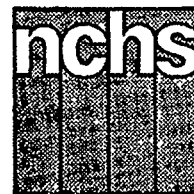


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# Monthly Vital Statistics Report



Provisional Data From the National Center for Health Statistics

## Annual Summary of Births, Marriages, Divorces, and Deaths: United States, 1988

| Contents              |   |
|-----------------------|---|
| Highlights            | 1 |
| Births                | 1 |
| Natural Increase      | 1 |
| Marriages             | 1 |
| Divorces              | 1 |
| Deaths                | 1 |
| Health, Access, and   | 1 |
| Age and Sex           | 1 |
| Population            | 1 |
| Major Causes of Death | 1 |
| Infant Mortality      | 1 |
| Life Expectancy       | 1 |
| References            | 1 |
| Statistical Tables    | 1 |
| Technical Notes       | 1 |

### Highlights

The provisional number of live births for 1988 was higher than the number reported for 1987 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 1988 and were the highest they have been since 1982.

In 1988 the provisional number of marriages fell by 1 percent from the comparable figure for 1987. The marriage rate per 1,000 population decreased 2 percent to the lowest level since 1967.

The number of divorces increased 2 percent between 1987 and 1988, and

the divorce rate per 1,000 population remained the same.

The provisional number of deaths increased in 1988 to the highest number ever recorded, reflecting the continued increase in the proportion of the population 65 years of age and over and the influenza outbreak which occurred in the first few months of the year. The age-adjusted death rate, however, remained essentially unchanged from 1987. The infant mortality rate declined to the lowest recorded level for the United States, and life expectancy at birth remained at the record high attained in 1987. Age-adjusted death rates were lower in 1988 for two leading causes of death, Diseases of heart and Nephritis, nephrotic syndrome, and nephrosis. Rates increased for Pneumonia and influenza, Homicide and legal intervention, and Human immunodeficiency virus infection. Changes for the remaining 10 of the 15 leading causes of death were not statistically significant.

Data for Human immunodeficiency virus infection reflect a 20-percent increase in the estimated number of deaths and a 23-percent increase in the rate between 1987 and 1988.

### Births

An estimated 3,913,000 babies were born in the United States during 1988, 2 percent more than the number

reported for 1987 (3,829,000) and the largest number reported since 1964. The birth rate was 15.9 live births per 1,000 population, 1 percent higher than the 1987 rate of 15.7 (table A). The fertility rate of 67.3 live births per 1,000 women aged 15-44 years was 2 percent higher than the 1987 rate of 66.1 (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 1975. The current birth and fertility rates are the highest they have been since 1982.

Monthly fertility rates in 1988 were higher than in 1987 for 8 months and lower for 4 months (January, March, April, and November) (table B). The seasonally adjusted rates showed no consistent pattern during the year (table C).

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 1987 and 1988 indicates that there were increases in at least some of the age-specific birth rates. These increases, coupled with a less than 1-percent increase in the number of women in the childbearing ages (15-44 years), resulted in the 2-percent rise in the number of births.

**Table A. Vital statistics rates: United States, 1981-88**

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

| Rate                   | 1988<br>(prov.) | 1987<br>(prov.) | 1986    |         | 1985<br>(final) | 1984<br>(final) | 1983<br>(final) | 1982<br>(final) | 1981<br>(final) |
|------------------------|-----------------|-----------------|---------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                        |                 |                 | (prov.) | (final) |                 |                 |                 |                 |                 |
| Birth .....            | 15.9            | 15.7            | 15.5    | 15.6    | 15.8            | 15.5            | 15.5            | 15.9            | 15.8            |
| Death .....            | 8.8             | 8.7             | 8.7     | 8.7     | 8.7             | 8.6             | 8.6             | 8.5             | 8.6             |
| Natural increase ..... | 7.1             | 7.0             | 6.8     | 6.9     | 7.1             | 6.9             | 6.9             | 7.4             | 7.2             |
| Marriage .....         | 9.7             | 9.9             | 10.0    | 10.0    | 10.1            | 10.5            | 10.5            | 10.6            | 10.6            |
| Divorce .....          | 4.8             | 4.8             | 4.8     | 4.9     | 5.0             | 5.0             | 4.9             | 5.0             | 5.3             |
| Infant mortality ..... | 9.9             | 10.0            | 10.4    | 10.4    | 10.6            | 10.8            | 11.2            | 11.5            | 11.9            |

**Table B. Live births, birth rates, and fertility rates, by month: United States, 1987 and 1988**

[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 |      |
|-----------------|-----------|-----------|------------|------|----------------|------|
|                 | 1988      | 1987      | 1988       | 1987 | 1988           | 1987 |
| Total .....     | 3,913,000 | 3,829,000 | 15.9       | 15.7 | 67.3           | 66.1 |
| January .....   | 306,000   | 308,000   | 14.8       | 15.0 | 62.2           | 62.8 |
| February .....  | 302,000   | 287,000   | 15.5       | 15.4 | 65.5           | 64.6 |
| March .....     | 320,000   | 328,000   | 15.4       | 15.9 | 65.1           | 66.7 |
| April .....     | 297,000   | 298,000   | 14.8       | 15.0 | 62.3           | 62.8 |
| May .....       | 332,000   | 323,000   | 16.0       | 15.7 | 67.4           | 65.8 |
| June .....      | 333,000   | 319,000   | 16.5       | 16.0 | 69.9           | 67.0 |
| July .....      | 353,000   | 334,000   | 17.0       | 16.1 | 71.6           | 67.8 |
| August .....    | 359,000   | 345,000   | 17.2       | 16.7 | 72.8           | 70.1 |
| September ..... | 342,000   | 340,000   | 17.0       | 17.0 | 71.7           | 71.4 |
| October .....   | 336,000   | 321,000   | 16.1       | 15.5 | 68.2           | 65.2 |
| November .....  | 311,000   | 314,000   | 15.4       | 15.7 | 65.2           | 65.9 |
| December .....  | 323,000   | 312,000   | 15.5       | 15.0 | 65.5           | 63.3 |

**Table C. Seasonally adjusted birth and fertility rates, by month: United States, 1987 and 1988**

[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 |      |
|-----------------|------------|------|----------------|------|
|                 | 1988       | 1987 | 1988           | 1987 |
| January .....   | 15.5       | 15.7 | 65.2           | 65.7 |
| February .....  | 15.9       | 15.7 | 66.9           | 65.9 |
| March .....     | 15.7       | 16.1 | 66.3           | 67.4 |
| April .....     | 15.2       | 15.4 | 64.0           | 64.7 |
| May .....       | 16.3       | 16.1 | 68.8           | 67.5 |
| June .....      | 16.6       | 16.0 | 70.1           | 67.2 |
| July .....      | 16.2       | 15.5 | 68.6           | 65.1 |
| August .....    | 16.3       | 15.8 | 68.8           | 66.1 |
| September ..... | 15.8       | 15.9 | 67.0           | 66.7 |
| October .....   | 16.0       | 15.4 | 67.5           | 64.6 |
| November .....  | 15.8       | 16.0 | 66.9           | 67.4 |
| December .....  | 15.9       | 15.5 | 67.1           | 65.0 |



Figure 1. Fertility rates: United States, 1930-88

According to projections prepared by the U.S. Bureau of the Census, the total number of women in the child-bearing ages will continue to increase by less than 1 percent annually between 1988 and 1991(1). Thus, 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 1-4 percent between 1987 and 1988 in seven geographic divisions (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, and

Pacific) and by less than 1 percent in the West South Central and Mountain divisions.

From 1987 to 1988, birth rates per 1,000 total population increased 1-4 percent in six divisions (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, and East South Central), remained the same in two divisions (West South Central and Pacific), and declined 1 percent in one division (Mountain).

Between 1987 and 1988 the provisional number of births increased in 33 States and declined in 17 States and the District of Columbia. Birth rates

increased in 29 States, declined in 16 States and the District of Columbia, and were unchanged in 5 States.

### Natural increase

During 1988, an estimated 1,742,000 persons were added to the population as a result of natural increase, the excess of births over deaths. The rate of natural increase in 1988 was 7.1 persons per 1,000 population, 1 percent above the rate for 1987 (7.0). The increase was due to a larger increase in the birth rate than in the death rate.

## Marriages

According to provisional statistics, 2,389,000 couples married in 1988, 1 percent fewer than in 1987 (2,421,000) (table D). The national marriage rate fell by 2 percent, from 9.9 per 1,000 population in 1987 to 9.7 in 1988.

The marriage rate, recorded since 1867, has varied between a high of 16.4 in 1946 and a low of 7.9 in the depression year of 1932 (figure 2). The 1988 rate is the lowest marriage rate since 1967 when it was also 9.7. This is the fourth consecutive drop in the marriage rate after a period of fairly steady rates from 1980–84.

**Table E. Marriage rates, seasonally adjusted and unadjusted, by month: United States, 1987 and 1988**

[Data are provisional. Rates on an annual basis 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               | Unadjusted for seasonal variation |      | Adjusted for seasonal variation |      |
|---------------------|-----------------------------------|------|---------------------------------|------|
|                     | 1988                              | 1987 | 1988                            | 1987 |
| Total . . . . .     | 41.0                              | 41.7 | ...                             | ...  |
| January . . . . .   | 24.4                              | 26.9 | 40.6                            | 45.0 |
| February . . . . .  | 26.3                              | 30.0 | 35.2                            | 39.3 |
| March . . . . .     | 35.6                              | 35.5 | 46.1                            | 43.8 |
| April . . . . .     | 38.1                              | 40.3 | 41.3                            | 43.9 |
| May . . . . .       | 45.2                              | 47.1 | 39.0                            | 41.7 |
| June . . . . .      | 58.1                              | 60.5 | 41.5                            | 41.7 |
| July . . . . .      | 45.9                              | 46.8 | 40.8                            | 41.9 |
| August . . . . .    | 49.2                              | 47.3 | 39.2                            | 37.6 |
| September . . . . . | 47.9                              | 47.8 | 41.5                            | 41.4 |
| October . . . . .   | 44.3                              | 41.7 | 43.6                            | 42.3 |
| November . . . . .  | 36.9                              | 36.5 | 40.0                            | 39.7 |
| December . . . . .  | 40.5                              | 40.7 | 44.0                            | 45.2 |

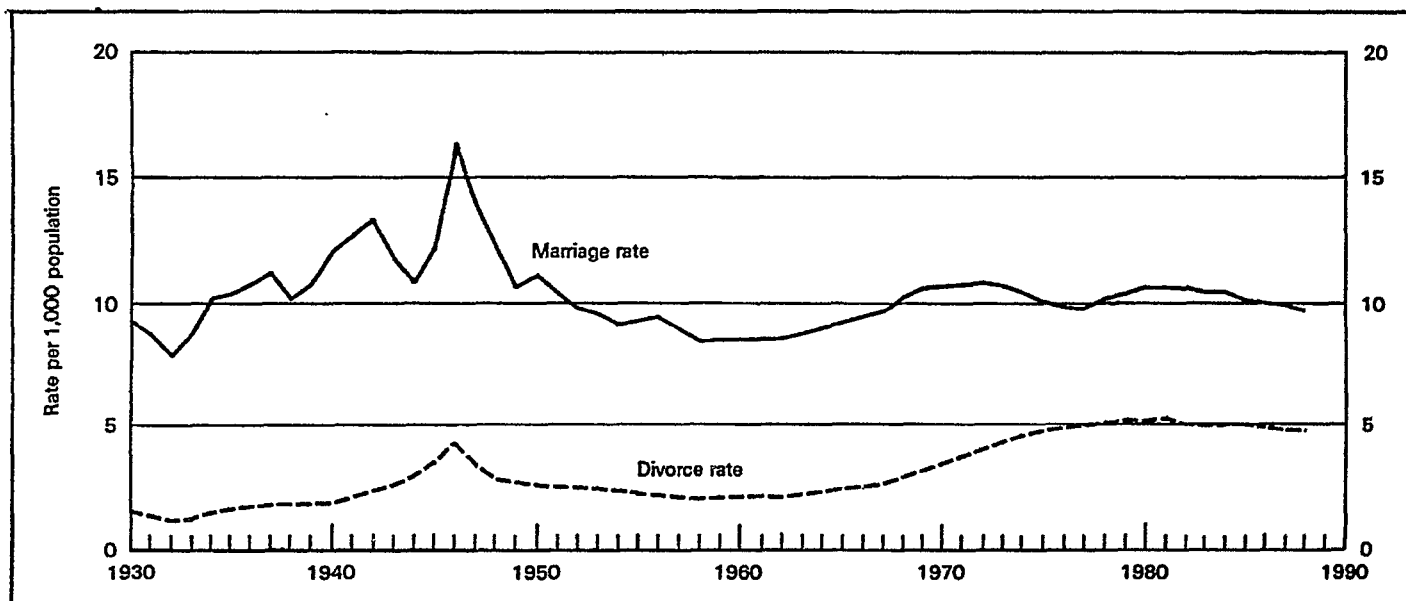
**Table D. Marriages and marriage rates, by month: United States, 1987 and 1988**

[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 |      |
|---------------------|-----------|-----------|------|------|
|                     | 1988      | 1987      | 1988 | 1987 |
| Total . . . . .     | 2,389,000 | 2,421,000 | 9.7  | 9.9  |
| January . . . . .   | 120,000   | 132,000   | 5.8  | 6.4  |
| February . . . . .  | 121,000   | 133,000   | 6.3  | 7.1  |
| March . . . . .     | 175,000   | 174,000   | 8.4  | 8.5  |
| April . . . . .     | 181,000   | 192,000   | 9.0  | 9.6  |
| May . . . . .       | 223,000   | 231,000   | 10.7 | 11.2 |
| June . . . . .      | 277,000   | 288,000   | 13.8 | 14.4 |
| July . . . . .      | 226,000   | 230,000   | 10.9 | 11.1 |
| August . . . . .    | 243,000   | 233,000   | 11.6 | 11.3 |
| September . . . . . | 229,000   | 228,000   | 11.3 | 11.4 |
| October . . . . .   | 218,000   | 206,000   | 10.5 | 9.9  |
| November . . . . .  | 176,000   | 174,000   | 8.7  | 8.7  |
| December . . . . .  | 200,000   | 200,000   | 9.6  | 9.7  |

Marriages in 1988 exhibited the usual seasonal variations. More couples married in June than in any other month (tables D and E), and the fewest marriages occurred in January. The marriage rate for June (13.8) was more than twice that for January (5.8).

Marriages also varied by place of occurrence. Marriage rates were lowest on average in the Middle Atlantic, East North Central, and Pacific divisions, and highest in the East South Central and Mountain divisions. The lowest marriage rate was in Illinois (6.8), where a new law required that both applicants for a marriage license have a



**Figure 2. Marriage and divorce rates: United States, 1930–88**

blood test for human immunodeficiency virus (HIV) infection. The highest marriage rates continued to be in Nevada (114.5), Hawaii (15.8), and South Carolina (15.7), all favored States for nonresidents to marry. Between 1987 and 1988 marriage rates fell in 17 States and the District of Columbia, rose in 32 States, and stayed the same in 1 State. The greatest absolute and percent change in rates between 1987 and 1988 occurred in Tennessee, where the marriage rate increased 20 percent from 11.8 to 14.2 per 1,000 population. The number of marriages has been increasing in Tennessee since the requirement for blood tests was dropped from the marriage legislation of that State in July 1985.

