups did not change significantly between the two years (table G).

**Table H. Estimated deaths, death rates, and percent of total deaths for the 15 leading causes of death: United States, 1989**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population. Figures may differ from those previously published. Due to rounding figures may not add to totals. See table 8 for category numbers of causes of death. For information on standard errors of the estimates and further discussion, see Technical notes]

Rank	Cause of death (Ninth Revision, International Classification of Diseases, 1975)	Number	Death rate	Percent of total deaths
...	All causes . . . . .	2,155,000	868.1	100.0
1	Diseases of heart . . . . .	735,450	296.3	34.1
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .	497,220	200.3	23.1
3	Cerebrovascular diseases . . . . .	147,470	59.4	6.8
4	Accidents and adverse effects . . . . .	94,780	38.2	4.4
...	Motor vehicle accidents . . . . .	48,800	19.7	2.3
...	All other accidents and adverse effects . . . . .	45,980	18.5	2.1
5	Chronic obstructive pulmonary diseases and allied conditions . . . . .	84,350	34.0	3.9
6	Pneumonia and influenza . . . . .	75,240	30.3	3.5
7	Diabetes mellitus . . . . .	46,560	18.8	2.2
8	Suicide . . . . .	31,210	12.6	1.4
9	Chronic liver disease and cirrhosis . . . . .	26,380	10.6	1.2
10	Homicide and legal intervention . . . . .	23,020	9.3	1.1
11	Human immunodeficiency virus infection . . . . .	21,360	8.6	1.0
12	Nephritis, nephrotic syndrome, and nephrosis . . . . .	21,230	8.6	1.0
13	Atherosclerosis . . . . .	19,120	7.7	0.9
14	Septicemia . . . . .	19,080	7.7	0.9
15	Certain conditions originating in the perinatal period . . . . .	18,540	7.5	0.9
...	All other causes . . . . .	293,940	118.4	13.6

## Expectation of life

The expectation of life at birth in 1989 reached a new record high of 75.2 years. Provisional data showed that for the white population, from 1988 to 1989, life expectancy at birth increased 0.5 year for males and 0.2 year for females. For the black population, life expectancy at birth increased 0.1 year for males and 0.2 year for females. The expectation of life at birth represents the average number of years that a group of infants would be expected to live if, throughout life, they were to experience the age-specific death rates prevailing during the year of their birth.

## Major causes of death

The 15 leading causes of death in 1989 accounted for 86 percent of all deaths in the United States (table H). (For ranking procedures see Technical notes.) The leading causes of death from 1979 through 1989 have generally been the same, but the order has often varied. For 1989 the nine leading causes of death were the same causes and in the same order as for 1988. For the 10th through 15th leading causes, the causes of death remained the same but the order changed.

Changes in ranking of leading causes of death between 1988 and 1989 were as follows: Homicide and legal intervention (the 11th leading cause of death in 1988) became the 10th leading cause of death, and Human immunodeficiency virus infection (HIV infection) (the 15th leading cause in 1988) became the 11th leading cause of death. Nephritis, nephrotic syndrome, and nephrosis remained the 12th leading cause of death. Atherosclerosis changed rank from 10th to 13th between the two years; Septicemia, from 13th to 14th; and Certain conditions originating in the perinatal period from 14th to 15th.

For most leading causes, age-adjusted death rates are better indicators than crude death rates for showing changes in mortality risk over time, with the exception of the category Certain conditions originating in the perinatal period, which occurs mainly among infants. Therefore, age-adjusted

rates are used to depict trends for 14 of the 15 leading causes of death (figure 4).

Among these 14 causes, age-adjusted death rates were lower in 1989 than in 1988 for six leading causes: Diseases of heart, Cerebrovascular diseases, Accidents and adverse effects, Pneumonia and influenza, Atherosclerosis, and Septicemia. The age-adjusted death rates have generally declined for Diseases of heart, Cerebrovascular diseases, and Atherosclerosis since 1950 (figure 4), and for Accidents and adverse effects since 1970.

Death rates for Pneumonia and influenza declined despite influenza epidemics in both 1988 and 1989 (2). The trend for Pneumonia and influenza, which declined during 1968–78, has shown an upward trend since the early 1980's, marked by the periodic effects of epidemics. The decline in mortality for Septicemia between 1988 and 1989 is in contrast to the sustained general increase for this cause since 1950.

Age-adjusted death rates were higher in 1989 than 1988 for 2 of the 14 leading causes of death: Diabetes mellitus and HIV infection. The increase for Diabetes mellitus contrasts with a relatively stable level of mortality for this cause since 1980. (For more information on HIV infection see the following section entitled "HIV infection.") For the remaining six leading causes of death—Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues; Chronic obstructive pulmonary diseases and allied conditions; Suicide; Chronic liver disease and cirrhosis; Homicide and legal intervention; and Nephritis, nephrotic syndrome, and nephrosis—provisional data did not indicate a statistically significant change between 1988 and 1989. Although there was a very large increase in age-adjusted death rates for Diabetes mellitus between 1988 and 1989 and a very large decrease for Atherosclerosis, there are no known reasons for these changes (3). They may reflect changes in the way in which physicians report causes of death on the death certificate, or variability in the Current Mortality Sample upon which these provisional estimates are based.

For the other leading cause of death, Certain conditions originating in the perinatal period, which occurs mainly among infants under 1 year of age, age-adjusted death rates are not shown. Changes in mortality for this cause are measured by the infant mortality rate per 100,000 live births. The difference between the infant mortality rate for Certain conditions originating in the perinatal period for 1989 (458.4 infant deaths per 100,000 live births) and the 1988 rate (469.7) was not statistically significant.

## HIV infection

On the basis of the Current Mortality Sample the estimated total number of deaths due to HIV infection during 1989 was 21,360 with a range of 20,490 to 22,230 (approximate 95-percent confidence interval). This number was 32 percent higher than the estimated number of deaths due to HIV infection in 1988, which was 16,210 with a range of 15,450 to 16,970. Of the approximately 21,360 HIV infection deaths in 1989, 64 percent were to white males, 24 percent to black males, and 6 percent or less to both white and black females. The largest numbers of deaths from this cause for both males and females were for the age groups 25–34 and 35–44 years. Although the numbers of deaths were highest for white males, the age-adjusted death rates and almost all age-specific death rates were highest for black males, followed by white males, black females, and white females.

From 1988 to 1989 the age-adjusted death rate for HIV infection increased from 6.5 deaths per 100,000 population to 8.3. It increased for each race-sex group, except for white females. The largest increase was for white males, followed by black females, and black males. The rank for this leading cause increased from 15th to 11th between 1988 and 1989. The estimated numbers of deaths and death rates for HIV infection are shown in table 10 of this report.

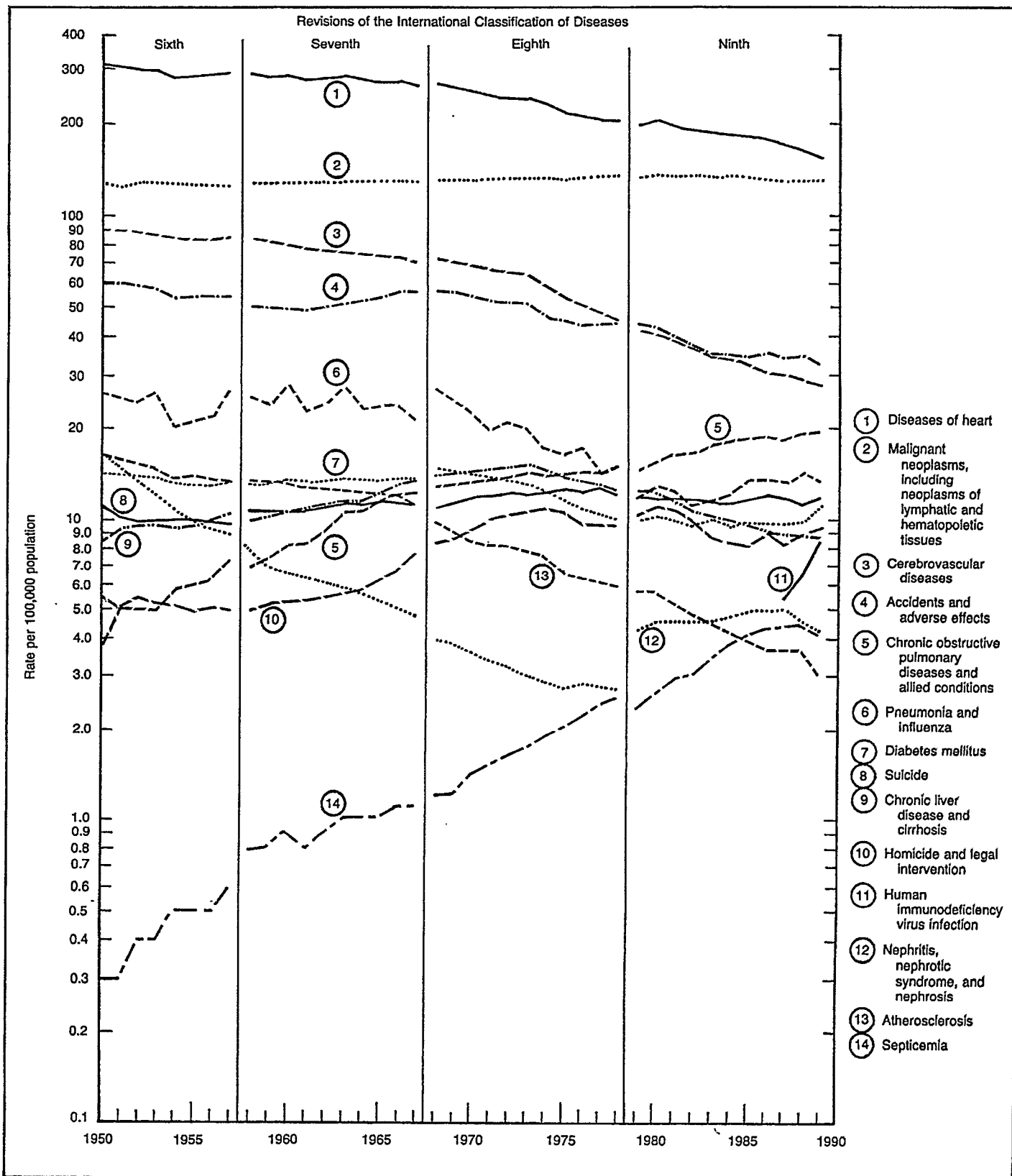


Figure 4. Age-adjusted death rates for 14 of the 15 leading causes of death: United States, 1950-89



**Infant mortality**

The infant mortality rate for 1989 was 973.3 per 100,000 live births, 2 percent lower than the rate of 992.9 for 1988. This is the lowest U.S. rate ever

recorded (figure 5). For 1989 the estimated infant mortality rate for infants under 28 days was 625.0 deaths per 100,000 live births; for infants 28 days–11 months the rate was 348.3 deaths per 100,000 live births. Between

1988 and 1989 changes in mortality rates for infants under 28 days and infants 28 days–11 months were not statistically significant.