### Divorces

The estimated number of divorces for the United States increased 2 percent between 1987 and 1988, from 1,157,000 to 1,183,000 (table F). The divorce rate for 1988, 4.8 per 1,000 population, remained unchanged from the rate for 1987. The divorce rate rose fairly steadily throughout the 1960's and 1970's, reaching a peak of 5.3 in 1979 and 1981. The divorce rate stabilized from 1982 to 1986, fluctuating between 4.9 and 5.0. The rate of 4.8 for 1987 and 1988 is the lowest since 1975 (figure 2).

Divorce rates on average were lowest in the northeastern States and highest in the southern and western States. Divorce rates by place of occurrence

ranged from lows of 2.9 in Massachusetts, 3.2 in Connecticut, and 3.3 in Pennsylvania to highs of 7.0 in Arkansas, 7.1 in Arizona and Oklahoma, and 14.1 in Nevada. Between 1987 and 1988 divorce rates fell in 12 States and the District of Columbia, rose in 23 States, and remained the same in 13 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 1988 an estimated 2,171,000 deaths occurred in the United States, the greatest number ever recorded. The provisional death rate for 1988 was 883.0 deaths per 100,000 population compared with the provisional rate for 1987 of 874.0. The record number of deaths in 1988 is consistent with a general increase in the size of the population, especially for ages 65 years and over, and the occurrence in the first few months of 1988 of an influenza outbreak, which is often associated with elevated mortality (2). The provisional age-adjusted death rate for 1988 of 536.3 deaths per 100,000 population was essentially unchanged from the record low rate for 1987 of 536.2 (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 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 January, February, March, May, and September in 1988 than for the same months in 1987. Rates for June, October, and December were the same; for all other months of 1988, death rates were lower than the previous year (table G).

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

Age-adjusted death rates for the major race-sex groups showed no statistically significant changes between 1987 and 1988. The lowest estimated age-adjusted death rate was for white females (385.8 deaths per 100,000 population), followed by black females (574.9), white males (670.5), and black males (1,018.4). For white males, white females, and black females the age-adjusted rates were also the lowest on record. While the age-adjusted rate for black males increased between 1987 and 1988, the change was not statistically significant. Between 1987 and 1988 provisional death rates decreased for the age groups 45-54 years and 65-74 years, and increased for those aged 75-84 years and 85 years and over. Death rates for other age groups did not change significantly between the two years (table H).

### Expectation of life

The expectation of life at birth in 1988 was 74.9 years, the same as the provisional record high attained in 1987. Provisional data showed that among the white population, from 1987 to 1988, life expectancy at birth remained the same for males, but increased by 0.1 year for females. Among the black population, life expectancy at birth declined by 0.3 year for males, but remained the same 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.

**Table F. Divorces and divorce rates, by month: United States, 1987 and 1988**

[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 |      |
|---------------------|-----------|-----------|------|------|
|                     | 1988      | 1987      | 1988 | 1987 |
| Total . . . . .     | 1,183,000 | 1,157,000 | 4.8  | 4.8  |
| January . . . . .   | 93,000    | 92,000    | 4.5  | 4.5  |
| February . . . . .  | 84,000    | 86,000    | 4.3  | 4.7  |
| March . . . . .     | 100,000   | 96,000    | 4.8  | 4.7  |
| April . . . . .     | 92,000    | 97,000    | 4.6  | 4.9  |
| May . . . . .       | 108,000   | 96,000    | 5.2  | 4.7  |
| June . . . . .      | 104,000   | 108,000   | 5.2  | 5.4  |
| July . . . . .      | 100,000   | 103,000   | 4.8  | 5.0  |
| August . . . . .    | 106,000   | 96,000    | 5.1  | 4.6  |
| September . . . . . | 98,000    | 97,000    | 4.8  | 4.9  |
| October . . . . .   | 98,000    | 96,000    | 4.7  | 4.7  |
| November . . . . .  | 91,000    | 90,000    | 4.5  | 4.5  |
| December . . . . .  | 108,000   | 98,000    | 5.2  | 4.7  |

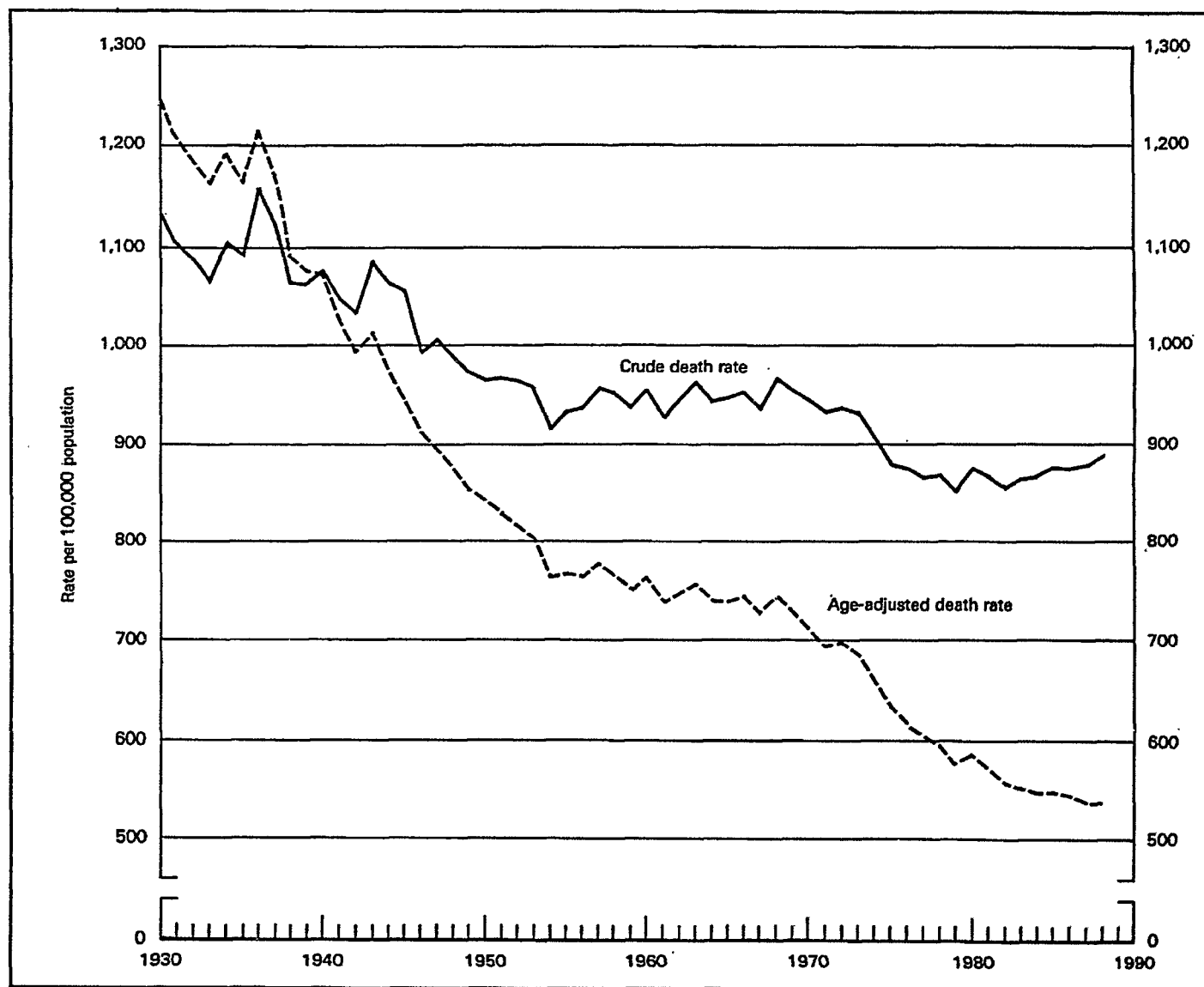


Figure 3. Crude and age-adjusted death rates: United States, 1930-88

Table G. Deaths and death rates, by month: United States, 1987 and 1988

[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 |      |
|-----------|-----------|-----------|------|------|
|           | 1988      | 1987      | 1988 | 1987 |
| Total     | 2,171,000 | 2,127,000 | 8.8  | 8.7  |
| January   | 196,000   | 190,000   | 9.5  | 9.3  |
| February  | 195,000   | 178,000   | 10.0 | 9.6  |
| March     | 202,000   | 186,000   | 9.7  | 9.0  |
| April     | 184,000   | 186,000   | 9.2  | 9.3  |
| May       | 180,000   | 174,000   | 8.7  | 8.5  |
| June      | 170,000   | 171,000   | 8.5  | 8.5  |
| July      | 175,000   | 175,000   | 8.4  | 8.5  |
| August    | 170,000   | 171,000   | 8.2  | 8.3  |
| September | 168,000   | 164,000   | 8.3  | 8.2  |
| October   | 179,000   | 178,000   | 8.6  | 8.6  |
| November  | 168,000   | 171,000   | 8.3  | 8.5  |
| December  | 185,000   | 183,000   | 8.8  | 8.8  |

**Table H. Estimated death rates by age for 1987 and 1988 and percent difference between 1987 and 1988: United States**

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

| Age                       | 1988     | 1987     | Percent difference |
|---------------------------|----------|----------|--------------------|
| All ages <sup>1</sup>     | 883.0    | 874.0    | 1.0                |
| Under 1 year <sup>2</sup> | 1,001.9  | 1,006.5  | -0.5               |
| 1-4 years                 | 50.7     | 51.6     | -1.7               |
| 5-14 years                | 26.2     | 25.6     | 2.3                |
| 15-24 years               | 104.8    | 101.6    | 3.1                |
| 25-34 years               | 133.6    | 131.4    | 1.7                |
| 35-44 years               | 217.6    | 211.8    | 2.7                |
| 45-54 years               | 486.4    | 498.9    | -2.5               |
| 55-64 years               | 1,246.3  | 1,246.8  | 0.0                |
| 65-74 years               | 2,731.2  | 2,763.6  | -1.2               |
| 75-84 years               | 6,324.4  | 6,266.1  | 0.9                |
| 85 years and over         | 15,577.7 | 15,405.7 | 1.1                |

<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.

### Major causes of death

The 15 leading causes of death in 1988 accounted for 87 percent of all deaths in the United States (table J). (For ranking procedures see Technical notes.) The leading causes of death from 1979 through 1988 have generally been the same, but the order has often varied. In addition, beginning with this report, the rules for ranking causes of death were modified to include the category Human immunodeficiency virus infection (HIV infection) as a rankable cause. Changes in the ranking of lead-

ing causes of death between 1987 and 1988 were as follows: Homicide and legal intervention (the 12th leading cause of death in 1987) moved ahead of Nephritis, nephrotic syndrome, and nephrosis to become the 11th leading cause of death in 1988. In 1988, HIV infection replaced the category Congenital anomalies as the 15th leading cause of death, the same rank as in 1987 had HIV infection been a rankable cause for that year. (For further discussion on HIV infection see the following section entitled "HIV infection.")

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. Among these 14 causes, age-adjusted death rates were lower in 1988 than in 1987 for two leading causes, Diseases of heart and Nephritis, nephrotic syndrome, and nephrosis. The age-adjusted death rate for Diseases of heart has generally declined since 1950 (figure 4). In contrast, the trend for Nephritis, nephrotic syndrome, and nephrosis had increased steadily during the 1980's, reversing the downward trend since 1950. Age-adjusted death rates were higher in 1988 than 1987 for 3 of the 14 leading causes of death: Pneumonia and influenza, Homicide and legal intervention, and HIV infection. Contributing to the increase in the age-adjusted rate for Pneumonia and influenza was an outbreak of influenza in the first few months of 1988 (2). For the remaining nine leading causes of death, provisional data did not indicate a statistically significant change between 1987 and 1988.

**Table J. Estimated deaths, death rates, and percent of total deaths for the 15 leading causes of death: United States, 1988**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population. 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                                                                      | 2,171,000 | 883.0      | 100.0                   |
| 1    | Diseases of heart                                                               | 767,400   | 312.2      | 35.3                    |
| 2    | Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues | 488,240   | 198.6      | 22.5                    |
| 3    | Cerebrovascular diseases                                                        | 150,300   | 61.1       | 6.9                     |
| 4    | Accidents and adverse effects                                                   | 97,500    | 39.7       | 4.5                     |
| ...  | Motor vehicle accidents                                                         | 50,060    | 20.4       | 2.3                     |
| ...  | All other accidents and adverse effects                                         | 47,440    | 19.3       | 2.2                     |
| 5    | Chronic obstructive pulmonary diseases and allied conditions                    | 81,960    | 33.3       | 3.8                     |
| 6    | Pneumonia and influenza                                                         | 77,330    | 31.5       | 3.6                     |
| 7    | Diabetes mellitus                                                               | 39,610    | 16.1       | 1.8                     |
| 8    | Suicide                                                                         | 30,260    | 12.3       | 1.4                     |
| 9    | Chronic liver disease and cirrhosis                                             | 26,080    | 10.6       | 1.2                     |
| 10   | Atherosclerosis                                                                 | 23,700    | 9.6        | 1.1                     |
| 11   | Homicide and legal intervention                                                 | 22,190    | 9.0        | 1.0                     |
| 12   | Nephritis, nephrotic syndrome, and nephrosis                                    | 21,890    | 8.9        | 1.0                     |
| 13   | Septicemia                                                                      | 20,850    | 8.5        | 1.0                     |
| 14   | Certain conditions originating in the perinatal period                          | 18,510    | 7.5        | 0.9                     |
| 15   | Human immunodeficiency virus infection                                          | 16,210    | 6.6        | 0.7                     |
| ...  | All other causes                                                                | 288,970   | 117.6      | 13.3                    |