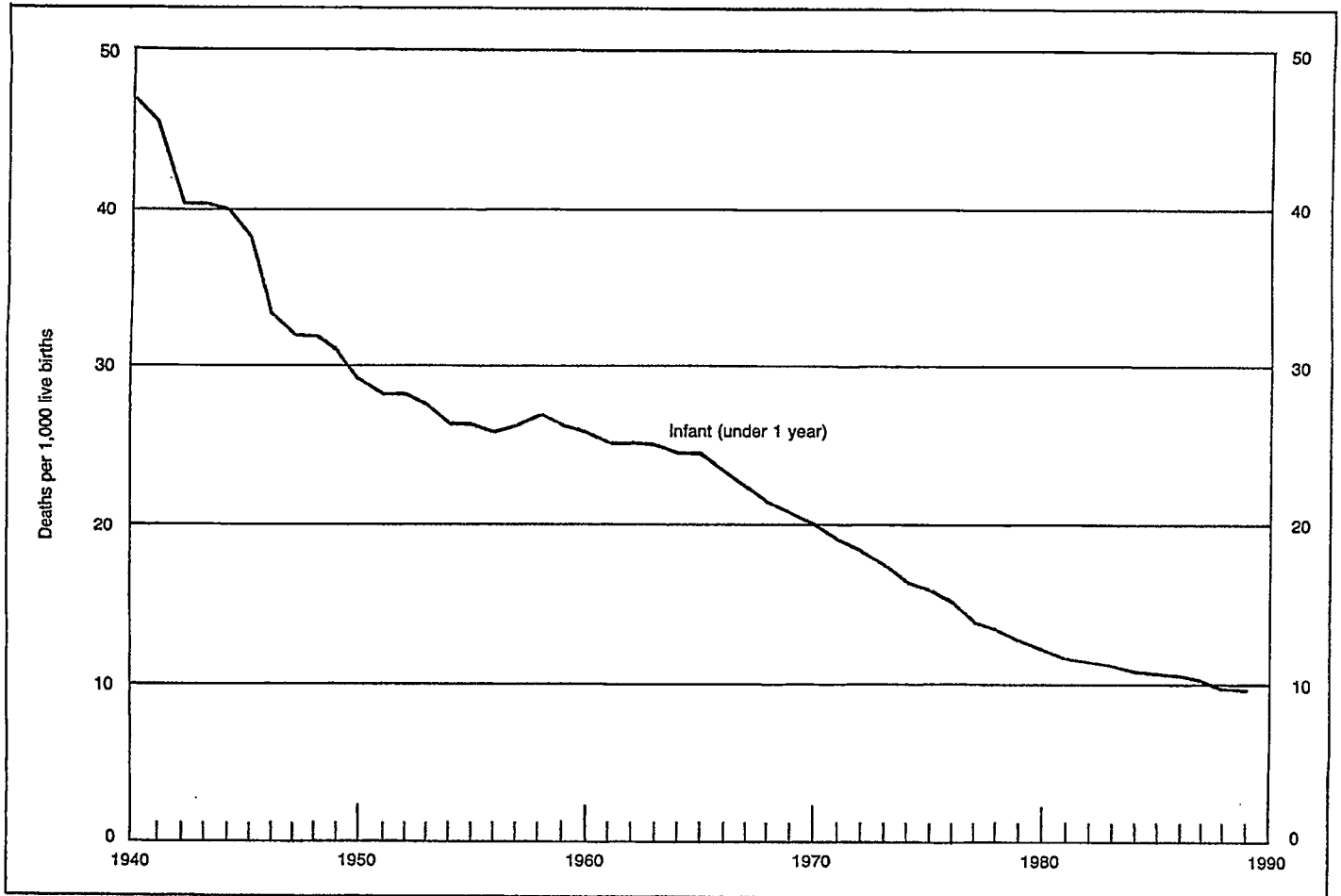


Figure 5. Infant mortality rates: United States, 1940–89

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**Symbols**

- Data not available
  - . . . Category not applicable
  - Quantity zero
  - 0.0 Quantity more than zero but less than 0.05
  - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
  - \* Figure does not meet standards of reliability or precision
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Table 1. Live births and birth rates: Each division and State, 1988 and 1989

[Provisional number of events reported; see Technical notes. By State of occurrence. Figures include revisions and, therefore, may differ from those previously published. Rates per 1,000 population in specified area]

Area	Live births			
	1989		1988	
	Number	Rate	Number	Rate
New England	202,027	15.5	195,022	15.0
Maine	16,842	13.8	15,961	13.2
New Hampshire	17,946	16.2	17,186	15.8
Vermont	7,920	14.0	8,538	15.3
Massachusetts	96,457	16.3	91,988	15.6
Rhode Island	15,302	15.3	14,481	14.6
Connecticut	47,560	14.7	46,868	14.5
Middle Atlantic	577,960	15.3	558,553	14.8
New York	291,145	16.2	277,291	15.5
New Jersey	116,554	15.1	114,118	14.8
Pennsylvania	170,261	14.1	167,144	13.9
East North Central	646,830	15.3	637,327	15.1
Ohio	162,793	14.9	165,258	15.2
Indiana	82,764	14.8	81,421	14.7
Illinois	186,500	16.0	180,526	15.5
Michigan	142,673	15.4	140,229	15.2
Wisconsin	72,100	14.8	69,893	14.4
West North Central	265,762	14.9	265,917	15.0
Minnesota	66,593	15.3	66,579	15.5
Iowa	37,241	13.1	38,506	13.6
Missouri	80,126	15.5	75,844	14.8
North Dakota	10,862	16.5	11,433	17.1
South Dakota	10,991	15.4	11,297	15.8
Nebraska	24,317	15.1	24,363	15.2
Kansas	35,632	14.2	37,895	15.2
South Atlantic	678,872	15.7	655,130	15.4
Delaware	11,492	17.1	10,915	16.5
Maryland	67,550	14.4	68,412	14.8
District of Columbia	22,549	37.3	19,290	31.3
Virginia	93,453	15.3	90,498	15.0
West Virginia	23,079	12.4	22,585	12.0
North Carolina	102,817	15.6	98,183	15.1
South Carolina	55,214	15.7	53,285	15.4
Georgia	109,905	17.1	107,108	16.9
Florida	192,813	15.2	184,854	15.0
East South Central	229,994	14.9	230,975	15.1
Kentucky	52,591	14.1	51,109	13.7
Tennessee	76,780	15.5	79,140	16.2
Alabama	58,360	14.2	59,611	14.5
Mississippi	42,263	16.1	41,115	15.7
West South Central	451,625	16.7	463,380	17.2
Arkansas	34,997	14.5	34,554	14.4
Louisiana	68,813	15.7	75,170	17.1
Oklahoma	46,455	14.4	46,874	14.5
Texas	301,360	17.7	306,782	18.2
Mountain	235,645	17.4	235,526	17.7
Montana	11,394	14.1	11,356	14.1
Idaho	15,459	15.2	15,564	15.5
Wyoming	6,491	13.7	6,697	14.0
Colorado	52,863	15.9	53,014	16.1
New Mexico	27,324	17.9	27,438	18.2
Arizona	67,609	19.0	65,608	18.8
Utah	36,208	21.2	37,260	22.0
Nevada	18,297	16.5	18,589	17.6
Pacific	705,189	18.4	672,346	18.0
Washington	73,261	15.4	68,242	14.7
Oregon	43,835	15.5	41,305	14.9
California	557,003	19.2	532,707	18.8
Alaska	11,545	21.9	11,037	21.1
Hawaii	19,545	17.6	19,055	17.4

All data are by State of occurrence rather than by State of residence and should be interpreted accordingly.

**Table 2. Marriages, divorces, and rates: Each division and State, 1988 and 1989**

[Provisional number of events reported; see Technical notes. Divorces include reported annulments. By State of occurrence. Figures include revisions and, therefore, may differ from those previously published. Rates per 1,000 population in specified area]

Area	Marriages <sup>1</sup>				Divorces			
	1989		1988		1989		1988	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
New England . . . . .	117,905	9.0	116,059	9.0	42,471	3.3	44,558	3.4
Maine . . . . .	12,420	10.2	12,487	10.4	5,708	4.7	5,763	4.8
New Hampshire . . . . .	11,260	10.2	11,270	10.4	5,239	4.7	4,755	4.4
Vermont . . . . .	6,016	10.6	6,486	11.6	2,473	4.4	2,748	4.9
Massachusetts . . . . .	53,370	9.0	49,981	8.5	15,436	2.6	17,244	2.9
Rhode Island . . . . .	8,235	8.3	8,379	8.4	3,627	3.6	3,785	3.8
Connecticut . . . . .	26,604	8.2	27,456	8.5	9,988	3.1	10,263	3.2
Middle Atlantic . . . . .	307,924	8.2	314,638	8.4	123,505	3.3	130,828	3.5
New York . . . . .	161,834	9.0	165,421	9.2	59,520	3.3	64,571	3.6
New Jersey . . . . .	60,182	7.8	61,052	7.9	25,644	3.3	26,897	3.5
Pennsylvania . . . . .	85,908	7.1	88,165	7.3	38,341	3.2	39,360	3.3
East North Central . . . . .	355,003	8.4	343,963	8.2	154,155	4.2	153,086	4.2
Ohio . . . . .	98,136	9.0	97,334	9.0	49,273	4.5	49,778	4.6
Indiana . . . . .	55,119	9.9	51,874	9.3	---	---	---	---
Illinois . . . . .	83,718	7.2	79,100	6.8	47,034	4.0	46,443	4.0
Michigan . . . . .	77,558	8.4	74,150	8.0	40,278	4.3	39,887	4.3
Wisconsin . . . . .	40,472	8.3	41,505	8.5	17,570	3.6	16,978	3.5
West North Central . . . . .	157,677	8.8	155,858	8.8	75,861	4.2	74,656	4.2
Minnesota . . . . .	34,325	7.9	33,481	7.8	15,707	3.6	14,945	3.5
Iowa . . . . .	24,266	8.5	25,006	8.8	9,975	3.5	10,761	3.8
Missouri . . . . .	51,147	9.9	49,867	9.7	26,330	5.1	24,864	4.8
North Dakota . . . . .	4,835	7.3	4,923	7.4	2,231	3.4	2,371	3.6
South Dakota . . . . .	7,100	9.9	7,262	10.2	2,624	3.7	2,657	3.7
Nebraska . . . . .	12,703	7.9	12,349	7.7	6,354	3.9	6,379	4.0
Kansas . . . . .	23,301	9.3	22,970	9.2	12,640	5.0	12,679	5.1
South Atlantic . . . . .	446,779	10.4	454,498	10.7	213,448	5.0	218,983	5.2
Delaware . . . . .	5,940	8.8	5,616	8.5	2,987	4.4	2,972	4.5
Maryland . . . . .	47,344	10.1	44,064	9.5	15,635	3.3	16,439	3.6
District of Columbia . . . . .	4,795	7.9	4,947	8.0	2,398	4.0	3,610	5.9
Virginia . . . . .	68,868	11.3	69,022	11.5	25,799	4.2	26,065	4.3
West Virginia . . . . .	13,354	7.2	14,400	7.7	9,379	5.1	9,149	4.9
North Carolina . . . . .	50,590	7.7	51,664	8.0	32,384	4.9	32,367	5.0
South Carolina . . . . .	54,335	15.5	54,339	15.7	14,859	4.2	14,637	4.2
Georgia . . . . .	63,108	9.8	73,330	11.6	30,045	4.7	35,709	5.6
Florida . . . . .	138,445	10.9	137,116	11.1	79,962	6.3	78,035	6.3
East South Central . . . . .	181,321	11.8	188,658	12.3	90,583	5.9	88,086	5.7
Kentucky . . . . .	50,208	13.5	49,910	13.4	20,629	5.5	20,456	5.5
Tennessee . . . . .	65,005	13.2	69,354	14.2	32,278	6.5	31,990	6.5
Alabama . . . . .	41,817	10.2	44,546	10.9	24,914	6.1	23,411	5.7
Mississippi . . . . .	24,291	9.3	24,848	9.5	12,762	4.9	12,229	4.7
West South Central <sup>2</sup> . . . . .	281,746	10.4	276,138	10.3	133,466	5.9	134,464	6.0
Arkansas . . . . .	34,612	14.4	34,820	14.5	16,372	6.8	16,675	7.0
Louisiana . . . . .	38,990	8.9	33,870	7.7	---	---	---	---
Oklahoma . . . . .	33,112	10.3	32,923	10.2	23,050	7.1	23,048	7.1
Texas . . . . .	175,032	10.3	174,525	10.4	94,044	5.5	94,741	5.6
Mountain . . . . .	241,362	17.9	240,322	18.0	83,897	6.2	87,751	6.6
Montana . . . . .	6,698	8.3	6,765	8.4	4,090	5.1	4,074	5.1
Idaho . . . . .	13,082	12.9	11,213	11.2	6,043	6.0	6,058	6.0
Wyoming . . . . .	4,624	9.7	4,696	9.8	3,040	6.4	3,307	6.9
Colorado . . . . .	31,680	9.6	31,536	9.6	18,709	5.6	18,792	5.7
New Mexico . . . . .	12,746	8.3	13,039	8.7	7,598	5.0	7,943	5.3
Arizona . . . . .	35,738	10.1	35,737	10.2	23,153	6.5	24,940	7.1
Utah . . . . .	18,642	10.9	16,611	9.8	8,088	4.7	7,824	4.6
Nevada . . . . .	118,152	106.3	120,725	114.5	13,176	11.9	14,813	14.1
Pacific . . . . .	325,059	8.5	319,810	8.6	176,272	4.6	186,112	5.0
Washington . . . . .	43,684	9.2	44,042	9.5	27,311	5.7	26,436	5.7
Oregon . . . . .	23,485	8.3	22,581	8.2	15,099	5.4	14,891	5.4
California . . . . .	234,120	8.1	229,983	8.1	124,889	4.3	136,076	4.8
Alaska . . . . .	5,786	11.0	5,803	11.1	3,331	6.3	3,633	6.9
Hawaii . . . . .	17,984	16.2	17,401	15.8	5,642	5.1	5,076	4.6

<sup>1</sup>Data are either marriages reported or marriage licenses issued; see Technical notes.

<sup>2</sup>Divorce data exclude figures for Indiana.

<sup>3</sup>Divorce data exclude figures for Louisiana.

All data are by State of occurrence rather than by State of residence and should be interpreted accordingly.

Table 3. Deaths, death rates, and infant deaths: Each division and State, 1988 and 1989

[Provisional number of events reported; see Technical notes. By State of occurrence. Figures include revisions and, therefore, may differ from those previously published. Rates per 1,000 population in specified area]

Area	Deaths (all ages)				Infant deaths (under 1 year)	
	1989		1988		Number	
	Number	Rate	Number	Rate	1989	1988
New England . . . . .	117,320	9.0	121,658	9.4	1,523	1,526
Maine . . . . .	11,029	9.0	11,331	9.4	113	126
New Hampshire . . . . .	8,391	7.6	8,658	8.0	125	111
Vermont . . . . .	4,501	7.9	5,267	9.5	47	65
Massachusetts . . . . .	55,472	9.4	57,715	9.8	723	721
Rhode Island . . . . .	9,757	9.8	9,930	10.0	154	126
Connecticut . . . . .	28,170	8.7	28,757	8.9	361	377
Middle Atlantic . . . . .	363,176	9.6	373,228	9.9	5,806	5,739
New York . . . . .	169,634	9.5	174,299	9.7	3,061	2,901
New Jersey . . . . .	69,393	9.0	71,773	9.3	912	1,027
Pennsylvania . . . . .	124,149	10.3	127,156	10.6	1,833	1,811
East North Central . . . . .	368,631	8.7	374,467	8.9	6,682	6,428
Ohio . . . . .	98,224	9.0	100,625	9.3	1,603	1,613
Indiana . . . . .	49,421	8.8	50,396	9.1	811	847
Illinois . . . . .	100,686	8.6	101,165	8.7	2,065	1,954
Michigan . . . . .	77,660	8.4	78,882	8.5	1,565	1,486
Wisconsin . . . . .	42,640	8.8	43,399	8.9	638	528
West North Central . . . . .	164,478	9.2	167,896	9.5	2,316	2,463
Minnesota . . . . .	34,484	7.9	35,246	8.2	449	521
Iowa . . . . .	25,201	8.9	27,753	9.8	284	309
Missouri . . . . .	55,648	10.8	54,495	10.6	913	908
North Dakota . . . . .	5,865	8.9	6,055	9.1	86	126
South Dakota . . . . .	6,535	9.1	6,564	9.2	100	97
Nebraska . . . . .	15,226	9.5	15,123	9.4	197	215
Kansas . . . . .	21,519	8.6	22,660	9.1	287	287
South Atlantic . . . . .	395,197	9.2	390,957	9.2	7,539	7,366
Delaware . . . . .	5,968	8.9	5,866	8.9	109	115
Maryland . . . . .	38,078	8.1	37,789	8.2	615	636
District of Columbia . . . . .	9,862	16.3	8,972	14.5	508	440
Virginia . . . . .	46,342	7.6	46,984	7.8	887	907
West Virginia . . . . .	19,472	10.5	19,649	10.5	212	214
North Carolina . . . . .	57,859	8.8	58,164	9.0	1,168	1,248
South Carolina . . . . .	28,958	8.2	28,348	8.2	690	600
Georgia . . . . .	53,761	8.4	52,815	8.3	1,334	1,378
Florida . . . . .	133,897	10.6	132,370	10.7	1,895	1,941
East South Central . . . . .	143,249	9.3	149,298	9.7	2,462	2,668
Kentucky . . . . .	34,005	9.1	35,557	9.5	451	552
Tennessee . . . . .	47,454	9.6	50,720	10.4	842	885
Alabama . . . . .	37,420	9.1	39,016	9.5	713	753
Mississippi . . . . .	24,370	9.3	24,005	9.2	456	478
West South Central . . . . .	215,141	8.0	217,606	8.1	4,362	4,421
Arkansas . . . . .	24,519	10.2	25,278	10.6	310	360
Louisiana . . . . .	36,221	8.3	38,640	8.8	776	883
Oklahoma . . . . .	28,779	8.9	29,174	9.0	422	427
Texas . . . . .	125,622	7.4	124,514	7.4	2,854	2,751
Mountain . . . . .	96,645	7.2	96,664	7.3	2,100	2,138
Montana . . . . .	6,682	8.3	6,736	8.4	97	74
Idaho . . . . .	7,150	7.1	7,391	7.4	116	117
Wyoming . . . . .	3,065	6.5	3,042	6.4	41	42
Colorado . . . . .	21,764	6.6	21,712	6.6	514	539
New Mexico . . . . .	10,525	6.9	10,476	7.0	221	242
Arizona . . . . .	28,882	8.1	28,446	8.2	646	638
Utah . . . . .	9,483	5.6	9,695	5.7	320	337
Nevada . . . . .	9,094	8.2	9,166	8.7	145	149
Pacific . . . . .	290,059	7.6	277,784	7.4	6,153	5,905
Washington . . . . .	36,341	7.6	36,372	7.8	668	681
Oregon . . . . .	27,469	9.7	24,868	9.0	347	383
California . . . . .	217,489	7.5	208,161	7.4	4,869	4,576
Alaska . . . . .	2,052	3.9	2,059	3.9	100	122
Hawaii . . . . .	6,708	6.0	6,324	5.8	169	143

All data are by State of occurrence rather than by State of residence and should be interpreted accordingly.

**Table 4. Estimated deaths and death rates, by age, race, and sex: United States, 1989**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. Figures may differ from those previously published. Due to rounding of estimates, figures may not add to totals. For information on standard errors of the estimates and further discussion, see Technical notes]

Age	All races						All other					
	All races			White			Total			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Number											
All ages . . . . .	2,155,000	1,115,410	1,039,530	1,866,700	955,400	911,300	288,240	160,010	128,230	260,030	143,200	116,830
Under 1 year . . . . .	38,900	21,750	17,150	25,910	14,770	11,140	12,990	6,980	6,010	11,760	6,260	5,500
1-4 years . . . . .	6,480	3,530	2,950	4,640	2,560	2,080	1,840	970	870	1,580	850	730
5-14 years . . . . .	9,350	5,820	3,530	6,900	4,390	2,510	2,450	1,430	1,020	2,110	1,240	870
15-24 years . . . . .	37,790	28,060	9,730	28,460	20,930	7,530	9,330	7,130	2,200	8,120	6,300	1,820
25-34 years . . . . .	61,240	44,620	16,620	43,690	32,120	11,570	17,550	12,500	5,050	15,960	11,390	4,570
35-44 years . . . . .	80,670	54,390	26,280	59,590	40,550	19,040	21,080	13,840	7,240	19,350	12,740	6,610
45-54 years . . . . .	119,280	76,080	43,200	93,170	59,480	33,690	26,110	16,600	9,510	23,670	15,080	8,590
55-59 years . . . . .	102,830	63,830	39,000	83,900	52,450	31,450	18,930	11,380	7,550	17,030	10,280	6,750
60-64 years . . . . .	158,430	96,290	62,140	133,830	82,000	51,830	24,600	14,290	10,310	22,230	12,840	9,390
65-69 years . . . . .	217,050	128,990	88,060	186,700	111,630	75,070	30,350	17,360	12,990	27,950	15,820	12,130
70-74 years . . . . .	260,810	147,420	113,390	230,720	131,100	99,620	30,090	16,320	13,770	27,310	14,710	12,600
75-79 years . . . . .	302,000	156,320	145,680	269,770	139,850	129,920	32,230	16,470	15,760	28,910	14,460	14,450
80-84 years . . . . .	300,000	137,120	162,880	274,290	125,140	149,150	25,710	11,980	13,730	22,810	10,290	12,520
85 years and over . . . . .	458,830	150,410	308,420	424,160	137,820	286,340	34,670	12,590	22,080	30,940	10,770	20,170
Not stated . . . . .	1,280	780	500	970	610	360	310	170	140	300	170	130
	Rate											
All ages <sup>1</sup> . . . . .	868.1	922.0	816.9	893.3	934.6	853.8	733.8	853.0	624.9	848.1	984.5	725.0
Under 1 year <sup>2</sup> . . . . .	986.0	1,076.7	890.9	819.2	910.0	722.9	1,661.1	1,758.2	1,561.0	1,899.8	1,993.6	1,803.3
1-4 years . . . . .	43.8	46.6	40.8	39.0	42.0	35.9	63.0	65.3	60.6	69.6	73.6	65.4
5-14 years . . . . .	26.6	32.3	20.6	24.5	30.3	18.3	35.2	40.5	29.8	38.5	44.5	32.3
15-24 years . . . . .	103.5	152.0	53.9	95.8	139.0	51.4	137.0	209.6	64.5	150.1	235.7	66.5
25-34 years . . . . .	139.7	203.3	75.9	119.1	173.4	63.8	244.9	365.9	134.7	286.5	432.9	155.4
35-44 years . . . . .	221.0	301.7	142.2	191.1	260.4	122.0	395.7	564.2	252.0	485.4	701.2	304.6
45-54 years . . . . .	479.1	628.2	337.9	434.1	563.8	308.7	760.1	1,062.7	507.5	904.1	1,288.9	593.2
55-59 years . . . . .	958.7	1,246.4	695.8	901.2	1,170.8	651.1	1,336.9	1,775.4	974.2	1,526.0	2,023.6	1,110.2
60-64 years . . . . .	1,457.9	1,895.8	1,073.6	1,398.6	1,823.0	1,022.1	1,895.2	2,459.6	1,435.9	2,147.8	2,749.5	1,656.1
65-69 years . . . . .	2,134.2	2,785.4	1,590.1	2,067.8	2,702.9	1,532.4	2,659.9	3,458.2	2,032.9	3,051.3	3,935.3	2,355.3
70-74 years . . . . .	3,255.2	4,255.8	2,492.6	3,207.6	4,201.9	2,445.3	3,674.0	4,744.2	2,898.9	4,131.6	5,368.6	3,264.2
75-79 years . . . . .	5,005.8	6,554.3	3,993.4	4,968.1	6,513.7	3,958.6	5,344.9	6,920.2	4,317.8	5,948.6	7,732.6	4,832.8
80-84 years . . . . .	8,047.2	10,499.2	6,725.0	8,046.1	10,524.8	6,718.5	8,059.6	10,239.3	6,830.8	8,910.2	11,307.7	7,587.9
85 years and over . . . . .	15,083.2	17,695.3	14,070.3	15,362.5	18,110.4	14,317.0	12,338.1	14,146.1	11,500.0	13,110.2	14,958.3	12,224.2

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

<sup>2</sup>Death rates under 1 year (based on population estimates) differ from infant mortality rates (based on live births); see table 11 for infant mortality rates and Technical notes for discussion of the difference.