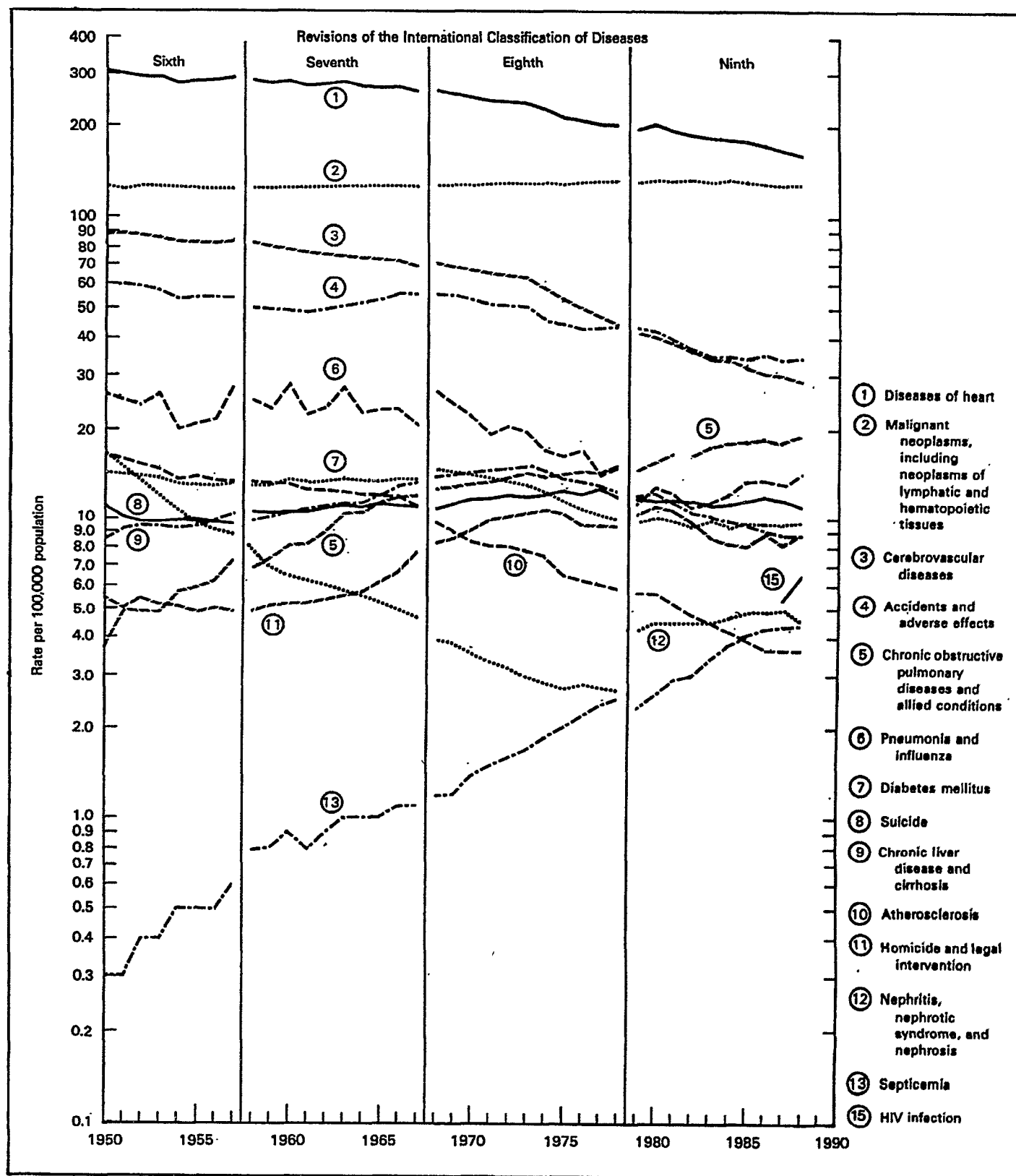


Figure 4. Age-adjusted death rates for 14 of the 15 leading causes of death: United States, 1950-88



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 1988 (469.7 infant deaths per 100,000 live births) and the 1987 rate (479.4) was not statistically significant.

### HIV infection

Beginning with mortality data for 1987, a new classification was introduced for Human immunodeficiency virus infection (HIV infection) (see Technical notes). On the basis of the Current Mortality Sample the estimated total number of deaths due to HIV infection during 1988 was 16,210 with a range of 15,450 to 16,970

(approximate 95-percent confidence interval). This number is more than 20 percent higher than the estimated deaths due to HIV infection in 1987, which was 13,130 with a range of 12,450 to 13,820. Of the approximately 16,210 HIV infection deaths in 1988, 61 percent were for white males, 26 percent for black males, and 5 to 6 percent each for 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.

Between 1987 and 1988 the age-adjusted death rate for HIV infection increased from 5.3 deaths per 100,000 population in 1987 to 6.5. It increased for each race-sex group, with the largest percent increase for white females,

followed by black females, black males, and white males. The estimated numbers of deaths and death rates for HIV infection are shown in table 10 of this report.

### Infant mortality

The infant mortality rate for 1988 was 9.9 per 1,000 live births compared with the rate of 10.0 for 1987. This is the lowest U.S. rate ever recorded (figure 5). For 1988 the estimated infant mortality rate for infants under 28 days was 6.4 deaths per 1,000 live births; for infants 28 days–11 months the rate was 3.5 deaths per 1,000 live births. Between 1987 and 1988 changes in mortality rates for all infants, infants under 28 days, and infants 28 days–11 months were not statistically significant. Individually, none of the causes of infant mortality changed significantly between 1987 and 1988.

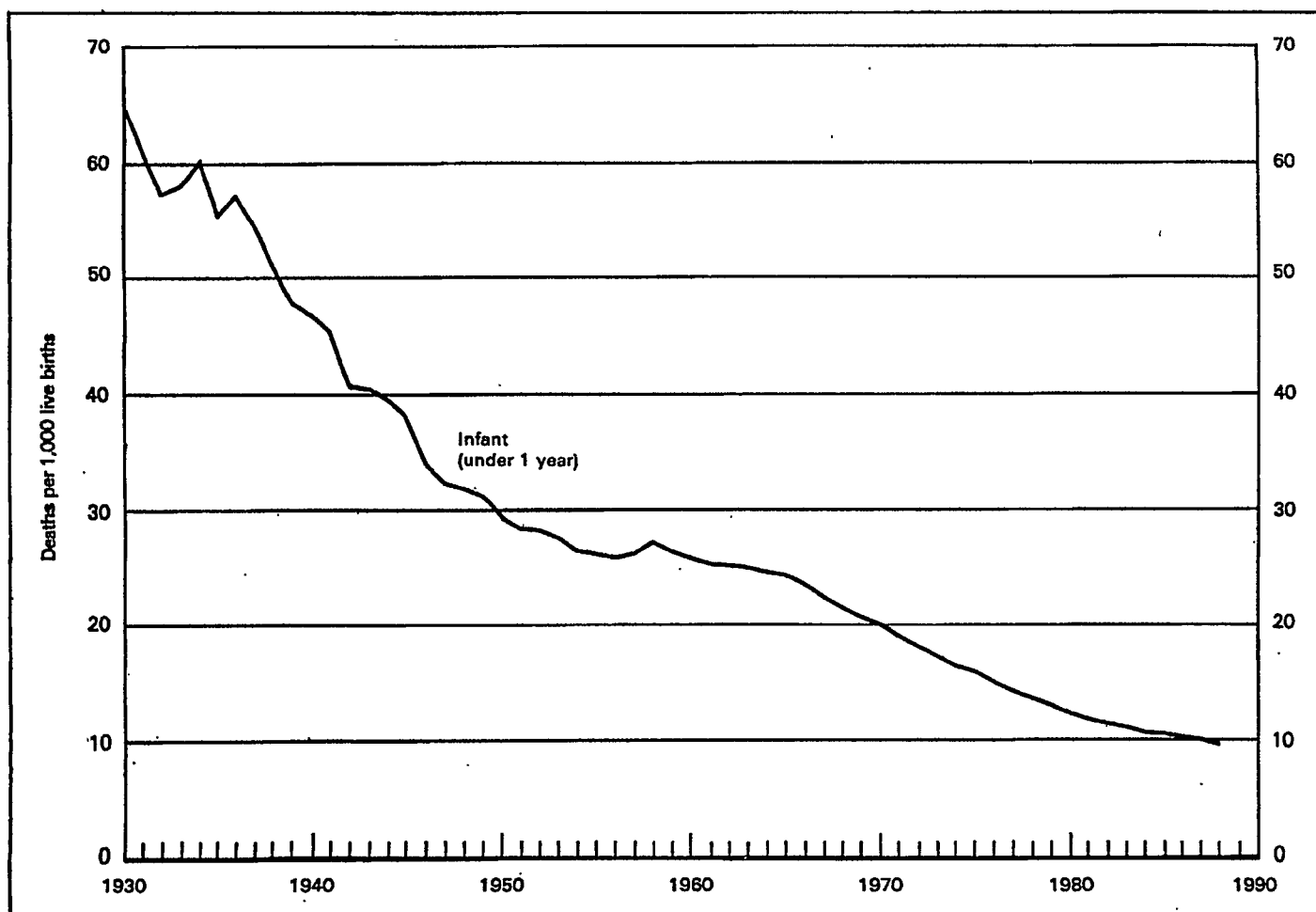


Figure 5. Infant mortality rates: United States, 1930–88

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Table 1. Live births and birth rates: Each reporting area, 1987 and 1988

[Provisional number of events reported; see Technical notes. By place of occurrence. Rates per 1,000 population in specified area]

| Area                 | Live births |      |         |      |
|----------------------|-------------|------|---------|------|
|                      | 1988        |      | 1987    |      |
|                      | Number      | Rate | Number  | Rate |
| New England          | 195,022     | 15.0 | 187,816 | 14.6 |
| Maine                | 15,961      | 13.2 | 16,155  | 13.6 |
| New Hampshire        | 17,186      | 15.8 | 16,435  | 15.5 |
| Vermont              | 8,538       | 15.3 | 7,226   | 13.2 |
| Massachusetts        | 91,988      | 15.6 | 86,934  | 14.8 |
| Rhode Island         | 14,481      | 14.6 | 14,519  | 14.7 |
| Connecticut          | 46,868      | 14.5 | 46,547  | 14.5 |
| Middle Atlantic      | 558,553     | 14.8 | 548,021 | 14.6 |
| New York             | 277,291     | 15.5 | 270,390 | 15.2 |
| New Jersey           | 114,118     | 14.8 | 111,344 | 14.5 |
| Pennsylvania         | 167,144     | 13.9 | 166,287 | 13.9 |
| East North Central   | 637,327     | 15.1 | 618,999 | 14.8 |
| Ohio                 | 165,258     | 15.2 | 156,900 | 14.5 |
| Indiana              | 81,421      | 14.7 | 77,694  | 14.0 |
| Illinois             | 180,526     | 15.5 | 177,564 | 15.3 |
| Michigan             | 140,229     | 15.2 | 136,374 | 14.8 |
| Wisconsin            | 69,893      | 14.4 | 70,467  | 14.7 |
| West North Central   | 265,917     | 15.0 | 262,637 | 14.9 |
| Minnesota            | 66,579      | 15.5 | 64,068  | 15.1 |
| Iowa                 | 38,506      | 13.6 | 38,736  | 13.7 |
| Missouri             | 75,844      | 14.8 | 75,950  | 14.9 |
| North Dakota         | 11,433      | 17.1 | 11,545  | 17.2 |
| South Dakota         | 11,297      | 15.8 | 11,514  | 16.2 |
| Nebraska             | 24,363      | 15.2 | 23,657  | 14.8 |
| Kansas               | 37,895      | 15.2 | 37,167  | 15.0 |
| South Atlantic       | 655,130     | 15.4 | 629,371 | 15.1 |
| Delaware             | 10,915      | 16.5 | 10,032  | 15.6 |
| Maryland             | 68,412      | 14.8 | 64,692  | 14.3 |
| District of Columbia | 19,290      | 31.3 | 20,406  | 32.8 |
| Virginia             | 90,498      | 15.0 | 87,002  | 14.7 |
| West Virginia        | 22,585      | 12.0 | 23,572  | 12.4 |
| North Carolina       | 98,183      | 15.1 | 93,405  | 14.6 |
| South Carolina       | 53,285      | 15.4 | 50,693  | 14.8 |
| Georgia              | 107,108     | 16.9 | 104,881 | 16.9 |
| Florida              | 184,854     | 15.0 | 174,688 | 14.5 |
| East South Central   | 230,975     | 15.1 | 222,131 | 14.5 |
| Kentucky             | 51,109      | 13.7 | 51,075  | 13.7 |
| Tennessee            | 79,140      | 16.2 | 71,343  | 14.7 |
| Alabama              | 59,611      | 14.5 | 59,207  | 14.5 |
| Mississippi          | 41,115      | 15.7 | 40,506  | 15.4 |
| West South Central   | 463,380     | 17.2 | 462,452 | 17.2 |
| Arkansas             | 34,554      | 14.4 | 33,375  | 14.0 |
| Louisiana            | 75,170      | 17.1 | 75,313  | 16.9 |
| Oklahoma             | 46,874      | 14.5 | 45,535  | 13.9 |
| Texas                | 306,782     | 18.2 | 308,229 | 18.4 |
| Mountain             | 235,526     | 17.7 | 235,177 | 17.9 |
| Montana              | 11,356      | 14.1 | 11,976  | 14.8 |
| Idaho                | 15,564      | 15.5 | 15,956  | 16.0 |
| Wyoming              | 6,697       | 14.0 | 7,107   | 14.5 |
| Colorado             | 53,014      | 16.1 | 54,314  | 16.5 |
| New Mexico           | 27,438      | 18.2 | 30,169  | 20.1 |
| Arizona              | 65,608      | 18.8 | 63,449  | 18.7 |
| Utah                 | 37,260      | 22.0 | 35,927  | 21.4 |
| Nevada               | 18,589      | 17.6 | 16,279  | 16.2 |
| Pacific              | 653,886     | 17.5 | 637,640 | 17.5 |
| Washington           | 68,242      | 14.7 | 73,836  | 16.3 |
| Oregon               | 41,305      | 14.9 | 39,708  | 14.6 |
| California           | 514,247     | 18.2 | 494,053 | 17.9 |
| Alaska               | 11,037      | 21.1 | 11,441  | 21.8 |
| Hawaii               | 19,055      | 17.4 | 18,602  | 17.2 |

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 reporting area, 1987 and 1988