Table 5. Death rates by age, race, and sex and age-adjusted death rates by race and sex: United States, 1960, 1970, and 1980-89—Con.

[Data for 1988 and 1989 are provisional, estimated from a 10-percent sample of deaths; for all other years, data are final. Rates per 100,000 population in specified group based on populations enumerated as of April 1 for census years and estimated as of July 1 for all other years. Figures may differ from those previously published. For method of computation, information on standard errors of the estimates, and further discussion, see Technical notes]

Race, sex, and year	All ages <sup>1</sup>	Under 1 year <sup>2</sup>	1-4 years	5-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75-84 years	85 years and over	Age- adjusted rate <sup>3</sup>
Black, male													
1989 . . . . .	984.5	1,993.6	73.6	44.5	235.7	432.9	701.2	1,288.9	2,371.3	4,516.3	8,902.9	14,958.3	1,010.0
1988 . . . . .	988.4	2,196.7	82.8	39.1	214.2	404.9	703.9	1,294.3	2,415.9	4,527.3	9,360.3	15,342.9	1,018.4
1987 <sup>4</sup> . . . . .	989.5	2,211.4	90.5	42.5	203.9	389.8	701.5	1,263.6	2,464.7	4,737.6	9,240.7	15,226.1	1,023.2
1986 <sup>4</sup> . . . . .	987.7	2,181.7	90.9	42.0	190.5	385.6	675.9	1,266.5	2,545.5	4,789.9	9,290.8	15,488.1	1,026.9
1985 <sup>4</sup> . . . . .	976.8	2,134.8	89.0	41.3	174.1	347.4	641.8	1,283.3	2,623.1	4,888.7	9,298.4	15,046.2	1,024.0
1984 <sup>4</sup> . . . . .	958.1	2,136.6	85.2	42.4	163.9	335.6	616.0	1,273.5	2,658.3	4,874.5	9,023.0	14,642.9	1,011.7
1983 <sup>4</sup> . . . . .	963.3	2,243.4	96.8	40.9	165.0	335.8	586.5	1,287.3	2,713.1	4,949.3	9,100.0	14,155.6	1,019.6
1982 <sup>4</sup> . . . . .	960.4	2,168.9	93.4	44.4	175.4	360.3	606.7	1,352.1	2,758.1	5,040.1	8,477.2	15,117.9	1,035.0
1981 <sup>4</sup> . . . . .	991.6	2,164.8	105.3	45.2	186.7	387.1	667.9	1,432.5	2,804.1	5,046.3	8,635.1	15,396.4	1,067.7
1980 <sup>4</sup> . . . . .	1,034.1	2,586.7	110.5	47.4	209.1	407.3	689.8	1,479.9	2,873.0	5,131.1	9,231.6	16,098.8	1,112.8
1970 <sup>4</sup> . . . . .	1,186.6	4,298.9	150.5	67.1	320.6	559.5	956.6	1,777.5	3,256.9	5,803.2	9,454.9	12,222.3	1,318.6
1960 <sup>4</sup> . . . . .	1,181.7	5,306.8	208.5	75.1	212.0	402.5	762.0	1,624.8	3,316.4	5,798.7	8,605.1	14,844.8	1,246.1
Black, female													
1989 . . . . .	725.0	1,803.3	65.4	32.3	66.5	155.4	304.6	593.2	1,373.6	2,744.7	5,812.5	12,224.2	564.6
1988 . . . . .	732.6	1,860.1	48.8	38.4	74.1	142.8	286.9	596.3	1,399.1	2,887.1	5,997.8	12,259.5	574.9
1987 <sup>4</sup> . . . . .	737.3	1,791.5	73.5	25.0	67.9	150.0	295.9	646.3	1,445.0	2,874.5	6,145.7	12,313.2	586.2
1986 <sup>4</sup> . . . . .	733.9	1,731.1	76.5	26.9	64.3	146.5	290.2	654.6	1,469.8	2,892.3	6,148.8	12,510.3	588.2
1985 <sup>4</sup> . . . . .	727.7	1,756.6	70.8	28.1	59.5	136.3	278.4	654.0	1,501.7	2,925.7	6,252.0	12,154.7	589.1
1984 <sup>4</sup> . . . . .	712.0	1,789.1	72.2	27.8	61.6	130.6	285.7	655.0	1,489.7	2,907.4	6,184.1	11,439.1	585.3
1983 <sup>4</sup> . . . . .	711.2	1,818.6	73.6	28.0	65.6	130.0	276.1	685.8	1,526.3	2,930.6	6,064.6	11,329.5	590.4
1982 <sup>4</sup> . . . . .	692.4	1,760.1	76.4	29.4	63.5	134.8	282.7	693.1	1,498.3	2,863.0	5,708.5	11,660.0	581.4
1981 <sup>4</sup> . . . . .	707.3	1,823.4	81.6	30.0	64.0	141.1	306.1	723.9	1,527.9	2,929.7	5,822.3	11,933.0	599.1
1980 <sup>4</sup> . . . . .	733.3	2,123.7	84.4	30.5	70.5	150.0	323.9	768.2	1,561.0	3,057.4	6,212.1	12,367.2	631.1
1970 <sup>4</sup> . . . . .	829.2	3,368.8	129.4	43.8	111.9	231.0	533.0	1,043.9	1,986.2	3,860.9	6,691.5	10,706.6	814.4
1960 <sup>4</sup> . . . . .	905.0	4,162.2	173.3	53.8	107.5	273.2	568.5	1,177.0	2,510.9	4,064.2	6,730.0	13,052.6	916.9

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

<sup>2</sup> Death rates under 1 year (based on population data) differ from infant mortality rates (based on live births); see table 11 for infant mortality rates and Technical notes for discussion of the difference.

<sup>3</sup> For method of computation, see Technical notes.

<sup>4</sup> Data are final; see Technical notes.

**Table 6. Provisional abridged life table for the total population: United States, 1989**

[Data are provisional, estimated from a 10-percent sample of deaths. For further discussion, see Technical notes]

Age interval	Proportion dying	Of 100,000 born alive		Stationary population		Average remaining lifetime
	Proportion of persons alive at beginning of age interval dying during interval (2)	Number living at beginning of age interval (3)	Number dying during age interval (4)	In the age interval (5)	In this and all subsequent age intervals (6)	Average number of years of life remaining at beginning of age interval (7)
Period of life between 2 exact ages stated in years (1)	$nq_x$	$l_x$	$n^d_x$	$n^l_x$	$T_x$	$e_x$
x to x+n						
0-1	0.0100	100,000	999	99,145	7,520,543	75.2
1-5	0.0017	99,001	171	395,603	7,421,398	75.0
5-10	0.0013	98,830	127	493,804	7,025,795	71.1
10-15	0.0014	98,703	135	493,253	6,531,991	66.2
15-20	0.0044	98,568	435	491,853	6,038,738	61.3
20-25	0.0059	98,133	576	489,254	5,546,885	56.5
25-30	0.0064	97,557	628	486,214	5,057,631	51.8
30-35	0.0075	96,929	726	482,873	4,571,417	47.2
35-40	0.0095	96,203	916	478,855	4,088,544	42.5
40-45	0.0128	95,287	1,224	473,593	3,609,689	37.9
45-50	0.0189	94,063	1,777	466,198	3,136,096	33.3
50-55	0.0293	92,286	2,704	455,095	2,669,898	28.9
55-60	0.0469	89,582	4,206	437,999	2,214,803	24.7
60-65	0.0706	85,376	6,031	412,619	1,776,804	20.8
65-70	0.1018	79,345	8,074	377,412	1,364,185	17.2
70-75	0.1515	71,271	10,797	330,301	986,773	13.8
75-80	0.2240	60,474	13,549	269,324	656,472	10.9
80-85	0.3368	46,925	15,806	195,324	387,148	8.3
85 and over	1.0000	31,119	31,119	191,824	191,824	6.2

**Table 7. Average length of life in years, by race and sex: United States, 1950, 1960, 1970, 1975-89**

[Data for 1988 and 1989 are provisional, estimated from a 10-percent sample of deaths; for all other years, data are final. For further discussion, see Technical notes]

Year	All races			White			Total			All other		
	Both sexes		Female	Both sexes		Female	Both sexes		Female	Both sexes		Female
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Female	
1989	75.2	71.8	78.5	75.9	72.6	79.1	71.7	67.5	75.7	69.7	65.2	74.0
1988	74.9	71.4	78.3	75.5	72.1	78.9	71.5	67.4	75.5	69.5	65.1	73.8
1987 <sup>1</sup>	75.0	71.5	78.4	75.6	72.2	78.9	71.3	67.3	75.2	69.4	65.2	73.6
1986 <sup>1</sup>	74.8	71.3	78.3	75.4	72.0	78.8	71.2	67.2	75.1	69.4	65.2	73.5
1985 <sup>1</sup>	74.7	71.2	78.2	75.3	71.9	78.7	71.2	67.2	75.0	69.5	65.3	73.5
1984 <sup>1</sup>	74.7	71.2	78.2	75.3	71.8	78.7	71.3	67.4	75.0	69.7	65.6	73.7
1983 <sup>1</sup>	74.6	71.0	78.1	75.2	71.7	78.7	71.1	67.2	74.9	69.6	65.4	73.6
1982 <sup>1</sup>	74.5	70.9	78.1	75.1	71.5	78.7	71.0	66.8	75.0	69.4	65.1	73.7
1981 <sup>1</sup>	74.2	70.4	77.8	74.8	71.1	78.4	70.3	66.1	74.4	68.9	64.5	73.2
1980 <sup>1</sup>	73.7	70.0	77.4	74.4	70.7	78.1	69.5	65.3	73.6	68.1	63.8	72.5
1979 <sup>1</sup>	73.9	70.0	77.8	74.6	70.8	78.4	69.8	65.4	74.1	68.5	64.0	72.9
1978 <sup>1</sup>	73.5	69.6	77.3	74.1	70.4	78.0	69.3	65.0	73.5	68.1	63.7	72.4
1977 <sup>1</sup>	73.3	69.5	77.2	74.0	70.2	77.9	68.9	64.7	73.2	67.7	63.4	72.0
1976 <sup>1</sup>	72.9	69.1	76.8	73.6	69.9	77.5	68.4	64.2	72.7	67.2	62.9	71.6
1975 <sup>1</sup>	72.6	68.8	76.6	73.4	69.5	77.3	68.0	63.7	72.4	66.8	62.4	71.3
1970 <sup>1</sup>	70.8	67.1	74.7	71.7	68.0	75.6	65.3	61.3	69.4	64.1	60.0	68.3
1960 <sup>1</sup>	69.7	66.6	73.1	70.6	67.4	74.1	63.6	61.1	66.3	---	---	---
1950 <sup>1</sup>	68.2	65.6	71.1	69.1	66.5	72.2	60.8	59.1	62.9	---	---	---

<sup>1</sup>Data are final; see Technical notes.

Table 8. Estimated age-specific and age-adjusted death rates for the 15 leading causes and selected components: United States, 1988 and 1989

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. Figures may differ from those previously published. For explanation of asterisk preceding cause-of-death codes, information on standard errors of the estimates, and further discussion, see Technical notes]

Cause of death (Ninth Revision, International Classification of Diseases, 1975)	Year	Age										Age-adjusted rate <sup>3</sup>	
		All ages <sup>1</sup>	Under 1 year <sup>2</sup>	1-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75-84 years		85 years and over
All causes	1989	868.1	986.0	31.7	103.5	139.7	221.0	479.1	1,210.0	2,628.2	6,167.5	15,083.2	524.1
	1988	883.0	1,001.9	33.5	104.8	133.6	217.6	486.4	1,246.3	2,731.2	6,324.4	15,577.7	536.3
Diseases of heart . . . . .390-398,402,404-429	1989	296.3	18.8	1.1	2.1	7.5	30.8	124.6	377.8	910.1	2,412.5	6,742.6	155.9
	1988	312.2	23.6	1.4	2.8	7.3	33.0	131.4	405.6	985.6	2,554.4	7,119.2	166.7
Rheumatic fever and rheumatic heart disease . . . . .390-398	1989	2.4	-	0.0	0.1	0.3	0.7	1.6	4.2	9.1	19.3	23.3	1.5
	1988	2.7	-	0.1	0.2	0.3	0.5	1.7	5.0	10.4	19.3	29.9	1.7
Hypertensive heart disease . . . . .402	1989	8.5	-	-	0.0	0.3	1.6	6.0	13.2	27.1	65.9	152.9	4.9
	1988	8.3	-	-	0.1	0.3	1.1	5.0	14.0	26.5	64.4	155.0	4.8
Hypertensive heart and renal disease . . . . .404	1989	0.9	-	-	-	0.0	0.1	0.2	1.0	2.9	7.3	18.1	0.4
	1988	1.0	-	-	-	0.0	0.1	0.5	1.3	2.2	10.6	23.1	0.5
Ischemic heart disease . . . . .410-414	1989	200.6	0.3	0.0	0.2	2.1	17.8	80.1	255.0	635.4	1,676.7	4,473.0	104.9
	1988	207.9	0.5	0.0	0.2	2.5	18.9	84.3	269.5	672.1	1,760.4	4,612.3	110.4
Acute myocardial infarction . . . . .410	1989	99.5	-	-	0.1	1.1	10.5	48.3	147.6	356.1	841.7	1,703.2	55.7
	1988	101.7	0.3	0.0	0.1	1.6	12.3	51.7	156.1	372.1	868.6	1,661.1	58.3
Other acute and subacute forms of ischemic heart disease . . .411	1989	1.3	-	-	-	0.1	0.2	0.8	3.0	4.0	8.8	24.7	0.8
	1988	1.4	-	-	-	0.1	0.3	0.8	2.3	4.3	11.0	30.5	0.8
Angina pectoris . . . . .413	1989	0.4	-	-	-	-	0.0	0.2	0.3	1.2	2.8	10.2	0.2
	1988	0.4	-	-	-	-	0.0	-	0.5	1.9	3.3	10.5	0.2
Old myocardial infarction and other forms of chronic ischemic heart disease . . . . .412,414	1989	99.3	0.3	0.0	0.0	0.9	7.0	30.8	104.1	274.2	823.4	2,735.0	48.2
	1988	104.3	0.3	0.0	0.1	0.8	6.3	31.8	110.7	293.8	877.5	2,910.1	51.1
Other diseases of endocardium . . . . .424	1989	4.7	0.3	-	0.1	0.3	0.9	1.4	3.7	12.6	45.0	113.4	2.4
	1988	4.5	0.3	0.1	0.0	0.4	0.5	1.2	4.3	12.9	38.8	115.0	2.3
All other forms of heart disease . . . . .415-423,425-429	1989	79.2	18.3	1.0	1.8	4.4	9.8	35.3	100.7	223.0	598.4	1,961.5	41.8
	1988	87.8	22.8	1.2	2.2	3.9	11.8	38.7	111.4	261.7	660.8	2,183.9	47.0
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208	1989	200.3	1.5	3.2	5.3	13.3	45.0	158.5	451.4	843.5	1,338.4	1,655.2	133.7
	1988	198.6	1.3	3.5	5.0	10.8	44.3	157.2	456.5	845.4	1,324.8	1,664.5	133.3
Malignant neoplasms of lip, oral cavity, and pharynx . . . . .140-149	1989	3.3	-	-	0.1	0.1	0.8	3.7	10.6	14.2	14.3	17.4	2.4
	1988	3.2	-	-	0.1	0.1	0.9	3.8	8.7	13.7	16.3	18.7	2.3
Malignant neoplasms of digestive organs and peritoneum . . .150-159	1989	48.0	-	0.1	0.3	1.4	8.0	30.9	94.4	205.0	355.9	508.2	30.1
	1988	47.4	-	0.1	0.3	1.4	7.0	29.7	95.9	197.7	356.9	537.0	29.7
Malignant neoplasms of respiratory and intrathoracic organs .160-165	1989	57.0	-	-	0.1	0.7	7.3	48.6	164.7	279.2	333.9	248.8	40.1
	1988	57.3	-	-	0.1	0.5	8.3	50.4	165.9	282.7	330.0	243.2	40.6
Malignant neoplasm of breast . . . . .174-175	1989	17.6	-	-	0.0	1.8	9.2	22.8	45.2	60.7	91.4	137.1	12.8
	1988	17.5	-	-	0.0	1.1	9.4	22.5	44.2	62.2	96.4	126.9	12.7
Malignant neoplasms of genital organs . . . . .179-187	1989	21.6	-	0.0	0.3	1.3	3.8	10.4	34.2	84.4	184.4	269.2	12.8
	1988	21.8	-	-	0.4	1.3	3.6	10.0	34.5	90.6	182.0	277.1	13.0
Malignant neoplasms of urinary organs . . . . .188-189	1989	8.1	-	0.0	0.1	0.2	1.0	5.3	14.2	33.2	63.7	98.0	4.9
	1988	7.9	0.3	0.1	0.1	0.1	1.0	5.4	15.5	31.5	59.9	97.4	4.9
Malignant neoplasms of all other and unspecified sites . . . . .170-173,190-199	1989	25.2	1.0	1.7	1.9	3.4	8.9	23.7	54.8	94.4	154.2	207.1	17.6
	1988	25.0	0.5	1.5	1.8	3.3	8.3	22.1	57.4	94.4	156.1	203.9	17.4
Leukemia . . . . .204-208	1989	7.6	0.5	1.2	1.7	1.8	2.1	4.9	11.7	26.1	54.3	74.6	5.1
	1988	7.1	0.5	1.5	1.4	1.2	2.4	4.7	10.7	24.6	51.0	68.5	4.8
Other malignant neoplasms of lymphatic and hematopoietic tissues . . . . .200-203	1989	11.9	-	0.3	0.8	2.6	3.9	8.4	21.6	46.3	86.3	94.3	7.9
	1988	11.5	-	0.3	0.8	1.7	3.3	8.6	23.7	47.8	76.5	91.6	7.8
Cerebrovascular diseases . . . . .430-438	1989	59.4	2.8	0.3	0.4	1.9	6.7	18.1	50.6	147.6	530.2	1,632.8	28.5
	1988	61.1	1.0	0.1	0.9	2.1	7.1	20.4	51.9	155.7	544.4	1,710.3	29.8
Accidents and adverse effects . . . . .E800-E949	1989	38.2	28.4	13.3	47.7	36.1	29.9	29.8	34.1	49.1	108.9	277.1	33.5
	1988	39.7	23.8	14.0	51.3	37.3	32.1	31.2	34.4	50.8	110.8	273.7	35.1
Motor vehicle accidents . . . . .E810-E825	1989	19.7	6.1	7.0	36.8	23.2	16.3	17.1	16.5	19.7	32.5	30.9	19.4
	1988	20.4	4.1	7.1	39.9	24.3	17.8	15.6	16.2	18.2	33.5	25.1	20.1
All other accidents and adverse effects . . . . .E800-E807,E826-E949	1989	18.5	22.3	6.3	10.9	12.9	13.6	12.7	17.6	29.4	76.4	246.2	14.1
	1988	19.3	19.4	6.9	11.4	13.0	14.2	15.7	18.2	32.6	77.3	248.6	15.0

Chronic obstructive pulmonary diseases and allied conditions .490-496	1989	34.0	1.5	0.3	0.5	0.8	2.1	9.6	48.9	147.2	314.7	407.0	19.4
	1988	33.3	0.5	0.3	0.4	0.6	1.8	8.8	50.2	151.6	301.3	399.9	19.2
Pneumonia and influenza . . . . .480-487	1989	30.3	12.7	0.6	0.8	1.7	3.6	6.1	18.0	55.5	242.5	1,082.5	13.3
	1988	31.5	14.5	0.6	0.5	2.1	3.6	7.3	19.3	60.7	263.5	1,090.2	14.2
Diabetes mellitus. . . . .250	1989	18.8	-	0.0	0.3	1.7	4.1	11.2	30.9	70.3	143.2	263.0	11.3
	1988	16.1	-	0.1	0.4	1.7	3.7	9.3	26.4	62.3	127.8	203.9	9.9
Suicide . . . . .E950-E959	1989	12.6	...	0.5	13.8	15.8	14.7	16.0	16.2	17.4	23.5	22.7	11.7
	1988	12.3	...	0.6	12.8	15.5	14.3	14.8	15.7	16.8	28.9	19.7	11.3
Chronic liver disease and cirrhosis. . . . .571	1989	10.6	-	0.0	0.1	2.3	9.4	18.2	30.2	35.5	35.8	27.6	8.7
	1988	10.6	0.3	0.0	0.2	2.4	10.3	20.0	30.1	35.7	31.0	18.3	9.0
Homicide and legal intervention . . . . .E960-E978	1989	9.3	8.1	1.7	16.7	17.2	10.6	7.5	5.2	4.2	4.2	3.6	9.4
	1988	9.0	7.3	1.6	15.1	16.3	10.9	7.5	5.3	4.4	4.3	6.1	9.0
Human immunodeficiency virus infection . . . . .*042-*044	1989	8.6	0.5		1.4	16.9	23.6	12.0	3.0			8.3	
	1988	6.6	0.7		1.8	13.1	17.3	9.4	2.1			6.5	
Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589	1989	8.6	5.6	0.1	0.3	0.6	1.2	2.9	8.7	24.0	71.9	204.8	4.4
	1988	8.9	5.2	0.1	0.2	0.8	1.1	2.7	9.0	25.1	79.5	207.3	4.6
Atherosclerosis. . . . .440	1989	7.7	-	-	-	0.0	0.1	0.8	3.9	12.6	60.2	324.1	3.0
	1988	9.6	-	-	-	0.0	0.1	0.9	3.8	16.2	74.1	428.8	3.7
Septicemia . . . . .038	1989	7.7	6.1	0.1	0.3	0.9	1.7	3.1	7.6	20.6	62.1	178.5	4.1
	1988	8.5	6.5	0.3	0.3	0.5	1.7	3.4	8.6	23.6	67.0	210.3	4.5
Certain conditions originating in the perinatal period. . . . .760-779	1989	7.5	464.4	0.3	0.0	0.1	-	0.0	-	-	-	-	0
	1988	7.5	474.0	0.4	0.1	-	-	-	-	-	-	-	0

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

<sup>2</sup> Death rates under 1 year (based on population estimates) differ from infant mortality rates (based on live births); see table 12 for infant mortality rates by cause and Technical notes for discussion of the difference.