[Provisional number of events reported; see Technical notes. Divorces include reported annulments. By place of occurrence. Rates per 1,000 population in specified area]

| Area                                      | Marriages <sup>1</sup> |       |         |       | Divorces |      |         |      |
|-------------------------------------------|------------------------|-------|---------|-------|----------|------|---------|------|
|                                           | 1988                   |       | 1987    |       | 1988     |      | 1987    |      |
|                                           | Number                 | Rate  | Number  | Rate  | Number   | Rate | Number  | Rate |
| New England . . . . .                     | 116,059                | 9.0   | 119,193 | 9.3   | 44,558   | 3.4  | 43,960  | 3.4  |
| Maine . . . . .                           | 12,487                 | 10.4  | 11,879  | 10.0  | 5,763    | 4.8  | 5,811   | 4.9  |
| New Hampshire . . . . .                   | 11,270                 | 10.4  | 10,506  | 9.9   | 4,755    | 4.4  | 4,844   | 4.6  |
| Vermont . . . . .                         | 6,486                  | 11.6  | 5,668   | 10.3  | 2,748    | 4.9  | 2,201   | 4.0  |
| Massachusetts . . . . .                   | 49,981                 | 8.5   | 55,925  | 9.6   | 17,244   | 2.9  | 17,755  | 3.0  |
| Rhode Island . . . . .                    | 8,379                  | 8.4   | 8,026   | 8.1   | 3,785    | 3.8  | 3,681   | 3.7  |
| Connecticut . . . . .                     | 27,456                 | 8.5   | 27,189  | 8.5   | 10,263   | 3.2  | 9,668   | 3.0  |
| Middle Atlantic . . . . .                 | 314,638                | 8.4   | 317,164 | 8.5   | 130,828  | 3.5  | 134,678 | 3.6  |
| New York . . . . .                        | 165,421                | 9.2   | 169,184 | 9.5   | 64,571   | 3.6  | 68,965  | 3.9  |
| New Jersey . . . . .                      | 61,052                 | 7.9   | 60,129  | 7.8   | 26,897   | 3.5  | 27,222  | 3.5  |
| Pennsylvania . . . . .                    | 88,165                 | 7.3   | 87,851  | 7.4   | 39,360   | 3.3  | 38,491  | 3.2  |
| East North Central <sup>2</sup> . . . . . | 343,963                | 8.2   | 352,585 | 8.4   | 153,086  | 4.2  | 152,356 | 4.2  |
| Ohio . . . . .                            | 97,334                 | 9.0   | 95,647  | 8.9   | 49,778   | 4.6  | 48,162  | 4.5  |
| Indiana . . . . .                         | 51,874                 | 9.3   | 48,451  | 8.8   | ---      | ---  | ---     | ---  |
| Illinois . . . . .                        | 79,100                 | 6.8   | 95,598  | 8.3   | 46,443   | 4.0  | 46,681  | 4.0  |
| Michigan . . . . .                        | 74,150                 | 8.0   | 75,159  | 8.2   | 39,887   | 4.3  | 40,493  | 4.4  |
| Wisconsin . . . . .                       | 41,505                 | 8.5   | 37,730  | 7.8   | 16,978   | 3.5  | 17,020  | 3.5  |
| West North Central . . . . .              | 155,858                | 8.8   | 149,838 | 8.5   | 77,487   | 4.4  | 72,063  | 4.1  |
| Minnesota . . . . .                       | 33,481                 | 7.8   | 32,765  | 7.7   | 14,945   | 3.5  | 14,865  | 3.5  |
| Iowa . . . . .                            | 25,006                 | 8.8   | 23,100  | 8.2   | 10,761   | 3.8  | 10,791  | 3.8  |
| Missouri . . . . .                        | 49,867                 | 9.7   | 48,167  | 9.4   | 24,864   | 4.8  | 24,289  | 4.8  |
| North Dakota . . . . .                    | 4,923                  | 7.4   | 5,025   | 7.5   | 2,371    | 3.6  | 2,249   | 3.3  |
| South Dakota . . . . .                    | 7,262                  | 10.2  | 6,983   | 9.8   | 2,657    | 3.7  | 2,692   | 3.8  |
| Nebraska . . . . .                        | 12,349                 | 7.7   | 11,749  | 7.4   | 6,379    | 4.0  | 6,317   | 4.0  |
| Kansas . . . . .                          | 22,970                 | 9.2   | 22,049  | 8.9   | 15,510   | 6.2  | 10,880  | 4.4  |
| South Atlantic . . . . .                  | 454,498                | 10.7  | 443,768 | 10.6  | 218,983  | 5.2  | 216,454 | 5.2  |
| Delaware . . . . .                        | 5,616                  | 8.5   | 5,209   | 8.1   | 2,972    | 4.5  | 2,910   | 4.5  |
| Maryland . . . . .                        | 44,064                 | 9.5   | 45,436  | 10.0  | 16,439   | 3.6  | 15,932  | 3.5  |
| District of Columbia . . . . .            | 4,947                  | 8.0   | 5,146   | 8.3   | 3,610    | 5.9  | 4,150   | 6.7  |
| Virginia . . . . .                        | 69,022                 | 11.5  | 67,073  | 11.4  | 26,065   | 4.3  | 25,568  | 4.3  |
| West Virginia . . . . .                   | 14,400                 | 7.7   | 13,451  | 7.1   | 9,149    | 4.9  | 9,071   | 4.8  |
| North Carolina . . . . .                  | 51,664                 | 8.0   | 50,506  | 7.9   | 32,367   | 5.0  | 31,630  | 4.9  |
| South Carolina . . . . .                  | 54,339                 | 15.7  | 53,489  | 15.6  | 14,637   | 4.2  | 13,961  | 4.1  |
| Georgia . . . . .                         | 73,330                 | 11.6  | 65,284  | 10.5  | 35,709   | 5.6  | 33,546  | 5.4  |
| Florida . . . . .                         | 137,116                | 11.1  | 138,174 | 11.5  | 78,035   | 6.3  | 79,686  | 6.6  |
| East South Central . . . . .              | 188,658                | 12.3  | 173,024 | 11.3  | 88,086   | 5.7  | 87,975  | 5.8  |
| Kentucky . . . . .                        | 49,910                 | 13.4  | 47,583  | 12.8  | 20,456   | 5.5  | 19,933  | 5.3  |
| Tennessee . . . . .                       | 69,354                 | 14.2  | 57,530  | 11.8  | 31,990   | 6.5  | 31,012  | 6.4  |
| Alabama . . . . .                         | 44,546                 | 10.9  | 44,045  | 10.8  | 23,411   | 5.7  | 24,658  | 6.0  |
| Mississippi . . . . .                     | 24,848                 | 9.5   | 23,866  | 9.1   | 12,229   | 4.7  | 12,372  | 4.7  |
| West South Central <sup>3</sup> . . . . . | 276,138                | 10.3  | 289,459 | 10.8  | 134,464  | 6.0  | 133,432 | 5.9  |
| Arkansas . . . . .                        | 34,820                 | 14.5  | 32,198  | 13.5  | 16,675   | 7.0  | 16,197  | 6.8  |
| Louisiana . . . . .                       | 33,870                 | 7.7   | 36,764  | 8.2   | ---      | ---  | ---     | ---  |
| Oklahoma . . . . .                        | 32,923                 | 10.2  | 31,823  | 9.7   | 23,048   | 7.1  | 23,919  | 7.3  |
| Texas . . . . .                           | 174,525                | 10.4  | 188,674 | 11.2  | 94,741   | 5.6  | 93,316  | 5.6  |
| Mountain . . . . .                        | 240,308                | 18.0  | 242,467 | 18.6  | 87,751   | 6.6  | 88,912  | 6.6  |
| Montana . . . . .                         | 6,765                  | 8.4   | 6,518   | 8.1   | 4,074    | 5.1  | 4,135   | 5.1  |
| Idaho . . . . .                           | 11,213                 | 11.2  | 13,080  | 13.1  | 6,058    | 6.0  | 5,873   | 5.9  |
| Wyoming . . . . .                         | 4,696                  | 9.8   | 4,600   | 9.4   | 3,307    | 6.9  | 3,209   | 6.5  |
| Colorado . . . . .                        | 31,536                 | 9.6   | 31,388  | 9.5   | 18,792   | 5.7  | 18,558  | 5.6  |
| New Mexico . . . . .                      | 13,025                 | 8.6   | 13,518  | 9.0   | 7,943    | 5.3  | 8,608   | 5.7  |
| Arizona . . . . .                         | 35,737                 | 10.2  | 39,415  | 12.4  | 24,940   | 7.1  | 23,808  | 7.0  |
| Utah . . . . .                            | 16,611                 | 9.8   | 16,294  | 9.7   | 7,824    | 4.6  | 8,879   | 5.3  |
| Nevada . . . . .                          | 120,725                | 114.5 | 117,654 | 116.8 | 14,813   | 14.1 | 13,842  | 13.7 |
| Pacific . . . . .                         | 319,810                | 8.6   | 333,182 | 9.1   | 186,112  | 5.0  | 173,830 | 4.8  |
| Washington . . . . .                      | 44,042                 | 9.5   | 43,460  | 9.6   | 26,436   | 5.7  | 26,045  | 5.7  |
| Oregon . . . . .                          | 22,581                 | 8.2   | 23,325  | 8.6   | 14,891   | 5.4  | 15,694  | 5.8  |
| California . . . . .                      | 229,983                | 8.1   | 244,440 | 8.8   | 136,076  | 4.8  | 124,090 | 4.5  |
| Alaska . . . . .                          | 5,803                  | 11.1  | 5,509   | 10.5  | 3,633    | 6.9  | 3,530   | 6.7  |
| Hawaii . . . . .                          | 17,401                 | 15.8  | 16,448  | 15.2  | 5,076    | 4.6  | 4,471   | 4.1  |

<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 reporting area, 1987 and 1988

[Provisional number of events reported; see Technical notes. By place of occurrence. Rates per 1,000 population in specified area]

| Area                           | Deaths (all ages) |      |         |      | Infant deaths (under 1 year) |       |
|--------------------------------|-------------------|------|---------|------|------------------------------|-------|
|                                | 1988              |      | 1987    |      | Number                       |       |
|                                | Number            | Rate | Number  | Rate | 1988                         | 1987  |
| New England . . . . .          | 121,658           | 9.4  | 118,594 | 9.2  | 1,526                        | 1,426 |
| Maine . . . . .                | 11,331            | 9.4  | 11,434  | 9.6  | 126                          | 103   |
| New Hampshire . . . . .        | 8,658             | 8.0  | 8,226   | 7.8  | 111                          | 119   |
| Vermont . . . . .              | 5,267             | 9.5  | 4,518   | 8.2  | 65                           | 66    |
| Massachusetts . . . . .        | 57,715            | 9.8  | 56,273  | 9.6  | 721                          | 678   |
| Rhode Island . . . . .         | 9,930             | 10.0 | 9,886   | 10.0 | 126                          | 121   |
| Connecticut . . . . .          | 28,757            | 8.9  | 28,257  | 8.8  | 377                          | 339   |
| Middle Atlantic . . . . .      | 373,228           | 9.9  | 367,861 | 9.8  | 5,739                        | 5,597 |
| New York . . . . .             | 174,299           | 9.7  | 172,380 | 9.7  | 2,901                        | 2,898 |
| New Jersey . . . . .           | 71,773            | 9.3  | 69,712  | 9.1  | 1,027                        | 893   |
| Pennsylvania . . . . .         | 127,156           | 10.6 | 125,769 | 10.5 | 1,811                        | 1,806 |
| East North Central . . . . .   | 374,467           | 8.9  | 366,920 | 8.8  | 6,428                        | 6,322 |
| Ohio . . . . .                 | 100,625           | 9.3  | 97,774  | 9.1  | 1,613                        | 1,455 |
| Indiana . . . . .              | 50,396            | 9.1  | 48,925  | 8.8  | 847                          | 768   |
| Illinois . . . . .             | 101,165           | 8.7  | 99,002  | 8.5  | 1,954                        | 2,003 |
| Michigan . . . . .             | 78,882            | 8.5  | 78,871  | 8.6  | 1,486                        | 1,477 |
| Wisconsin . . . . .            | 43,399            | 8.9  | 42,348  | 8.8  | 528                          | 619   |
| West North Central . . . . .   | 167,896           | 9.5  | 165,615 | 9.4  | 2,463                        | 2,564 |
| Minnesota . . . . .            | 35,246            | 8.2  | 34,644  | 8.2  | 521                          | 555   |
| Iowa . . . . .                 | 27,753            | 9.8  | 26,985  | 9.5  | 309                          | 307   |
| Missouri . . . . .             | 54,495            | 10.6 | 54,574  | 10.7 | 908                          | 934   |
| North Dakota . . . . .         | 6,055             | 9.1  | 5,827   | 8.7  | 126                          | 102   |
| South Dakota . . . . .         | 6,564             | 9.2  | 6,683   | 9.4  | 97                           | 116   |
| Nebraska . . . . .             | 15,123            | 9.4  | 15,207  | 9.5  | 215                          | 234   |
| Kansas . . . . .               | 22,660            | 9.1  | 21,695  | 8.8  | 287                          | 316   |
| South Atlantic . . . . .       | 390,957           | 9.2  | 378,595 | 9.1  | 7,366                        | 7,061 |
| Delaware . . . . .             | 5,866             | 8.9  | 5,675   | 8.8  | 115                          | 91    |
| Maryland . . . . .             | 37,789            | 8.2  | 37,233  | 8.2  | 636                          | 631   |
| District of Columbia . . . . . | 8,972             | 14.5 | 8,602   | 13.8 | 440                          | 415   |
| Virginia . . . . .             | 46,984            | 7.8  | 46,015  | 7.8  | 907                          | 850   |
| West Virginia . . . . .        | 19,649            | 10.5 | 19,978  | 10.5 | 214                          | 215   |
| North Carolina . . . . .       | 58,164            | 9.0  | 55,396  | 8.6  | 1,248                        | 1,064 |
| South Carolina . . . . .       | 28,348            | 8.2  | 27,705  | 8.1  | 600                          | 653   |
| Georgia . . . . .              | 52,815            | 8.3  | 49,872  | 8.0  | 1,265                        | 1,275 |
| Florida . . . . .              | 132,370           | 10.7 | 128,119 | 10.7 | 1,941                        | 1,867 |
| East South Central . . . . .   | 149,298           | 9.7  | 143,384 | 9.4  | 2,668                        | 2,557 |
| Kentucky . . . . .             | 35,557            | 9.5  | 33,959  | 9.1  | 552                          | 410   |
| Tennessee . . . . .            | 50,720            | 10.4 | 48,370  | 10.0 | 885                          | 887   |
| Alabama . . . . .              | 39,016            | 9.5  | 37,188  | 9.1  | 753                          | 749   |
| Mississippi . . . . .          | 24,005            | 9.2  | 23,867  | 9.1  | 478                          | 511   |
| West South Central . . . . .   | 217,606           | 8.1  | 209,856 | 7.8  | 4,421                        | 4,443 |
| Arkansas . . . . .             | 25,278            | 10.6 | 23,464  | 9.8  | 360                          | 286   |
| Louisiana . . . . .            | 38,640            | 8.8  | 36,516  | 8.2  | 883                          | 883   |
| Oklahoma . . . . .             | 29,174            | 9.0  | 27,972  | 8.5  | 427                          | 447   |
| Texas . . . . .                | 124,514           | 7.4  | 121,904 | 7.3  | 2,751                        | 2,827 |
| Mountain . . . . .             | 96,664            | 7.3  | 93,736  | 7.1  | 2,138                        | 2,076 |
| Montana . . . . .              | 6,736             | 8.4  | 6,524   | 8.1  | 74                           | 90    |
| Idaho . . . . .                | 7,391             | 7.4  | 6,992   | 7.0  | 117                          | 125   |
| Wyoming . . . . .              | 3,042             | 6.4  | 2,878   | 5.9  | 42                           | 39    |
| Colorado . . . . .             | 21,712            | 6.6  | 21,487  | 6.5  | 539                          | 557   |
| New Mexico . . . . .           | 10,476            | 7.0  | 10,437  | 7.0  | 242                          | 207   |
| Arizona . . . . .              | 28,446            | 8.2  | 27,522  | 8.1  | 638                          | 558   |
| Utah . . . . .                 | 9,695             | 5.7  | 9,339   | 5.6  | 337                          | 352   |
| Nevada . . . . .               | 9,166             | 8.7  | 8,557   | 8.5  | 149                          | 148   |
| Pacific . . . . .              | 277,784           | 7.4  | 282,066 | 7.7  | 5,905                        | 5,876 |
| Washington . . . . .           | 36,372            | 7.8  | 34,992  | 7.7  | 681                          | 669   |
| Oregon . . . . .               | 24,868            | 9.0  | 24,130  | 8.9  | 383                          | 387   |
| California . . . . .           | 208,161           | 7.4  | 214,486 | 7.8  | 4,576                        | 4,528 |
| Alaska . . . . .               | 2,059             | 3.9  | 2,075   | 4.0  | 122                          | 110   |
| Hawaii . . . . .               | 6,324             | 5.8  | 6,383   | 5.9  | 143                          | 182   |