<sup>3</sup> For method of computation, see Technical notes.

<sup>4</sup> Because deaths from this cause occur primarily among infants, age-adjusted rates are not shown. See table 12.

Table 9. Estimated deaths and death rates for 72 selected causes: United States, 1988 and 1989

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population. Figures may differ from those previously published. Due to rounding of estimates, figures may not add to totals. For explanation of asterisk preceding cause-of-death codes, information on standard errors of the estimates, and further discussion, see Technical notes]

Cause of death (Ninth Revision, International Classification of Diseases, 1975)	Number		Rate	
	1989	1988	1989	1988
All causes . . . . .	2,155,000	2,171,000	868.1	883.0
Shigellosis and amebiasis . . . . .004,006	10	—	0.0	—
Certain other intestinal infections . . . . .007-009	450	280	0.2	0.1
Tuberculosis . . . . .010-018	1,750	1,970	0.7	0.8
Tuberculosis of respiratory system . . . . .010-012	1,370	1,640	0.6	0.7
Other tuberculosis . . . . .013-018	380	330	0.2	0.1
Whooping cough . . . . .033	40	—	0.0	—
Streptococcal sore throat, scarlatina, and erysipelas . . . . .034-035	—	20	—	0.0
Meningococcal infection . . . . .036	380	300	0.2	0.1
Septicemia . . . . .038	19,080	20,850	7.7	8.5
Acute poliomyelitis . . . . .045	—	—	—	—
Measles . . . . .055	30	—	0.0	—
Viral hepatitis . . . . .070	1,380	1,260	0.6	0.5
Syphilis . . . . .090-097	110	60	0.0	0.0
All other infectious and parasitic diseases <sup>1</sup> . . . . .001-003,005,020-032,037,039-041,*042-*044,046-054,056-066,071-088,098-139	28,510	22,570	11.5	9.2
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208	497,220	488,240	200.3	198.6
Malignant neoplasms of lip, oral cavity, and pharynx . . . . .140-149	8,100	7,750	3.3	3.2
Malignant neoplasms of digestive organs and peritoneum . . . . .150-159	119,240	116,610	48.0	47.4
Malignant neoplasms of respiratory and intrathoracic organs . . . . .160-165	141,590	140,760	57.0	57.3
Malignant neoplasm of breast . . . . .174-175	43,700	43,020	17.6	17.5
Malignant neoplasms of genital organs . . . . .179-187	53,570	53,660	21.6	21.8
Malignant neoplasms of urinary organs . . . . .188-189	20,130	19,400	8.1	7.9
Malignant neoplasms of all other and unspecified sites . . . . .170-173,190-199	62,590	61,460	25.2	25.0
Leukemia . . . . .204-208	18,850	17,420	7.6	7.1
Other malignant neoplasms of lymphatic and hematopoietic tissues . . . . .200-203	29,450	28,160	11.9	11.5
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature . . . . .210-239	7,100	7,120	2.9	2.9
Diabetes mellitus . . . . .250	46,560	39,610	18.8	16.1
Nutritional deficiencies . . . . .260-269	3,080	2,820	1.2	1.1
Anemias . . . . .280-285	3,930	3,740	1.6	1.5
Meningitis . . . . .320-322	1,040	1,230	0.4	0.5
Major cardiovascular diseases . . . . .390-448	934,300	972,140	376.4	395.5
Diseases of heart . . . . .390-398,402,404-429	735,450	767,400	296.3	312.2
Rheumatic fever and rheumatic heart disease . . . . .390-398	6,000	6,520	2.4	2.7
Hypertensive heart disease . . . . .402	21,050	20,320	8.5	8.3
Hypertensive heart and renal disease . . . . .404	2,130	2,530	0.9	1.0
Ischemic heart disease . . . . .410-414	497,850	511,050	200.6	207.9
Acute myocardial infarction . . . . .410	247,020	249,950	99.5	101.7
Other acute and subacute forms of ischemic heart disease . . . . .411	3,320	3,550	1.3	1.4
Angina pectoris . . . . .413	910	1,080	0.4	0.4
Old myocardial infarction and other forms of chronic ischemic heart disease . . . . .412,414	246,600	256,470	99.3	104.3
Other diseases of endocardium . . . . .424	11,790	11,040	4.7	4.5
All other forms of heart disease . . . . .415-423,425-429	196,640	215,940	79.2	87.8
Hypertension with or without renal disease . . . . .401,403	8,450	8,110	3.4	3.3
Cerebrovascular diseases . . . . .430-438	147,470	150,300	59.4	61.1
Intracerebral and other intracranial hemorrhage . . . . .431-432	21,100	21,620	8.5	8.8
Cerebral thrombosis and unspecified occlusion of cerebral arteries . . . . .434.0,434.9	19,860	20,820	8.0	8.5
Cerebral embolism . . . . .434.1	700	730	0.3	0.3
All other and late effects of cerebrovascular diseases . . . . .430,433,435-438	105,800	107,130	42.6	43.6
Atherosclerosis . . . . .440	19,120	23,700	7.7	9.6
Other diseases of arteries, arterioles, and capillaries . . . . .441-448	23,820	22,620	9.6	9.2
Acute bronchitis and bronchiolitis . . . . .466	500	710	0.2	0.3
Pneumonia and influenza . . . . .480-487	75,240	77,330	30.3	31.5
Pneumonia . . . . .480-486	73,880	75,430	29.8	30.7
Influenza . . . . .487	1,370	1,900	0.6	0.8
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	84,350	81,960	34.0	33.3
Bronchitis, chronic and unspecified . . . . .490-491	3,720	3,440	1.5	1.4
Emphysema . . . . .492	15,520	15,750	6.3	6.4
Asthma . . . . .493	5,150	4,580	2.1	1.9
Other chronic obstructive pulmonary diseases and allied conditions . . . . .494-496	59,960	58,180	24.2	23.7
Ulcer of stomach and duodenum . . . . .531-533	6,590	6,420	2.7	2.6
Appendicitis . . . . .540-543	420	400	0.2	0.2
Hernia of abdominal cavity and intestinal obstruction without mention of hernia . . . . .550-553,560	5,350	5,040	2.2	2.1
Chronic liver disease and cirrhosis . . . . .571	26,380	26,080	10.6	10.6
Cholelithiasis and other disorders of gallbladder . . . . .574-575	2,960	3,210	1.2	1.3
Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589	21,230	21,890	8.6	8.9
Acute glomerulonephritis and nephrotic syndrome . . . . .580-581	260	280	0.1	0.1
Chronic glomerulonephritis, nephritis and nephropathy, not specified as acute or chronic, and renal sclerosis, unspecified . . . . .582-583,587	1,500	1,240	0.6	0.5

**Table 9. Estimated deaths and death rates for 72 selected causes: United States, 1988 and 1989—Con.**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population. Figures may differ from those previously published. Due to rounding of estimates, figures may not add to totals. For explanation of asterisk preceding cause-of-death codes, information on standard errors of the estimates, and further discussion, see Technical notes]

Cause of death (Ninth Revision, International Classification of Diseases, 1975)	Number		Rate	
	1989	1988	1989	1988
Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause . . . . .584-586,588-589	19,470	20,360	7.8	8.3
Infections of kidney . . . . .590	1,250	1,440	0.5	0.6
Hyperplasia of prostate . . . . .600	410	420	0.2	0.2
Complications of pregnancy, childbirth, and the puerperium . . . . .630-676	260	300	0.1	0.1
Pregnancy with abortive outcome . . . . .630-638	30	20	0.0	0.0
Other complications of pregnancy, childbirth, and the puerperium . . . . .640-676	230	280	0.1	0.1
Congenital anomalies . . . . .740-759	12,680	12,770	5.1	5.2
Certain conditions originating in the perinatal period . . . . .760-779	18,540	18,510	7.5	7.5
Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome . . . . .767-769	4,470	4,190	1.8	1.7
Other conditions originating in the perinatal period . . . . .760-766,770-779	14,080	14,320	5.7	5.8
Symptoms, signs, and ill-defined conditions . . . . .780-799	29,830	31,820	12.0	12.9
All other diseases . . . . .Residual	172,380	167,300	69.4	68.1
Accidents and adverse effects . . . . .E800-E949	94,780	97,500	38.2	39.7
Motor vehicle accidents . . . . .E810-E825	48,800	50,060	19.7	20.4
All other accidents and adverse effects . . . . .E800-E807, E826-E949	45,980	47,440	18.5	19.3
Suicide . . . . .E950-E959	31,210	30,260	12.6	12.3
Homicide and legal intervention . . . . .E960-E978	23,020	22,190	9.3	9.0
All other external causes . . . . .E980-E999	2,580	2,830	1.0	1.2

<sup>1</sup> Includes data for Human Immunodeficiency virus infection (category numbers \*042-\*044); see table 10 and Technical notes.

**Table 10. Estimated deaths and death rates for Human immunodeficiency virus infection by age, race, and sex and age-adjusted rates by race and sex: United States, 1988 and 1989**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. Figures may differ from those previously published. Due to rounding of estimates, figures may not add to totals. For information on standard errors of the estimates and further discussion, see Technical notes. Data are based on deaths assigned to category numbers \*042--\*044; see Technical notes]

Sex and age	All races <sup>1</sup>				White				Black			
	1989		1988		1989		1988		1989		1988	
	Number	Rate <sup>2</sup>	Number	Rate <sup>2</sup>	Number	Rate <sup>2</sup>	Number	Rate <sup>2</sup>	Number	Rate <sup>2</sup>	Number	Rate <sup>2</sup>
<b>Both sexes</b>												
All ages . . . . .	21,360	8.6	16,210	6.6	14,730	7.0	10,720	5.2	6,470	21.1	5,300	17.5
Under 15 years . . . . .	250	0.5	360	0.7	140	0.3	190	0.4	110	1.3	170	2.1
15-24 years . . . . .	500	1.4	680	1.8	320	1.1	430	1.4	180	3.3	230	4.2
25-34 years . . . . .	7,400	16.9	5,700	13.1	4,810	13.1	3,470	9.5	2,540	45.6	2,160	39.2
35-44 years . . . . .	8,620	23.6	6,090	17.3	6,060	19.4	4,100	13.6	2,480	62.2	1,950	51.2
45-54 years . . . . .	2,990	12.0	2,260	9.4	2,170	10.1	1,660	8.0	800	30.6	580	22.7
55 years and over . . . . .	1,570	3.0	1,090	2.1	1,220	2.6	870	1.9	340	7.2	200	4.3
Not stated . . . . .	20	...	10	...	10	...	-	...	10	...	10	...
Age-adjusted rate <sup>3</sup> . . . . .	...	8.3	...	6.5	...	6.7	...	5.0	...	21.7	...	18.1
<b>Male</b>												
All ages . . . . .	19,060	15.8	14,300	11.9	13,750	13.5	9,840	9.7	5,140	35.3	4,290	29.9
Under 15 years . . . . .	110	0.4	200	0.7	70	0.3	120	0.5	40	0.9	80	1.9
15-24 years . . . . .	420	2.3	570	3.0	270	1.8	370	2.4	150	5.6	180	6.6
25-34 years . . . . .	6,490	29.6	4,980	22.8	4,450	24.0	3,190	17.3	1,990	75.6	1,720	66.2
35-44 years . . . . .	7,860	43.6	5,490	31.6	5,790	37.2	3,850	25.6	1,990	109.5	1,600	92.2
45-54 years . . . . .	2,780	23.0	2,110	18.0	2,090	19.8	1,580	15.4	670	57.3	510	44.5
55 years and over . . . . .	1,390	6.1	930	4.1	1,070	5.3	730	3.6	300	15.0	190	9.6
Not stated . . . . .	10	...	10	...	10	...	-	...	-	...	10	...
Age-adjusted rate <sup>3</sup> . . . . .	...	15.0	...	11.5	...	12.6	...	9.3	...	37.7	...	31.9
<b>Female</b>												
All ages . . . . .	2,300	1.8	1,910	1.5	970	0.9	880	0.8	1,330	8.3	1,010	6.4
Under 15 years . . . . .	140	0.5	160	0.6	70	0.3	70	0.3	70	1.7	90	2.2
15-24 years . . . . .	80	0.4	110	0.6	50	0.3	60	0.4	30	1.1	50	1.8
25-34 years . . . . .	910	4.2	720	3.3	360	2.0	280	1.5	550	18.7	440	15.1
35-44 years . . . . .	760	4.1	600	3.4	270	1.7	250	1.7	490	22.6	350	16.9
45-54 years . . . . .	210	1.6	150	1.2	80	0.7	80	0.8	130	9.0	70	5.0
55 years and over . . . . .	180	0.6	160	0.5	140	0.5	140	0.5	40	1.5	10	0.4
Not stated . . . . .	10	...	-	...	-	...	-	...	10	...	-	...
Age-adjusted rate <sup>3</sup> . . . . .	...	1.7	...	1.5	...	0.8	...	0.8	...	8.1	...	6.3

<sup>1</sup> Includes races other than white and black.  
<sup>2</sup> Figures for age not stated are included in "All ages" but are not distributed among age groups.  
<sup>3</sup> For method of computation, see Technical notes.



**Table 11. Infant mortality rates, by race and sex: United States, 1960, 1970, and 1980-89**

[Rates per 1,000 live births in specified group. For further discussion, see Technical notes]

Year	All races			White			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
<b>Provisional</b>												
1989.....	9.7	---	---	---	---	---	---	---	---	---	---	---
1988.....	9.9	---	---	---	---	---	---	---	---	---	---	---
1987.....	10.0	---	---	---	---	---	---	---	---	---	---	---
1986.....	10.4	---	---	---	---	---	---	---	---	---	---	---
<b>Final</b>												
1987.....	10.1	11.2	8.9	8.6	9.6	7.6	15.4	16.9	13.9	17.9	19.6	16.0
1986.....	10.4	11.5	9.1	8.9	10.0	7.8	15.7	17.3	14.0	18.0	20.0	16.0
1985.....	10.6	11.9	9.3	9.3	10.6	8.0	15.8	17.2	14.4	18.2	19.9	16.5
1984.....	10.8	11.9	9.6	9.4	10.5	8.3	16.1	17.3	14.8	18.4	19.8	16.9
1983.....	11.2	12.3	10.0	9.7	10.8	8.6	16.8	18.3	15.2	19.2	21.1	17.2
1982.....	11.5	12.8	10.2	10.1	11.2	8.9	17.3	18.9	15.5	19.6	21.5	17.7
1981.....	11.9	13.1	10.7	10.5	11.7	9.2	17.8	19.2	16.3	20.0	21.7	18.3
1980.....	12.6	13.9	11.2	11.0	12.3	9.6	19.1	20.7	17.5	21.4	23.3	19.4
1970.....	20.0	22.4	17.5	17.8	20.0	15.4	30.9	34.2	27.5	32.6	36.2	29.0
1960.....	26.0	29.3	22.6	22.9	26.0	19.6	43.2	47.9	38.5	44.3	49.1	39.4

**Table 12. Infant mortality rates, by age and for 10 selected causes of death: United States, 1986-89**

[Provisional data for 1987-89 are estimated from a 10-percent sample of deaths. Rates per 100,000 live births. Figures may differ from those previously published. For information on standard errors of the estimates and further discussion, see Technical notes]

<i>Age and cause of death (Ninth Revision, International Classification of Diseases, 1975)</i>	<i>1989 (prov.)</i>	<i>1988 (prov.)</i>	<i>1987</i>		<i>1986 (final)</i>
			<i>(prov.)</i>	<i>(final)</i>	
Total, under 1 year . . . . .	973.3	992.9	997.0	1,008.2	1,035.3
Under 28 days . . . . .	625.0	641.7	653.8	646.5	671.1
28 days to 11 months . . . . .	348.3	351.5	343.3	361.8	364.1
Certain gastrointestinal diseases. . . . .008-009,535,555-558	5.8	4.4	5.0	5.3	5.3
Pneumonia and influenza . . . . .480-487	12.5	14.4	17.6	17.7	17.6
Congenital anomalies. . . . .740-759	204.7	207.2	207.0	207.0	219.5
Disorders relating to short gestation and unspecified low birth weight . . . . .765	100.1	90.9	84.8	88.0	86.4
Birth trauma. . . . .767	4.3	4.6	5.0	6.5	7.1
Intrauterine hypoxia and birth asphyxia. . . . .768	19.5	20.3	25.5	20.8	26.2
Respiratory distress syndrome . . . . .769	86.6	80.4	86.4	86.2	90.6
Other conditions originating in the perinatal period . . . . .760-764,766,770-779	248.0	273.2	277.9	272.9	275.0
Sudden infant death syndrome. . . . .798.0	126.4	117.4	116.1	137.3	140.5
All other causes . . . . .Residual	165.6	179.7	172.1	166.5	167.2

## Technical Notes

### Nature and sources of data

All data for 1988 and 1989 in this report are provisional. Data for all other years are final, unless specified as provisional. Data for the United States as a whole refer to events occurring within the United States; other data refer to events occurring within the reporting areas shown.

Beginning with 1970, final birth and mortality statistics exclude data for births and deaths to nonresidents of the United States. Data for nonresidents are included in provisional data. All mortality figures exclude fetal deaths.

Provisional or estimated figures for births, marriages, divorces, deaths, and infant deaths, except data estimated from the Current Mortality Sample, summarize data from monthly reports of the numbers of birth, marriage, divorce, and death certificates received in registration offices between two dates a month apart regardless of the month or year when the events occurred. As a result, provisional monthly figures do not strictly reflect the number of events occurring in each month.

Delay in the receipt of certificates in a registration office may result in a low count for a given month, followed by a high count for the month(s) in which the delayed records are received. Although this occasionally may result in large fluctuations in State counts for a given event, the effect on provisional monthly totals for the United States is usually small. Data include revisions received from the States and, therefore, may differ from those previously published.

Although the counts in this report are not subject to sampling variability (except the Current Mortality Sample, see below), they may be affected by random variation. When the number of events is small (perhaps less than 100) 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. For this distribution a simple ap-

proximation may be used to estimate the random variation, as follows.

If  $N$  is the number of events in the population and  $R$  is the corresponding rate, the chances are 19 in 20 that

$$1. N - 2\sqrt{N} \text{ and } N + 2\sqrt{N}$$

covers the "true" number of events.

$$2. R - 2 \frac{R}{\sqrt{N}} \text{ and } R + 2 \frac{R}{\sqrt{N}}$$

covers the "true" rate.

If the rate  $R_1$  corresponding to  $N_1$  events is compared with the rate  $R_2$  corresponding to  $N_2$  events, the difference between the two rates may be regarded as statistically significant if it exceeds

$$2\sqrt{\frac{R_1^2}{N_1} + \frac{R_2^2}{N_2}}$$

Additional information on random variation in numbers of events, rates, and ratios may be found in the technical appendixes of *Vital Statistics of the United States, 1987*, Volumes I and II.

### Natality

Monthly estimates of births for the entire United States are based on the monthly reports adjusted for observed differences from final monthly figures. State figures are not adjusted in this manner. U.S. birth figures contain adjustments made to data for California because of varying length of reporting periods.

### Marriages

Monthly estimates of marriages for the entire United States are based on the monthly reports adjusted for observed differences from final monthly figures. State figures are not adjusted in this manner. For most States, data represent marriages performed. For New Mexico, New York City, and some counties of Arizona, data are marriage licenses issued.

### Divorces

Provisional divorce data, including reported annulments, are shown for the areas reporting divorce data monthly. Divorce figures for the United States for 1988 and 1989 are estimated from a summary of monthly reports from 48 States and the District of Columbia. These areas contained over 95 percent of the population of the United States as enumerated in 1980. Indiana and Louisiana do not report divorces on a provisional basis.

### Mortality

Monthly estimates of deaths for the entire United States are based on monthly reports; they are not adjusted for observed differences from final monthly figures. U.S. figures for deaths and infant deaths contain adjustments made to data for California because of varying length of reporting periods.

### Current mortality sample

Estimated deaths and death rates for 1988 and 1989 by age, race, sex, and cause and provisional life table figures were derived from the Current Mortality Sample. The Current Mortality Sample is a 10-percent systematic sample of death certificates received each month in the vital statistics offices in the 50 States, the District of Columbia, and the independent registration area of New York City. The sample for each of these areas consists of one-tenth of the death certificates received in the office between a given date and the same date of the following month. All death certificates received during the 1-month period are sampled regardless of the month or year in which the death occurred. As a result, the monthly sample is not strictly comparable to a sample on a month-of-occurrence basis. The proportions of death certificates received in the samples for each month of 1989 representing deaths occurring in the current month and those occurring in other months are shown in table 1.

Table I. Percent of death certificates received in the sample each month, by month of occurrence: United States, 1989

Month	Deaths occurring in—		
	Same month	Previous month	All other months
January	70.9	21.0	8.1
February	65.7	25.2	9.2
March	69.0	22.5	8.5
April	66.8	22.1	11.2
May	68.0	23.3	8.8
June	66.5	24.2	9.3
July	68.4	22.9	8.6
August	69.0	22.7	8.3
September	67.3	24.9	7.8
October	69.2	24.0	6.8
November	69.2	24.0	6.8
December	68.8	22.3	8.9

Because of the way in which death certificates are processed in California, this State contributes a high proportion of the certificates for deaths not occurring in the sample month. For the sample exclusive of California, the percent of the sample deaths occurring in the current month constitutes 75 percent of the total as opposed to 68 percent of the entire sample. As for the year of occurrence, 96 percent of the 214,743 transcripts in the 1989 sample were for deaths occurring in 1989 and 4 percent for deaths occurring in 1988.

*Correction for bias and adjustment to provisional counts*—The sample data are corrected for cause-of-death bias and adjusted to provisional counts of deaths and infant deaths using rules and methodology described in the annual summary for 1978(4). As a result, the estimates shown in this report may differ from those published earlier. The Current Mortality Sample is selected at a specified time each month. Complete information concerning the underlying cause of death is sometimes not available in the State offices when the sample is drawn but is available later when copies of the final death certificates are processed. As a result, estimates based on sample counts for certain causes are recurrently biased estimates of final counts.