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, 1988

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. 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  |           |           | White      |            |          | All other |          |            |          |          |          |
|-------------------------------------|------------|-----------|-----------|------------|------------|----------|-----------|----------|------------|----------|----------|----------|
|                                     | Both sexes |           | Female    | Both sexes |            | Female   | Total     |          |            | Black    |          |          |
|                                     | Both sexes | Male      |           | Male       | Both sexes |          | Male      | Female   | Both sexes | Male     | Female   |          |
| Number                              |            |           |           |            |            |          |           |          |            |          |          |          |
| All ages . . . . .                  | 2,171,000  | 1,130,540 | 1,040,070 | 1,887,080  | 973,620    | 913,460  | 283,530   | 156,920  | 126,610    | 257,900  | 141,590  | 116,310  |
| Under 1 year. . . . .               | 38,700     | 22,180    | 16,500    | 25,510     | 15,000     | 10,510   | 13,170    | 7,180    | 5,990      | 12,040   | 6,590    | 5,450    |
| 1-4 years . . . . .                 | 7,400      | 4,200     | 3,200     | 5,600      | 3,120      | 2,480    | 1,800     | 1,080    | 720        | 1,480    | 930      | 530      |
| 5-14 years . . . . .                | 9,080      | 5,420     | 3,660     | 6,650      | 4,140      | 2,510    | 2,430     | 1,280    | 1,150      | 2,090    | 1,070    | 1,020    |
| 15-24 years . . . . .               | 39,180     | 29,100    | 10,080    | 30,190     | 22,350     | 7,840    | 8,990     | 6,750    | 2,240      | 7,870    | 5,810    | 2,060    |
| 25-34 years . . . . .               | 58,350     | 42,820    | 15,530    | 42,320     | 31,360     | 10,960   | 16,030    | 11,460   | 4,570      | 14,670   | 10,520   | 4,150    |
| 35-44 years . . . . .               | 76,730     | 51,530    | 25,200    | 56,980     | 38,360     | 18,620   | 19,750    | 13,170   | 6,580      | 18,170   | 12,220   | 5,950    |
| 45-54 years . . . . .               | 117,520    | 74,790    | 42,730    | 91,990     | 58,680     | 33,310   | 25,530    | 16,110   | 9,420      | 23,240   | 14,820   | 8,420    |
| 55-59 years . . . . .               | 104,840    | 64,960    | 39,880    | 86,360     | 54,290     | 32,070   | 18,480    | 10,670   | 7,810      | 16,810   | 9,720    | 7,090    |
| 60-64 years . . . . .               | 167,260    | 102,200   | 65,060    | 142,290    | 87,240     | 55,050   | 24,970    | 14,960   | 10,010     | 22,970   | 13,690   | 9,280    |
| 65-69 years . . . . .               | 221,270    | 132,400   | 88,870    | 191,490    | 115,750    | 75,740   | 29,780    | 16,650   | 13,130     | 27,330   | 15,110   | 12,220   |
| 70-74 years . . . . .               | 267,520    | 152,240   | 115,280   | 236,980    | 136,000    | 100,980  | 30,540    | 16,240   | 14,300     | 28,130   | 14,770   | 13,360   |
| 75-79 years . . . . .               | 304,550    | 160,590   | 143,960   | 272,440    | 143,940    | 128,500  | 32,110    | 16,650   | 15,460     | 29,340   | 14,940   | 14,400   |
| 80-84 years . . . . .               | 297,670    | 134,930   | 162,740   | 271,650    | 122,860    | 148,790  | 26,020    | 12,070   | 13,950     | 23,350   | 10,520   | 12,830   |
| 85 years and over . . . . .         | 459,230    | 152,420   | 306,810   | 425,640    | 139,920    | 285,720  | 33,590    | 12,500   | 21,090     | 30,110   | 10,740   | 19,370   |
| Not stated . . . . .                | 1,330      | 760       | 570       | 990        | 610        | 380      | 340       | 150      | 190        | 320      | 140      | 180      |
| Rate                                |            |           |           |            |            |          |           |          |            |          |          |          |
| All ages <sup>1</sup> . . . . .     | 883.0      | 944.2     | 825.0     | 910.0      | 960.3      | 861.8    | 737.8     | 855.2    | 630.5      | 853.9    | 988.4    | 732.6    |
| Under 1 year <sup>2</sup> . . . . . | 1,001.9    | 1,121.5   | 876.3     | 818.4      | 937.5      | 692.8    | 1,771.2   | 1,901.9  | 1,636.6    | 2,030.4  | 2,196.7  | 1,860.1  |
| 1-4 years . . . . .                 | 50.7       | 56.2      | 44.9      | 47.6       | 51.7       | 43.3     | 63.5      | 75.1     | 51.6       | 66.1     | 82.8     | 48.8     |
| 5-14 years . . . . .                | 26.2       | 30.5      | 21.7      | 23.9       | 29.0       | 18.5     | 35.7      | 37.0     | 34.3       | 38.7     | 39.1     | 38.4     |
| 15-24 years . . . . .               | 104.8      | 154.0     | 54.5      | 98.8       | 144.4      | 52.0     | 131.2     | 197.4    | 65.2       | 143.3    | 214.2    | 74.1     |
| 25-34 years . . . . .               | 133.6      | 196.0     | 71.2      | 115.6      | 169.6      | 60.5     | 227.2     | 341.0    | 123.6      | 266.5    | 404.9    | 142.8    |
| 35-44 years . . . . .               | 217.6      | 296.2     | 141.0     | 188.7      | 254.7      | 123.0    | 389.8     | 564.8    | 240.6      | 476.9    | 703.9    | 286.9    |
| 45-54 years . . . . .               | 486.4      | 636.5     | 344.3     | 441.4      | 573.0      | 314.2    | 768.5     | 1,066.2  | 520.2      | 908.9    | 1,294.3  | 596.3    |
| 55-59 years . . . . .               | 962.1      | 1,250.4   | 699.5     | 909.6      | 1,190.0    | 650.2    | 1,318.1   | 1,685.6  | 1,015.6    | 1,507.6  | 1,917.2  | 1,166.1  |
| 60-64 years . . . . .               | 1,529.7    | 2,005.5   | 1,114.6   | 1,473.4    | 1,928.0    | 1,072.7  | 1,956.9   | 2,620.0  | 1,419.9    | 2,243.2  | 2,963.2  | 1,651.2  |
| 65-69 years . . . . .               | 2,214.2    | 2,913.7   | 1,631.2   | 2,154.5    | 2,851.7    | 1,568.4  | 2,697.5   | 3,433.0  | 2,121.2    | 3,057.0  | 3,864.5  | 2,429.4  |
| 70-74 years . . . . .               | 3,384.6    | 4,477.6   | 2,559.5   | 3,336.3    | 4,437.2    | 2,500.7  | 3,812.7   | 4,847.8  | 3,068.7    | 4,314.4  | 5,490.7  | 3,488.3  |
| 75-79 years . . . . .               | 5,125.2    | 6,913.0   | 4,021.2   | 5,123.0    | 6,883.8    | 3,982.0  | 5,488.9   | 7,176.7  | 4,379.6    | 6,163.9  | 8,163.9  | 4,914.7  |
| 80-84 years . . . . .               | 8,229.2    | 10,691.8  | 6,907.5   | 8,204.5    | 10,692.8   | 6,882.1  | 8,475.6   | 10,681.4 | 7,190.7    | 9,340.0  | 11,820.2 | 7,968.9  |
| 85 years and over . . . . .         | 15,577.7   | 18,475.2  | 14,451.7  | 15,888.0   | 18,933.7   | 14,727.8 | 12,487.0  | 14,534.9 | 11,524.6   | 13,206.1 | 15,342.9 | 12,259.5 |

<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 1980-88

[Data for 1987 and 1988 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. For method of computation, information on standard errors of the estimates, and further discussion, see Technical notes]