The data for 1989 were adjusted for bias based on the experience of 3 years—1985, 1986, and 1987. If for a given cause the sample count for these years departed from one-tenth of the final count by more than would be

Table II. Causes of death corrected for bias and adjusted weights for all ages and for under 1 year: United States, 1989

Cause of death <sup>1</sup> (Ninth Revision, International Classification of Diseases, 1975)	Adjusted weight
All ages	
Viral hepatitis	8.67
All other infectious and parasitic diseases	10.26 <sup>2</sup>
Malignant neoplasms of respiratory and intrathoracic organs	10.16
Malignant neoplasms of all other and unspecified sites	9.79
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature	9.24
Hypertensive heart disease	10.27
Hypertension with or without renal disease	10.41
Intracerebral and other intracranial hemorrhage	10.36
Cerebral thrombosis and unspecified occlusion of cerebral arteries	10.24
Asthma	10.66
Ulcer of stomach and duodenum	10.62
Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause	9.57
Symptoms, signs, and ill-defined conditions	7.31
All other diseases	10.09
Motor vehicle accidents	10.37
All other accidents and adverse effects	10.16
Suicide	10.42
Homicide and legal intervention	10.45
All other external causes	11.61
Under 1 year	
Cerebrovascular disease	15.47
Intracerebral and other intracranial hemorrhage	15.47
Cerebral thrombosis and unspecified occlusion of cerebral arteries	15.47
Cerebral embolism	15.47
All other and late effects of cerebrovascular diseases	15.47
Symptoms, signs, and ill-defined conditions	8.72 <sup>3</sup>
All other diseases	10.99
All other accidents and adverse effects	11.74

<sup>1</sup>Causes of death eligible to have an adjusted weight were those that had 50 or more deaths based on final data for 1987.

<sup>2</sup>This weight is an average of the weights of 10.00 for Human immunodeficiency virus infection (category numbers \*042-\*044) and 11.14 for the remainder of this category weighted by the number of deaths in the 1989 Current Mortality Sample from HIV infection and the remainder of the category.

<sup>3</sup>This weight is an average of the weights of 10.49 for Sudden infant death syndrome (SIDS) (category number 798.0) and 4.91 for the remainder of this category weighted by the number of deaths in the 1989 Current Mortality Sample from SIDS and the remainder of the category.

expected on the basis of sampling variability alone, the sample deaths for this cause were corrected by using an adjusted weight. For all causes without an adjusted weight, a weight of 10 was used. The adjusted weights that were applied to the 1989 sample for all ages and for ages under 1 year are shown in table II.

The 1988 cause-of-death data in this report were adjusted for bias using data for 1984, 1985, and 1986. Therefore, the adjusted weights for 1989 data are not the same as those used for 1988 (5).

*Sampling variability*—Because the estimates of deaths and death rates presented in this report (with the exception of total deaths and deaths under 1 year for the United States and geographic subdivisions) are based on a sample of the death certificates, they are subject

to sampling variability. The estimated relative standard errors shown in this report are measures of the sampling errors of the estimated numbers of deaths (or of the estimated death rates) expressed as percents of the estimate. The chances are about two in three that the percent difference between an estimate and the result of a complete count is less than the percent shown. The chances are about 19 in 20 that the percent difference is less than twice the percent shown. Special caution should be used in interpreting figures based on 100 or fewer estimated deaths; these estimates have relative standard errors of 30 percent or more and are therefore considered unreliable.

Two methods are used for estimating relative standard errors—one for the ratio estimates for the causes of death corrected for bias and the other

for estimates for the remaining causes of death or for given age-race-sex groups.

The relative standard error of a ratio estimate for a given cause of death corrected for bias for all ages or for under 1 year is computed as follows:

$$V=300\sqrt{\frac{1}{10}\left(\frac{1}{x}-\frac{1}{D}\right)+\left(\frac{1}{Y}-\frac{1}{M}\right)}$$

where  $V$  = relative standard error (in percent) of the estimate  $X$  where

$X$  = the estimated number of deaths (or estimated death rate) from a given cause corrected for bias

$x$  = the number of deaths in the sample from the given cause

$D$  = the total number of death certificates in the sample for the specified year (214,743 for 1989)

$Y$  = the final number of deaths from the given cause occurring in the 3 years used for bias correction combined

$M$  = the final number of all deaths occurring in the 3 years used for bias correction combined (6,324,104 for 1985-87)

The relative standard errors for the remaining estimates for given causes of death not requiring a correction for bias or for a given age-race-sex group are computed as follows:

$$V=300\sqrt{\frac{1}{X}-\frac{1}{N}}$$

where  $V$  = the relative standard error (in percent) of the estimate  $X$  where

$X$  = the estimated number of deaths (or estimated death rate) from a given cause or for an age-race-sex group

$N$  = the provisional count of deaths for the specified year (2,155,000 for 1989)

Data required to compute relative standard errors for 1988 are given in an earlier report (5). For easy reference, the relative standard errors due to sam-

Table III. Relative standard errors for estimated numbers of deaths from the Current Mortality Sample expressed as a percent of the estimate

Estimated number of deaths	Relative standard error (as percent)	Estimated number of deaths	Relative standard error (as percent)
10	94.9	900	10.0
20	67.1	1,000	9.5
50	42.4	2,000	6.7
100	30.0	5,000	4.2
200	21.2	10,000	3.0
300	17.3	20,000	2.1
400	15.0	50,000	1.3
500	13.4	100,000	0.9
600	12.2	200,000	0.6
700	11.3	500,000	0.4
800	10.6	1,000,000	0.2

pling for estimates for a given age-race-sex group or for a given cause of death not requiring a correction for bias are shown in table III.

Comparisons made in the text between death rates based on the Current Mortality Sample, unless otherwise specified, were statistically significant at the 0.05 level of significance. Lack of comment in the text about any two rates does *not* mean that the difference was tested and found not to be significant at this level.

**Cause-of-death**

The mortality statistics presented here were compiled in accordance with World Health Organization regulations, which specify that member nations classify causes of death in accordance with the current revision of the International Statistical Classification of Diseases, Injuries, and Causes of Death.

Causes of death for 1979-89 were classified according to the Ninth Revision (6). For years prior to 1979 causes of death were classified according to the revision then in use. Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Consequently, cause-of-death comparisons between revisions require consideration of the comparability ratios and, where available, estimates of their standard errors. For information about comparability ratios between the Eighth and Ninth Revisions, see *Monthly Vital Statistics Report*, Volume 28, Number 11 Supplement (7).

For information about comparability ratios between the Seventh and

Eighth Revisions, see *Vital and Health Statistics*, Series 2, Number 66 (8). For a list of other reports on the effects of revisions of the international lists on mortality statistics tabulated by cause, see *Vital Statistics—Special Reports*, Volume 51, Number 4 (9).

Besides specifying the classification, the World Health Organization regulations outline the form of medical certification and the coding procedures to be used. In general, when more than one cause of death is reported, the cause designated by the certifying physician as the underlying cause of death is the cause tabulated.

Causes of death for data presented in this publication were coded by procedures outlined in issues of Part 2a of the *NCHS Instruction Manual* (10).

*Codes for HIV infection*—Beginning with data for 1987, NCHS introduced category numbers \*042-\*044 for classifying and coding human immunodeficiency virus (HIV) infection, formerly referred to as human T-cell lymphotropic virus-III/lymphadenopathy-associated virus (HTLV-III/LAV) infection. The asterisk before the category numbers indicates that these codes are not part of the Ninth Revision of the International Classification of Diseases (ICD-9). In table 10 of this report estimated deaths and death rates for Human immunodeficiency virus infection are shown for 1988 and 1989 by age, race, and sex. These estimates are based on data from the Current Mortality Sample and therefore are subject to the sampling variability discussed above. Deaths classified to these categories for 1988 and 1989 are included in All other in-

fectious and parasitic diseases in the List of 72 Selected Causes of Death shown in table 9. For 1986 and previous years, deaths involving HIV infection were classified to Deficiency of cell-mediated immunity (ICD-9 No. 279.1), contained in the title All other diseases; to Pneumocystosis (ICD-9 No. 136.3), contained in the title All other infectious and parasitic diseases; to Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues; and to a number of other causes. Therefore, beginning with 1987 cause-of-death data are not strictly comparable with data for earlier years.

### Cause-of-death ranking

Cause-of-death ranking is based on the List of 72 Selected Causes of Death and the category Human immunodeficiency virus infection (\*042-\*044). The List of 72 Selected Causes of Death was adapted from one of the special lists for mortality tabulations recommended by the World Health Organization for use with the Ninth Revision of the International Classification of Diseases. Two group titles—Major cardiovascular diseases and Symptoms, signs, and ill-defined conditions—are not ranked. In addition, category titles that begin with the words "Other" and "All other" are not ranked. The remaining category titles are ranked according to the number of deaths for 1989 to determine the leading causes of death. When one of the titles that represents a subtotal is ranked (for example, Tuberculosis), its component parts (in this case, Tuberculosis of respiratory system and Other tuberculosis) are not ranked.

### Age-adjusted rates

The age-adjusted rates presented in this report were computed by the direct method, that is, by applying the age-specific death rates for a specified group or cause of death to the standard population distributed by age. The total population as enumerated in 1940 was selected as the standard. The age-adjusted rates were based on 10-year age groups except those by specified

causes for 1988 and 1989. Rates by specified cause in tables 8 and 10 were based on age groups shown in the given table. It is important not to compare age-adjusted death rates with crude rates.

### Life tables

U.S. abridged life tables are constructed by reference to a standard life table (11). For explanation of the columns of the life table, see *Vital Statistics of the United States, 1987*, Volume II, Section 6 (12).

### Infant mortality

Infant mortality rates shown in figure 5 and tables A, 11, and 12 are the most commonly used index for measuring the risk of dying during the first year of life; they are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period, and are presented as rates per 1,000 or per 100,000 live births. Infant mortality rates use the number of live births in the denominator to approximate the population at risk of dying before the first birthday.

In contrast to infant mortality rates based on live births, infant death rates shown in tables G, 4, 5, and 8 are based on the estimated population under 1 year of age. Infant death rates that appear in tabulations of age-specific death rates are calculated by dividing the number of infant deaths in a calendar year by the estimated mid-year population of persons under 1 year of age (based on births occurring in the 12-month period ending with June), and are presented as rates per 100,000 population in this age group. Due to differences in the denominators, infant death rates may differ from infant mortality rates.

### Seasonal adjustment

The method of seasonal adjustment used for birth and fertility rates is described in *The X-11 Variant of the Census Method II Seasonal Adjustment Program* (13).

### Population bases for computing rates

The annual populations used for computing rates shown in this report (furnished by the U.S. Bureau of the Census) represent the population residing in the specified area. Populations for 1940, 1950, 1960, 1970, and 1980 were enumerated as of April 1; all other annual populations were estimated as of July 1. Monthly populations were estimated as of the first of the month except for the female population 15-44 years of age, which was estimated as of the 15th of the month.

The annual populations for 1989 have been published by the U.S. Bureau of the Census (14,15). Monthly populations are unpublished estimates provided by the U.S. Bureau of the Census.

Beginning with 1984 data in this report, population estimates incorporate new estimates for net migration and net undocumented immigration. As a result, rates for 1984-89 are not strictly comparable with those for previous years, although trends for the total population and most age-race-sex groups are not substantially affected. Additional information has been published by the U.S. Bureau of the Census (16).

The U.S. Bureau of the Census has conducted extensive research to evaluate the coverage of the U.S. population (including undercount and overcount and misstatement of age, race, and sex) in the last four decennial censuses—1950, 1960, 1970, and 1980 (17-19). These evaluative studies indicate that there is differential coverage in the censuses among the population groups; that is, some age, race, and sex groups are more completely enumerated than others. To the extent that the estimates of net census undercounts and overcounts are valid, that the net undercounts and overcounts are substantial, and that they vary among subgroups of the population, net census undercounts and overcounts can have consequences for vital statistics measures (17).

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