| Race, sex,<br>and year       | All<br>ages <sup>1</sup> | Under<br>1 year <sup>2</sup> | 1-4<br>years | 5-14<br>years | 15-24<br>years | 25-34<br>years | 35-44<br>years | 45-54<br>years | 55-64<br>years | 65-74<br>years | 75-84<br>years | 85 years<br>and over | Age-<br>adjusted<br>rate <sup>3</sup> |
|------------------------------|--------------------------|------------------------------|--------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------------|---------------------------------------|
| <b>All races, both sexes</b> |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 883.0                    | 1,001.9                      | 50.7         | 26.2          | 104.8          | 133.6          | 217.6          | 486.4          | 1,246.3        | 2,731.2        | 6,324.4        | 15,577.7             | 536.3                                 |
| 1987 . . . . .               | 874.0                    | 1,006.5                      | 51.6         | 25.6          | 101.6          | 131.4          | 211.8          | 498.9          | 1,246.8        | 2,763.6        | 6,266.1        | 15,405.7             | 536.2                                 |
| 1986 <sup>4</sup> . . . . .  | 873.2                    | 1,032.1                      | 52.0         | 26.0          | 102.3          | 132.1          | 212.9          | 504.8          | 1,255.1        | 2,801.4        | 6,348.2        | 15,398.9             | 541.7                                 |
| 1985 <sup>4</sup> . . . . .  | 873.9                    | 1,067.8                      | 51.4         | 26.3          | 95.9           | 123.4          | 207.2          | 516.3          | 1,282.7        | 2,838.6        | 6,445.1        | 15,480.3             | 546.1                                 |
| 1984 <sup>4</sup> . . . . .  | 862.3                    | 1,085.6                      | 51.9         | 26.7          | 96.8           | 121.1          | 204.8          | 521.1          | 1,287.8        | 2,848.1        | 6,399.3        | 15,223.6             | 545.9                                 |
| 1983 <sup>4</sup> . . . . .  | 862.8                    | 1,107.3                      | 55.9         | 26.9          | 96.0           | 121.4          | 201.9          | 535.7          | 1,299.5        | 2,874.3        | 6,441.5        | 15,168.0             | 550.5                                 |
| 1982 <sup>4</sup> . . . . .  | 852.0                    | 1,164.2                      | 57.6         | 28.3          | 101.0          | 125.2          | 207.4          | 549.7          | 1,297.9        | 2,885.2        | 6,329.8        | 15,048.3             | 553.8                                 |
| 1981 <sup>4</sup> . . . . .  | 862.4                    | 1,207.3                      | 60.2         | 29.4          | 107.1          | 132.1          | 221.3          | 573.5          | 1,322.1        | 2,922.3        | 6,429.9        | 15,379.7             | 568.2                                 |
| 1980 <sup>4</sup> . . . . .  | 876.3                    | 1,288.3                      | 63.9         | 30.6          | 115.4          | 135.5          | 227.9          | 584.0          | 1,346.3        | 2,994.9        | 6,692.6        | 15,980.3             | 585.8                                 |
| 1970 <sup>4</sup> . . . . .  | 945.3                    | 2,142.4                      | 84.5         | 41.3          | 127.7          | 157.4          | 314.5          | 730.0          | 1,658.8        | 3,582.7        | 8,004.4        | 16,344.9             | 714.3                                 |
| 1960 <sup>4</sup> . . . . .  | 954.7                    | 2,696.4                      | 109.1        | 46.6          | 106.3          | 146.4          | 299.4          | 756.0          | 1,735.1        | 3,822.1        | 8,745.2        | 19,857.5             | 760.9                                 |
| <b>All races, male</b>       |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 944.2                    | 1,121.5                      | 56.2         | 30.5          | 154.0          | 196.0          | 296.2          | 636.5          | 1,624.2        | 3,583.2        | 8,243.2        | 18,475.2             | 699.8                                 |
| 1987 . . . . .               | 935.1                    | 1,122.7                      | 58.4         | 31.8          | 150.5          | 189.1          | 290.4          | 638.0          | 1,625.8        | 3,635.7        | 8,206.1        | 18,037.2             | 698.6                                 |
| 1986 <sup>4</sup> . . . . .  | 940.7                    | 1,152.7                      | 57.9         | 31.7          | 151.4          | 192.7          | 288.1          | 653.1          | 1,648.2        | 3,701.4        | 8,353.0        | 18,187.4             | 709.1                                 |
| 1985 <sup>4</sup> . . . . .  | 945.0                    | 1,197.0                      | 58.1         | 31.6          | 141.1          | 178.0          | 278.3          | 669.0          | 1,692.6        | 3,787.7        | 8,504.2        | 18,325.1             | 716.8                                 |
| 1984 <sup>4</sup> . . . . .  | 935.9                    | 1,198.2                      | 57.0         | 32.1          | 141.6          | 173.9          | 270.2          | 676.6          | 1,705.2        | 3,813.0        | 8,445.9        | 18,119.1             | 716.7                                 |
| 1983 <sup>4</sup> . . . . .  | 942.6                    | 1,223.7                      | 63.3         | 32.5          | 140.4          | 174.6          | 265.8          | 694.5          | 1,725.6        | 3,885.4        | 8,539.1        | 17,977.4             | 725.3                                 |
| 1982 <sup>4</sup> . . . . .  | 938.0                    | 1,291.5                      | 63.3         | 34.1          | 149.2          | 180.6          | 272.6          | 720.4          | 1,736.1        | 3,929.2        | 8,391.4        | 17,782.0             | 733.1                                 |
| 1981 <sup>4</sup> . . . . .  | 954.5                    | 1,331.8                      | 67.3         | 35.7          | 158.3          | 190.6          | 291.9          | 751.7          | 1,774.7        | 3,994.6        | 8,519.6        | 18,138.2             | 753.3                                 |
| 1980 <sup>4</sup> . . . . .  | 976.9                    | 1,428.5                      | 72.6         | 36.7          | 172.3          | 196.1          | 299.2          | 767.3          | 1,815.1        | 4,105.2        | 8,816.7        | 18,801.1             | 777.2                                 |
| 1970 <sup>4</sup> . . . . .  | 1,090.3                  | 2,410.0                      | 93.2         | 50.5          | 188.5          | 215.3          | 402.6          | 958.5          | 2,282.7        | 4,873.8        | 10,010.2       | 17,821.5             | 931.6                                 |
| 1960 <sup>4</sup> . . . . .  | 1,104.5                  | 3,059.3                      | 119.5        | 55.7          | 152.1          | 187.9          | 372.8          | 992.2          | 2,309.5        | 4,914.4        | 10,178.4       | 21,186.3             | 949.3                                 |
| <b>All races, female</b>     |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 825.0                    | 876.3                        | 44.9         | 21.7          | 54.5           | 71.2           | 141.0          | 344.3          | 909.4          | 2,051.4        | 5,166.6        | 14,451.7             | 403.5                                 |
| 1987 . . . . .               | 815.9                    | 883.8                        | 44.4         | 19.1          | 51.7           | 73.6           | 135.4          | 367.3          | 909.6          | 2,070.4        | 5,102.4        | 14,376.5             | 404.5                                 |
| 1986 <sup>4</sup> . . . . .  | 809.3                    | 905.8                        | 45.8         | 19.9          | 52.3           | 71.6           | 139.8          | 364.8          | 906.1          | 2,090.8        | 5,151.9        | 14,297.5             | 406.6                                 |
| 1985 <sup>4</sup> . . . . .  | 806.6                    | 932.4                        | 44.5         | 20.8          | 49.9           | 68.9           | 138.3          | 372.5          | 919.0          | 2,094.7        | 5,219.9        | 14,343.2             | 409.4                                 |
| 1984 <sup>4</sup> . . . . .  | 792.7                    | 967.5                        | 46.5         | 21.1          | 51.1           | 68.5           | 141.5          | 374.6          | 918.4          | 2,096.4        | 5,188.2        | 14,053.9             | 409.7                                 |
| 1983 <sup>4</sup> . . . . .  | 787.4                    | 985.4                        | 48.3         | 21.0          | 50.7           | 68.9           | 140.2          | 386.0          | 923.8          | 2,092.3        | 5,200.0        | 14,010.6             | 411.5                                 |
| 1982 <sup>4</sup> . . . . .  | 770.7                    | 1,030.8                      | 51.6         | 22.3          | 51.6           | 70.4           | 144.4          | 389.9          | 913.9          | 2,084.7        | 5,120.7        | 13,895.2             | 411.2                                 |
| 1981 <sup>4</sup> . . . . .  | 775.4                    | 1,076.7                      | 52.8         | 22.8          | 54.8           | 74.3           | 153.2          | 406.9          | 925.2          | 2,100.6        | 5,201.0        | 14,202.5             | 420.4                                 |
| 1980 <sup>4</sup> . . . . .  | 785.3                    | 1,141.7                      | 54.7         | 24.2          | 57.5           | 75.9           | 159.3          | 412.9          | 934.3          | 2,144.7        | 5,440.1        | 14,746.9             | 432.6                                 |
| 1970 <sup>4</sup> . . . . .  | 807.8                    | 1,863.7                      | 75.4         | 31.8          | 68.1           | 101.6          | 231.1          | 517.2          | 1,098.9        | 2,579.7        | 6,677.6        | 15,518.0             | 532.5                                 |
| 1960 <sup>4</sup> . . . . .  | 809.2                    | 2,321.3                      | 98.4         | 37.3          | 61.3           | 106.6          | 229.4          | 526.7          | 1,196.4        | 2,871.8        | 7,633.1        | 19,008.4             | 590.6                                 |
| <b>White, both sexes</b>     |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 910.0                    | 818.4                        | 47.6         | 23.9          | 98.8           | 115.6          | 188.7          | 441.4          | 1,193.9        | 2,679.4        | 6,305.2        | 15,888.0             | 513.4                                 |
| 1987 . . . . .               | 900.2                    | 836.9                        | 49.1         | 24.2          | 98.3           | 116.0          | 183.2          | 454.2          | 1,187.9        | 2,711.3        | 6,243.7        | 15,698.5             | 514.0                                 |
| 1986 <sup>4</sup> . . . . .  | 896.2                    | 870.7                        | 46.6         | 24.4          | 98.8           | 115.1          | 184.6          | 458.7          | 1,193.8        | 2,741.2        | 6,312.6        | 15,639.1             | 518.0                                 |
| 1985 <sup>4</sup> . . . . .  | 897.1                    | 916.3                        | 46.2         | 24.8          | 92.9           | 108.4          | 181.0          | 471.5          | 1,218.7        | 2,772.8        | 6,406.8        | 15,757.0             | 523.1                                 |
| 1984 <sup>4</sup> . . . . .  | 885.2                    | 931.8                        | 46.9         | 25.4          | 94.7           | 107.2          | 179.1          | 477.1          | 1,223.7        | 2,784.6        | 6,367.2        | 15,508.3             | 523.6                                 |
| 1983 <sup>4</sup> . . . . .  | 884.6                    | 948.1                        | 50.8         | 25.6          | 93.2           | 107.6          | 177.8          | 490.8          | 1,233.0        | 2,808.0        | 6,415.6        | 15,477.4             | 528.0                                 |
| 1982 <sup>4</sup> . . . . .  | 872.9                    | 1,018.5                      | 52.8         | 27.0          | 98.3           | 110.2          | 182.7          | 504.0          | 1,233.3        | 2,822.3        | 6,329.3        | 15,296.9             | 531.8                                 |
| 1981 <sup>4</sup> . . . . .  | 880.3                    | 1,062.0                      | 54.3         | 28.0          | 104.6          | 116.2          | 192.5          | 524.9          | 1,255.7        | 2,855.9        | 6,423.4        | 15,628.0             | 544.6                                 |
| 1980 <sup>4</sup> . . . . .  | 892.5                    | 1,099.9                      | 57.9         | 29.1          | 112.0          | 118.4          | 197.2          | 531.6          | 1,276.7        | 2,921.1        | 6,664.9        | 16,220.0             | 559.4                                 |
| 1970 <sup>4</sup> . . . . .  | 946.3                    | 1,869.7                      | 75.1         | 39.1          | 115.8          | 129.9          | 267.0          | 666.2          | 1,577.1        | 3,490.1        | 8,043.3        | 16,889.7             | 679.6                                 |
| 1960 <sup>4</sup> . . . . .  | 947.8                    | 2,357.7                      | 95.2         | 43.9          | 99.1           | 123.6          | 260.4          | 692.3          | 1,632.8        | 3,739.8        | 8,827.2        | 20,354.5             | 727.0                                 |
| <b>White, male</b>           |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 960.3                    | 937.5                        | 51.7         | 29.0          | 144.4          | 169.6          | 254.7          | 573.0          | 1,557.4        | 3,533.8        | 8,234.6        | 18,933.7             | 670.5                                 |
| 1987 . . . . .               | 951.6                    | 938.7                        | 54.2         | 30.1          | 145.3          | 166.7          | 251.1          | 577.7          | 1,554.7        | 3,585.7        | 8,200.1        | 18,456.4             | 671.0                                 |
| 1986 <sup>4</sup> . . . . .  | 954.4                    | 976.6                        | 52.2         | 29.9          | 145.9          | 168.8          | 248.4          | 592.2          | 1,573.1        | 3,634.8        | 8,341.7        | 18,576.1             | 679.8                                 |
| 1985 <sup>4</sup> . . . . .  | 960.0                    | 1,038.9                      | 52.4         | 29.9          | 136.3          | 157.1          | 241.4          | 608.8          | 1,614.3        | 3,716.8        | 8,500.4        | 18,788.9             | 688.7                                 |
| 1984 <sup>4</sup> . . . . .  | 951.1                    | 1,038.4                      | 51.8         | 30.5          | 138.8          | 154.3          | 235.1          | 617.9          | 1,625.5        | 3,745.3        | 8,459.1        | 18,552.7             | 689.9                                 |
| 1983 <sup>4</sup> . . . . .  | 957.4                    | 1,052.9                      | 57.3         | 31.1          | 137.0          | 154.8          | 232.9          | 636.5          | 1,642.9        | 3,816.1        | 8,556.9        | 18,443.3             | 698.4                                 |
| 1982 <sup>4</sup> . . . . .  | 951.8                    | 1,135.5                      | 58.2         | 32.5          | 145.6          | 158.7          | 238.6          | 659.9          | 1,654.6        | 3,859.8        | 8,444.7        | 18,123.1             | 706.0                                 |
| 1981 <sup>4</sup> . . . . .  | 965.1                    | 1,182.0                      | 60.5         | 34.2          | 154.5          | 167.3          | 252.4          | 686.5          | 1,692.0        | 3,926.9        | 8,565.2        | 18,454.0             | 724.4                                 |
| 1980 <sup>4</sup> . . . . .  | 983.3                    | 1,230.3                      | 66.1         | 35.0          | 167.0          | 171.3          | 257.4          | 698.9          | 1,728.5        | 4,035.7        | 8,829.8        | 19,097.3             | 745.3                                 |
| 1970 <sup>4</sup> . . . . .  | 1,086.7                  | 2,113.2                      | 83.6         | 48.0          | 170.8          | 176.6          | 343.5          | 882.9          | 2,202.6        | 4,810.1        | 10,098.8       | 18,551.7             | 893.4                                 |
| 1960 <sup>4</sup> . . . . .  | 1,098.5                  | 2,694.1                      | 104.9        | 52.7          | 143.7          | 163.2          | 332.6          | 932.2          | 2,225.2        | 4,848.4        | 10,299.6       | 21,750.0             | 917.7                                 |

See footnotes at end of table.

**Table 5. Death rates by age, race, and sex and age-adjusted death rates by race and sex: United States, 1960, 1970, and 1980-88—Con.**

[Data for 1987 and 1988 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. For method of computation, information on standard errors of the estimates, and further discussion, see Technical notes]

| Race, sex,<br>and year       | All<br>ages <sup>1</sup> | Under<br>1 year <sup>2</sup> | 1-4<br>years | 5-14<br>years | 15-24<br>years | 25-34<br>years | 35-44<br>years | 45-54<br>years | 55-64<br>years | 65-74<br>years | 75-84<br>years | 85 years<br>and over | Age-<br>adjusted<br>rate <sup>3</sup> |
|------------------------------|--------------------------|------------------------------|--------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------------|---------------------------------------|
| <b>White, female</b>         |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 861.8                    | 692.8                        | 43.3         | 18.5          | 52.0           | 60.5           | 123.0          | 314.2          | 865.7          | 1,993.0        | 5,145.3        | 14,727.8             | 385.8                                 |
| 1987 . . . . .               | 851.0                    | 729.7                        | 43.7         | 18.1          | 50.0           | 64.2           | 115.7          | 335.0          | 857.8          | 2,012.4        | 5,075.9        | 14,641.8             | 386.9                                 |
| 1986 . . . . .               | 840.7                    | 759.1                        | 40.7         | 18.6          | 50.4           | 60.4           | 121.3          | 330.3          | 853.3          | 2,031.8        | 5,108.7        | 14,502.9             | 387.7                                 |
| 1985 . . . . .               | 837.1                    | 786.9                        | 39.7         | 19.4          | 48.4           | 58.9           | 121.2          | 339.5          | 864.1          | 2,028.3        | 5,171.4        | 14,579.4             | 390.6                                 |
| 1984 . . . . .               | 822.3                    | 818.5                        | 41.6         | 20.0          | 49.6           | 59.5           | 123.9          | 341.9          | 864.9          | 2,032.5        | 5,140.0        | 14,319.6             | 391.3                                 |
| 1983 . . . . .               | 815.3                    | 837.6                        | 43.9         | 19.7          | 48.3           | 60.1           | 123.4          | 351.0          | 867.8          | 2,024.7        | 5,162.2        | 14,278.3             | 392.7                                 |
| 1982 . . . . .               | 797.9                    | 895.2                        | 47.0         | 21.2          | 49.5           | 61.3           | 127.7          | 355.1          | 859.8          | 2,022.9        | 5,100.7        | 14,123.9             | 393.3                                 |
| 1981 . . . . .               | 799.6                    | 935.4                        | 47.7         | 21.6          | 53.2           | 64.7           | 133.6          | 370.9          | 869.4          | 2,032.8        | 5,176.3        | 14,438.2             | 401.4                                 |
| 1980 . . . . .               | 806.1                    | 962.5                        | 49.3         | 22.9          | 55.5           | 65.4           | 138.2          | 372.7          | 876.2          | 2,066.6        | 5,401.7        | 14,979.6             | 411.1                                 |
| 1970 . . . . .               | 812.6                    | 1,614.6                      | 66.1         | 22.9          | 61.6           | 84.1           | 193.3          | 462.9          | 1,014.9        | 2,470.7        | 6,698.7        | 15,980.2             | 501.7                                 |
| 1960 . . . . .               | 800.9                    | 2,007.7                      | 85.2         | 34.7          | 54.9           | 85.0           | 191.1          | 458.8          | 1,078.9        | 2,779.3        | 7,696.6        | 19,477.7             | 555.0                                 |
| <b>All other, both sexes</b> |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 737.8                    | 1,771.2                      | 63.5         | 35.7          | 131.2          | 227.2          | 389.8          | 768.5          | 1,622.1        | 3,167.5        | 6,516.8        | 12,487.0             | 673.8                                 |
| 1987 . . . . .               | 730.6                    | 1,728.0                      | 62.2         | 31.4          | 116.6          | 212.6          | 386.6          | 778.7          | 1,680.6        | 3,211.9        | 6,493.0        | 12,431.9             | 674.4                                 |
| 1986 . . . . .               | 745.6                    | 1,719.2                      | 75.0         | 32.5          | 118.9          | 223.4          | 387.9          | 796.1          | 1,719.2        | 3,321.2        | 6,708.3        | 12,917.6             | 693.1                                 |
| 1985 . . . . .               | 743.3                    | 1,720.8                      | 73.8         | 32.8          | 110.3          | 204.5          | 372.4          | 805.2          | 1,781.2        | 3,412.8        | 6,827.6        | 12,516.1             | 697.8                                 |
| 1984 . . . . .               | 731.5                    | 1,755.4                      | 73.6         | 32.4          | 106.7          | 197.3          | 369.1          | 811.2          | 1,797.7        | 3,408.2        | 6,721.9        | 11,996.5             | 694.5                                 |
| 1983 . . . . .               | 736.6                    | 1,802.0                      | 78.5         | 32.7          | 109.4          | 198.6          | 357.6          | 838.7          | 1,841.1        | 3,464.5        | 6,695.1        | 11,796.8             | 703.1                                 |
| 1982 . . . . .               | 728.9                    | 1,745.5                      | 78.4         | 34.3          | 114.4          | 210.3          | 367.1          | 868.2          | 1,840.0        | 3,458.5        | 6,343.4        | 12,159.6             | 704.6                                 |
| 1981 . . . . .               | 755.0                    | 1,786.5                      | 87.3         | 35.6          | 120.0          | 226.2          | 408.2          | 921.0          | 1,890.8        | 3,531.9        | 6,478.6        | 12,547.9             | 732.6                                 |
| 1980 . . . . .               | 791.7                    | 2,148.5                      | 91.4         | 37.4          | 133.6          | 239.1          | 428.9          | 967.7          | 1,954.9        | 3,671.0        | 6,984.3        | 13,227.1             | 774.2                                 |
| 1970 . . . . .               | 938.4                    | 3,597.1                      | 134.1        | 53.7          | 203.6          | 348.7          | 664.3          | 1,290.9        | 2,431.1        | 4,488.4        | 7,511.2        | 10,750.3             | 983.4                                 |
| 1960 . . . . .               | 1,008.5                  | 4,626.4                      | 190.8        | 64.3          | 158.2          | 318.6          | 633.4          | 1,342.9        | 2,774.6        | 4,784.9        | 7,631.1        | 13,907.6             | 1,046.1                               |
| <b>All other, male</b>       |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 855.2                    | 1,901.9                      | 75.1         | 37.0          | 197.4          | 341.0          | 564.8          | 1,066.2        | 2,128.7        | 4,012.2        | 8,324.6        | 14,534.9             | 885.2                                 |
| 1987 . . . . .               | 843.0                    | 1,920.1                      | 76.5         | 39.1          | 174.3          | 314.2          | 550.4          | 1,044.5        | 2,178.1        | 4,077.9        | 8,262.7        | 14,385.5             | 878.5                                 |
| 1986 . . . . .               | 862.7                    | 1,911.8                      | 82.3         | 39.6          | 177.4          | 329.0          | 554.0          | 1,069.2        | 2,245.8        | 4,295.7        | 8,459.3        | 14,757.5             | 905.7                                 |
| 1985 . . . . .               | 858.6                    | 1,888.0                      | 82.8         | 38.7          | 164.2          | 298.5          | 529.9          | 1,087.4        | 2,335.6        | 4,424.9        | 8,540.1        | 14,376.6             | 910.4                                 |
| 1984 . . . . .               | 846.4                    | 1,905.2                      | 79.5         | 39.0          | 155.7          | 289.1          | 513.2          | 1,095.0        | 2,370.5        | 4,426.4        | 8,320.3        | 14,128.4             | 904.4                                 |
| 1983 . . . . .               | 854.9                    | 1,976.3                      | 89.5         | 38.7          | 157.2          | 292.9          | 495.5          | 1,117.4        | 2,431.9        | 4,521.8        | 8,398.0        | 13,478.4             | 916.3                                 |
| 1982 . . . . .               | 854.8                    | 1,921.1                      | 85.7         | 41.2          | 167.8          | 313.0          | 509.5          | 1,176.7        | 2,457.7        | 4,571.7        | 7,918.1        | 14,386.4             | 928.4                                 |
| 1981 . . . . .               | 889.4                    | 1,934.3                      | 98.8         | 43.0          | 178.5          | 338.8          | 567.5          | 1,255.7        | 2,522.6        | 4,626.0        | 8,056.0        | 14,685.9             | 984.3                                 |
| 1980 . . . . .               | 936.5                    | 2,350.2                      | 103.0        | 44.9          | 201.6          | 357.8          | 594.2          | 1,309.1        | 2,606.3        | 4,747.2        | 8,688.5        | 15,774.9             | 1,015.1                               |
| 1970 . . . . .               | 1,115.9                  | 4,020.0                      | 144.7        | 65.0          | 304.6          | 504.1          | 873.5          | 1,646.1        | 3,046.6        | 5,474.4        | 8,981.0        | 11,405.2             | 1,231.4                               |
| 1960 . . . . .               | 1,152.0                  | 5,189.4                      | 207.3        | 75.2          | 213.8          | 386.4          | 729.2          | 1,551.0        | 3,151.5        | 5,664.0        | 8,662.6        | 15,238.7             | 1,211.0                               |
| <b>All other, female</b>     |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 630.5                    | 1,636.6                      | 51.6         | 34.3          | 65.2           | 123.6          | 240.6          | 520.2          | 1,208.3        | 2,529.0        | 5,376.6        | 11,524.6             | 505.4                                 |
| 1987 . . . . .               | 627.8                    | 1,531.1                      | 47.5         | 23.5          | 59.2           | 120.4          | 247.1          | 556.0          | 1,274.3        | 2,555.5        | 5,368.1        | 11,500.0             | 511.6                                 |
| 1986 . . . . .               | 638.8                    | 1,521.8                      | 67.5         | 25.2          | 60.9           | 128.0          | 246.6          | 568.9          | 1,287.7        | 2,589.7        | 5,591.5        | 12,025.5             | 524.0                                 |
| 1985 . . . . .               | 638.1                    | 1,550.3                      | 64.6         | 26.7          | 57.1           | 120.0          | 238.7          | 570.7          | 1,329.3        | 2,659.2        | 5,741.9        | 11,688.6             | 530.0                                 |
| 1984 . . . . .               | 627.0                    | 1,603.0                      | 67.4         | 25.7          | 58.4           | 115.3          | 246.3          | 575.9          | 1,328.8        | 2,648.8        | 5,691.1        | 11,104.7             | 529.0                                 |
| 1983 . . . . .               | 629.2                    | 1,618.9                      | 67.2         | 26.5          | 62.4           | 115.1          | 240.8          | 607.5          | 1,359.4        | 2,682.6        | 5,607.8        | 10,944.5             | 535.2                                 |
| 1982 . . . . .               | 614.5                    | 1,560.7                      | 71.0         | 27.3          | 61.7           | 119.1          | 245.4          | 615.7          | 1,346.8        | 2,637.3        | 5,329.5        | 11,130.5             | 529.3                                 |
| 1981 . . . . .               | 633.0                    | 1,634.5                      | 75.6         | 28.2          | 62.8           | 127.3          | 272.4          | 646.1          | 1,383.1        | 2,715.2        | 5,463.9        | 11,371.7             | 549.4                                 |
| 1980 . . . . .               | 660.6                    | 1,944.1                      | 79.5         | 29.8          | 68.0           | 135.7          | 288.3          | 687.8          | 1,423.1        | 2,856.2        | 5,863.3        | 11,922.3             | 582.6                                 |
| 1970 . . . . .               | 775.3                    | 3,169.4                      | 123.3        | 42.3          | 108.8          | 215.7          | 490.5          | 979.4          | 1,886.9        | 3,675.6        | 6,392.6        | 10,288.9             | 770.8                                 |
| 1960 . . . . .               | 872.6                    | 4,067.1                      | 174.4        | 53.4          | 106.1          | 260.0          | 547.3          | 1,144.9        | 2,409.7        | 3,981.4        | 6,708.4        | 12,871.2             | 893.3                                 |
| <b>Black, both sexes</b>     |                          |                              |              |               |                |                |                |                |                |                |                |                      |                                       |
| 1988 . . . . .               | 853.9                    | 2,030.4                      | 66.1         | 38.7          | 143.3          | 266.5          | 476.9          | 908.9          | 1,859.7        | 3,587.3        | 7,257.6        | 13,206.1             | 769.9                                 |
| 1987 . . . . .               | 843.6                    | 2,001.7                      | 68.1         | 35.7          | 128.6          | 248.7          | 467.2          | 913.3          | 1,922.3        | 3,609.4        | 7,209.9        | 12,868.8             | 787.1                                 |
| 1986 . . . . .               | 854.2                    | 1,955.3                      | 83.8         | 34.5          | 126.5          | 259.1          | 465.8          | 928.6          | 1,955.6        | 3,697.9        | 7,338.4        | 13,515.2             | 781.0                                 |
| 1985 . . . . .               | 845.7                    | 1,951.1                      | 80.0         | 34.8          | 115.9          | 235.4          | 443.7          | 935.7          | 2,007.5        | 3,759.0        | 7,407.4        | 13,076.0             | 779.9                                 |
| 1984 . . . . .               | 828.5                    | 1,964.1                      | 78.8         | 35.2          | 111.9          | 226.7          | 435.9          | 932.4          | 2,016.0        | 3,740.0        | 7,254.4        | 12,468.9             | 771.9                                 |
| 1983 . . . . .               | 830.5                    | 2,032.9                      | 85.3         | 34.5          | 114.4          | 226.1          | 417.2          | 956.6          | 2,059.7        | 3,773.6        | 7,215.8        | 12,320.9             | 777.9                                 |
| 1982 . . . . .               | 819.2                    | 1,963.2                      | 84.9         | 36.9          | 118.7          | 240.4          | 429.9          | 987.3          | 2,053.9        | 3,769.2        | 6,773.3        | 12,792.4             | 778.7                                 |
| 1981 . . . . .               | 841.7                    | 1,992.7                      | 93.6         | 37.7          | 124.3          | 255.9          | 470.5          | 1,041.1        | 2,094.4        | 3,816.3        | 6,904.8        | 13,073.7             | 803.9                                 |
| 1980 . . . . .               | 875.4                    | 2,356.6                      | 97.6         | 39.0          | 138.3          | 269.5          | 489.9          | 1,087.6        | 2,146.6        | 3,932.9        | 7,382.6        | 13,610.8             | 842.5                                 |
| 1970 . . . . .               | 999.3                    | 3,835.6                      | 140.0        | 55.5          | 212.4          | 381.2          | 724.9          | 1,383.8        | 2,570.6        | 4,719.4        | 7,860.7        | 11,300.5             | 1,044.0                               |
| 1960 . . . . .               | 1,038.6                  | 4,740.9                      | 190.9        | 64.5          | 157.9          | 333.0          | 659.0          | 1,391.7        | 2,899.1        | 4,880.2        | 7,594.9        | 13,828.4             | 1,073.3                               |

See footnotes at end of table.



**Table 5. Death rates by age, race, and sex and age-adjusted death rates by race and sex: United States, 1960, 1970, and 1980-88—Con.**

[Data for 1987 and 1988 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. For method of computation, information on standard errors of the estimates, and further discussion, see Technical notes]

| <i>Race, sex,<br/>and year</i> | <i>All<br/>ages<sup>1</sup></i> | <i>Under<br/>1 year<sup>2</sup></i> | <i>1-4<br/>years</i> | <i>5-14<br/>years</i> | <i>15-24<br/>years</i> | <i>25-34<br/>years</i> | <i>35-44<br/>years</i> | <i>45-54<br/>years</i> | <i>55-64<br/>years</i> | <i>65-74<br/>years</i> | <i>75-84<br/>years</i> | <i>85 years<br/>and over</i> | <i>Age-<br/>adjusted<br/>rate<sup>3</sup></i> |
|--------------------------------|---------------------------------|-------------------------------------|----------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------------|-----------------------------------------------|
| <b>Black, male</b>             |                                 |                                     |                      |                       |                        |                        |                        |                        |                        |                        |                        |                              |                                               |
| 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 . . . . .                 | 973.1                           | 2,218.0                             | 85.1                 | 45.6                  | 194.9                  | 370.3                  | 673.5                  | 1,244.4                | 2,473.5                | 4,592.0                | 9,238.8                | 14,956.5                     | 1,005.4                                       |
| 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                           | 2,136.8                             | 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                                       |
| <b>Black, female</b>           |                                 |                                     |                      |                       |                        |                        |                        |                        |                        |                        |                        |                              |                                               |
| 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 . . . . .                 | 726.7                           | 1,780.9                             | 50.5                 | 25.6                  | 64.0                   | 140.1                  | 295.0                  | 644.4                  | 1,465.6                | 2,879.4                | 5,979.6                | 11,921.1                     | 579.9                                         |
| 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, 1988

[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 | Number living at beginning of age interval | Number dying during age interval | In the age interval   | In this and all subsequent age intervals | Average number of years of life remaining at beginning of age interval |
| (1)                   | (2)                                                                            | (3)                                        | (4)                              | (5)                   | (6)                                      | (7)                                                                    |
| x to x+n              | $nq_x$                                                                         | $l_x$                                      | $n d_x$                          | $n L_x$               | $T_x$                                    | $e_x$                                                                  |
| 0-1 . . . . .         | 0.0102                                                                         | 100,000                                    | 1,019                            | 99,123                | 7,490,568                                | 74.9                                                                   |
| 1-5 . . . . .         | 0.0020                                                                         | 98,981                                     | 198                              | 395,460               | 7,391,445                                | 74.7                                                                   |
| 5-10 . . . . .        | 0.0012                                                                         | 98,783                                     | 119                              | 493,591               | 6,995,985                                | 70.8                                                                   |
| 10-15 . . . . .       | 0.0014                                                                         | 98,664                                     | 139                              | 493,050               | 6,502,394                                | 65.9                                                                   |
| 15-20 . . . . .       | 0.0044                                                                         | 98,525                                     | 438                              | 491,632               | 6,009,344                                | 61.0                                                                   |
| 20-25 . . . . .       | 0.0060                                                                         | 98,087                                     | 585                              | 489,002               | 5,517,712                                | 56.3                                                                   |
| 25-30 . . . . .       | 0.0062                                                                         | 97,502                                     | 601                              | 488,006               | 5,028,710                                | 51.6                                                                   |
| 30-35 . . . . .       | 0.0072                                                                         | 96,901                                     | 694                              | 482,811               | 4,542,704                                | 46.9                                                                   |
| 35-40 . . . . .       | 0.0094                                                                         | 96,207                                     | 906                              | 478,898               | 4,059,893                                | 42.2                                                                   |
| 40-45 . . . . .       | 0.0126                                                                         | 95,301                                     | 1,204                            | 473,710               | 3,580,995                                | 37.6                                                                   |
| 45-50 . . . . .       | 0.0188                                                                         | 94,097                                     | 1,770                            | 466,384               | 3,107,285                                | 33.0                                                                   |
| 50-55 . . . . .       | 0.0301                                                                         | 92,327                                     | 2,777                            | 455,129               | 2,640,901                                | 28.6                                                                   |
| 55-60 . . . . .       | 0.0471                                                                         | 89,550                                     | 4,219                            | 437,809               | 2,185,772                                | 24.4                                                                   |
| 60-65 . . . . .       | 0.0740                                                                         | 85,331                                     | 6,316                            | 411,720               | 1,747,963                                | 20.5                                                                   |
| 65-70 . . . . .       | 0.1054                                                                         | 79,015                                     | 8,328                            | 375,154               | 1,336,243                                | 16.9                                                                   |
| 70-75 . . . . .       | 0.1571                                                                         | 70,687                                     | 11,106                           | 326,636               | 961,089                                  | 13.6                                                                   |
| 75-80 . . . . .       | 0.2302                                                                         | 59,581                                     | 13,716                           | 264,451               | 634,453                                  | 10.6                                                                   |
| 80-85 . . . . .       | 0.3431                                                                         | 45,865                                     | 15,735                           | 190,200               | 370,002                                  | 8.1                                                                    |
| 85 and over . . . . . | 1.0000                                                                         | 30,130                                     | 30,130                           | 179,802               | 179,802                                  | 6.0                                                                    |

**Table 7. Average length of life in years by race and sex: United States, 1950, 1960, 1970, 1975-88**

[Data for 1987 and 1988 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         |      |        | All other     |      |        |               |      |        |
|-------------------|---------------|------|--------|---------------|------|--------|---------------|------|--------|---------------|------|--------|
|                   |               |      |        |               |      |        | Total         |      |        | Black         |      |        |
|                   | Both<br>sexes | Male | Female | Both<br>sexes | Male | Female | Both<br>sexes | Male | Female | Both<br>sexes | Male | Female |
| 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              | 74.9          | 71.5 | 78.3   | 75.5          | 72.1 | 78.8   | 71.6          | 67.6 | 75.4   | 69.7          | 65.4 | 73.8   |
| 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, 1987 and 1988**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. 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 . . . . .                                                                             | 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                          |
|                                                                                                  | 1987 | 874.0                 | 1,006.5                   | 33.4       | 101.6       | 131.4       | 211.8       | 498.9       | 1,246.8     | 2,763.6     | 6,266.1     | 15,405.7          | 536.2                          |
| Diseases of heart . . . . .390-398,402,404-429                                                   | 1988 | 312.2                 | 23.6                      | 1.4        | 2.8         | 7.3         | 33.0        | 131.4       | 405.6       | 985.6       | 2,554.4     | 7,119.1           | 166.7                          |
|                                                                                                  | 1987 | 313.4                 | 23.9                      | 1.3        | 2.9         | 7.5         | 34.4        | 140.7       | 408.9       | 1,019.5     | 2,556.3     | 7,122.1           | 169.9                          |
| Rheumatic fever and rheumatic heart disease . . . . .390-398                                     | 1988 | 2.7                   | -                         | 0.1        | 0.2         | 0.3         | 0.5         | 1.7         | 5.0         | 10.4        | 19.3        | 29.9              | 1.7                            |
|                                                                                                  | 1987 | 2.5                   | -                         | 0.0        | 0.2         | 0.3         | 0.6         | 2.3         | 4.7         | 10.9        | 17.7        | 20.6              | 1.7                            |
| Hypertensive heart disease . . . . .402                                                          | 1988 | 8.3                   | -                         | -          | 0.1         | 0.3         | 1.1         | 5.0         | 14.0        | 26.5        | 64.4        | 155.0             | 4.8                            |
|                                                                                                  | 1987 | 8.3                   | -                         | -          | 0.1         | 0.2         | 1.8         | 4.8         | 14.8        | 28.0        | 64.6        | 145.1             | 4.9                            |
| Hypertensive heart and renal disease . . . . .404                                                | 1988 | 1.0                   | -                         | -          | -           | 0.0         | 0.1         | 0.5         | 1.3         | 2.2         | 10.6        | 23.1              | 0.5                            |
|                                                                                                  | 1987 | 1.1                   | -                         | -          | -           | 0.0         | 0.2         | 0.3         | 1.2         | 3.6         | 10.4        | 23.7              | 0.6                            |
| Ischemic heart disease . . . . .410-414                                                          | 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                          |
|                                                                                                  | 1987 | 211.0                 | 0.3                       | 0.1        | 0.5         | 2.3         | 20.1        | 91.8        | 278.2       | 701.5       | 1,763.9     | 4,700.0           | 114.0                          |
| Acute myocardial infarction . . . . .410                                                         | 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                           |
|                                                                                                  | 1987 | 104.0                 | 0.3                       | 0.1        | 0.4         | 1.3         | 12.2        | 57.6        | 163.7       | 397.0       | 873.6       | 1,649.5           | 60.9                           |
| Other acute and subacute forms of ischemic heart disease . . .411                                | 1988 | 1.4                   | -                         | -          | -           | 0.1         | 0.3         | 0.8         | 2.3         | 4.3         | 11.0        | 30.5              | 0.8                            |
|                                                                                                  | 1987 | 1.5                   | -                         | -          | -           | 0.1         | 0.3         | 1.1         | 2.4         | 6.3         | 8.9         | 22.0              | 0.9                            |
| Angina pectoris . . . . .413                                                                     | 1988 | 0.4                   | -                         | -          | -           | -           | 0.0         | -           | 0.5         | 1.9         | 3.3         | 10.5              | 0.2                            |
|                                                                                                  | 1987 | 0.5                   | -                         | -          | -           | 0.0         | -           | -           | 0.7         | 1.5         | 5.8         | 12.6              | 0.3                            |
| Old myocardial infarction and other forms of chronic ischemic heart disease . . . . .412,414     | 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                           |
|                                                                                                  | 1987 | 105.0                 | -                         | 0.0        | 0.2         | 0.8         | 7.6         | 33.2        | 111.4       | 296.6       | 875.6       | 3,016.0           | 51.9                           |
| Other diseases of endocardium . . . . .424                                                       | 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                            |
|                                                                                                  | 1987 | 4.6                   | 0.5                       | 0.1        | 0.0         | 0.3         | 0.8         | 1.8         | 4.6         | 13.7        | 38.8        | 111.6             | 2.4                            |
| All other forms of heart disease . . . . .415-423,425-429                                        | 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                           |
|                                                                                                  | 1987 | 85.8                  | 23.1                      | 1.1        | 2.1         | 4.4         | 10.9        | 39.7        | 105.4       | 261.9       | 660.9       | 2,120.7           | 46.4                           |
| Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208 | 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                          |
|                                                                                                  | 1987 | 196.1                 | 3.7                       | 3.7        | 5.1         | 12.5        | 44.4        | 164.5       | 448.5       | 845.8       | 1,282.8     | 1,631.7           | 133.1                          |
| Malignant neoplasms of lip, oral cavity, and pharynx . . . . .140-149                            | 1988 | 3.2                   | -                         | -          | 0.1         | 0.1         | 0.9         | 3.8         | 8.7         | 13.7        | 16.3        | 18.7              | 2.3                            |
|                                                                                                  | 1987 | 3.4                   | -                         | -          | 0.1         | 0.1         | 0.9         | 4.3         | 9.6         | 13.8        | 17.7        | 22.7              | 2.5                            |
| Malignant neoplasms of digestive organs and peritoneum . . .150-159                              | 1988 | 47.4                  | -                         | 0.1        | 0.3         | 1.4         | 7.0         | 29.7        | 95.9        | 197.7       | 356.9       | 537.0             | 29.7                           |
|                                                                                                  | 1987 | 47.7                  | 0.3                       | 0.1        | 0.2         | 1.6         | 7.7         | 33.2        | 98.6        | 202.6       | 351.4       | 517.3             | 30.5                           |
| Malignant neoplasms of respiratory and intrathoracic organs .160-165                             | 1988 | 57.3                  | -                         | -          | 0.1         | 0.5         | 8.3         | 50.4        | 165.9       | 282.7       | 330.0       | 243.2             | 40.6                           |
|                                                                                                  | 1987 | 54.8                  | -                         | 0.0        | 0.1         | 0.7         | 7.8         | 50.2        | 159.3       | 280.3       | 302.0       | 208.9             | 39.3                           |
| Malignant neoplasm of breast . . . . .174-175                                                    | 1988 | 17.5                  | -                         | -          | 0.0         | 1.1         | 9.4         | 22.5        | 44.2        | 62.2        | 96.4        | 126.9             | 12.7                           |
|                                                                                                  | 1987 | 17.0                  | -                         | -          | 0.0         | 1.8         | 8.8         | 24.0        | 42.7        | 60.6        | 85.5        | 136.7             | 12.6                           |
| Malignant neoplasms of genital organs . . . . .179-187                                           | 1988 | 21.8                  | -                         | -          | 0.4         | 1.3         | 3.6         | 10.0        | 34.5        | 90.6        | 182.0       | 277.1             | 13.0                           |
|                                                                                                  | 1987 | 21.1                  | -                         | -          | 0.4         | 1.6         | 3.5         | 11.5        | 31.9        | 86.9        | 178.2       | 267.2             | 12.8                           |
| Malignant neoplasms of urinary organs . . . . .188-189                                           | 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                            |
|                                                                                                  | 1987 | 8.2                   | -                         | 0.1        | 0.1         | 0.1         | 1.1         | 3.9         | 16.7        | 33.8        | 64.5        | 96.3              | 5.0                            |
| Malignant neoplasms of all other and unspecified sites . . . . .170-173,190-199                  | 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                           |
|                                                                                                  | 1987 | 25.3                  | 1.9                       | 1.7        | 1.7         | 3.6         | 8.7         | 23.6        | 57.5        | 97.5        | 149.9       | 211.7             | 17.8                           |
| Leukemia . . . . .204-208                                                                        | 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                            |
|                                                                                                  | 1987 | 7.4                   | 1.1                       | 1.5        | 1.3         | 1.3         | 2.6         | 4.7         | 11.2        | 24.7        | 54.1        | 78.1              | 5.0                            |
| Other malignant neoplasms of lymphatic and hematopoietic tissues . . . . .200-203                | 1988 | 11.5                  | -                         | 0.3        | 0.8         | 1.7         | 3.3         | 8.6         | 23.7        | 47.8        | 76.5        | 91.6              | 7.8                            |
|                                                                                                  | 1987 | 11.2                  | 0.5                       | 0.2        | 1.2         | 1.6         | 3.2         | 9.2         | 21.0        | 45.7        | 79.6        | 93.1              | 7.6                            |
| Cerebrovascular diseases . . . . .430-438                                                        | 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                           |
|                                                                                                  | 1987 | 61.3                  | 2.4                       | 0.2        | 0.9         | 2.2         | 6.6         | 20.8        | 51.8        | 153.4       | 563.0       | 1,734.2           | 30.1                           |
| Accidents and adverse effects . . . . .E800-E949                                                 | 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                           |
|                                                                                                  | 1987 | 39.0                  | 21.2                      | 14.5       | 50.2        | 37.7        | 30.0        | 31.6        | 35.4        | 50.3        | 102.5       | 258.5             | 34.6                           |
| Motor vehicle accidents . . . . .E810-E825                                                       | 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                           |
|                                                                                                  | 1987 | 20.1                  | 4.2                       | 7.2        | 38.4        | 23.8        | 16.8        | 16.6        | 16.6        | 19.0        | 30.6        | 24.8              | 19.7                           |
| All other accidents and adverse effects . . . . .E800-E807,E826-E949                             | 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                           |
|                                                                                                  | 1987 | 18.9                  | 17.0                      | 7.4        | 11.8        | 13.9        | 13.1        | 14.9        | 18.8        | 31.4        | 71.8        | 233.7             | 14.9                           |

|                                                                        |      |      |       |     |      |      |      |      |      |       |       |         |      |
|------------------------------------------------------------------------|------|------|-------|-----|------|------|------|------|------|-------|-------|---------|------|
| Chronic obstructive pulmonary diseases and allied conditions .490-496  | 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 |
|                                                                        | 1987 | 32.2 | 2.1   | 0.3 | 0.5  | 0.4  | 1.8  | 7.7  | 48.0 | 146.4 | 305.5 | 363.1   | 18.7 |
| Pneumonia and influenza . . . . .480-487                               | 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 |
|                                                                        | 1987 | 28.8 | 17.8  | 0.5 | 0.7  | 1.5  | 3.7  | 6.7  | 17.9 | 57.0  | 235.2 | 1,029.3 | 13.2 |
| Diabetes mellitus. . . . .250                                          | 1988 | 16.1 | -     | 0.1 | 0.4  | 1.7  | 3.7  | 9.3  | 26.4 | 62.3  | 127.8 | 203.9   | 9.9  |
|                                                                        | 1987 | 15.6 | -     | 0.1 | 0.4  | 1.2  | 3.3  | 9.5  | 27.1 | 60.4  | 121.6 | 207.2   | 9.6  |
| Suicide . . . . .E950-E959                                             | 1988 | 12.3 | ...   | 0.6 | 12.8 | 15.5 | 14.3 | 14.8 | 15.7 | 16.8  | 28.9  | 19.7    | 11.3 |
|                                                                        | 1987 | 12.7 | ...   | 0.4 | 12.8 | 14.8 | 14.9 | 15.5 | 17.8 | 19.9  | 29.2  | 22.0    | 11.7 |
| Chronic liver disease and cirrhosis. . . . .571                        | 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  |
|                                                                        | 1987 | 10.7 | 1.1   | 0.0 | 0.2  | 2.2  | 9.9  | 19.0 | 34.0 | 33.3  | 34.6  | 17.4    | 9.0  |
| Atherosclerosis. . . . .440                                            | 1988 | 9.6  | -     | -   | -    | 0.0  | 0.1  | 0.9  | 3.8  | 16.2  | 74.1  | 428.8   | 3.7  |
|                                                                        | 1987 | 9.5  | -     | -   | -    | 0.1  | 0.1  | 0.9  | 3.9  | 15.5  | 76.4  | 425.5   | 3.7  |
| Homicide and legal intervention . . . . .E960-E978                     | 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  |
|                                                                        | 1987 | 8.5  | 5.3   | 1.4 | 12.9 | 15.2 | 10.8 | 8.2  | 5.9  | 4.0   | 3.4   | 3.1     | 8.4  |
| Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589          | 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  |
|                                                                        | 1987 | 9.5  | 7.7   | 0.1 | 0.2  | 0.3  | 1.3  | 3.4  | 9.9  | 28.2  | 80.4  | 230.9   | 5.0  |
| Septicemia . . . . .038                                                | 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  |
|                                                                        | 1987 | 8.1  | 4.2   | 0.2 | 0.3  | 0.7  | 1.6  | 2.9  | 8.9  | 25.1  | 66.1  | 187.0   | 4.4  |
| Certain conditions originating in the perinatal period. . . . .760-779 | 1988 | 7.5  | 474.0 | 0.4 | 0.1  | -    | -    | -    | -    | -     | -     | -       | 0    |
|                                                                        | 1987 | 7.6  | 484.0 | 0.3 | 0.1  | 0.0  | -    | -    | 0.0  | 0.1   | -     | -       | 0    |
| Human immunodeficiency virus infection . . . . .*042-*044              | 1988 | 6.6  | 0.7   | 1.8 | 13.1 | 17.3 | 9.4  | 2.1  | 6.5  |       |       |         |      |
|                                                                        | 1987 | 5.4  | 0.4   | 1.5 | 11.6 | 13.3 | 8.2  | 1.6  | 5.3  |       |       |         |      |

<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, 1987 and 1988

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population. 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  |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-------|-------|
|                                                                                                                                                 | 1988      | 1987      | 1988  | 1987  |
| All causes . . . . .                                                                                                                            | 2,171,000 | 2,127,000 | 883.0 | 874.0 |
| Shigellosis and amebiasis . . . . .004,006                                                                                                      | —         | 10        | —     | 0.0   |
| Certain other intestinal infections . . . . .007-009                                                                                            | 280       | 340       | 0.1   | 0.1   |
| Tuberculosis . . . . .010-018                                                                                                                   | 1,970     | 1,720     | 0.8   | 0.7   |
| Tuberculosis of respiratory system . . . . .010-012                                                                                             | 1,640     | 1,460     | 0.7   | 0.6   |
| Other tuberculosis . . . . .013-018                                                                                                             | 330       | 260       | 0.1   | 0.1   |
| Whooping cough . . . . .033                                                                                                                     | —         | —         | —     | —     |
| Streptococcal sore throat, scarlatina, and erysipelas . . . . .034-035                                                                          | 20        | 10        | 0.0   | 0.0   |
| Meningococcal infection . . . . .036                                                                                                            | 300       | 210       | 0.1   | 0.1   |
| Septicemia . . . . .038                                                                                                                         | 20,850    | 19,810    | 8.5   | 8.1   |
| Acute poliomyelitis . . . . .045                                                                                                                | —         | —         | —     | —     |
| Measles . . . . .055                                                                                                                            | —         | —         | —     | —     |
| Viral hepatitis . . . . .070                                                                                                                    | 1,260     | 1,470     | 0.5   | 0.6   |
| Syphilis . . . . .090-097                                                                                                                       | 60        | 100       | 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     | 22,570    | 19,160    | 9.2   | 7.9   |
| Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208                                                | 488,240   | 477,190   | 198.6 | 196.1 |
| Malignant neoplasms of lip, oral cavity, and pharynx . . . . .140-149                                                                           | 7,750     | 8,240     | 3.2   | 3.4   |
| Malignant neoplasms of digestive organs and peritoneum . . . . .150-159                                                                         | 116,610   | 116,200   | 47.4  | 47.7  |
| Malignant neoplasms of respiratory and intrathoracic organs . . . . .160-165                                                                    | 140,760   | 133,400   | 57.3  | 54.8  |
| Malignant neoplasm of breast . . . . .174-175                                                                                                   | 43,020    | 41,380    | 17.5  | 17.0  |
| Malignant neoplasms of genital organs . . . . .179-187                                                                                          | 53,660    | 51,380    | 21.8  | 21.1  |
| Malignant neoplasms of urinary organs . . . . .188-189                                                                                          | 19,400    | 19,850    | 7.9   | 8.2   |
| Malignant neoplasms of all other and unspecified sites . . . . .170-173,190-199                                                                 | 61,460    | 61,510    | 25.0  | 25.3  |
| Leukemia . . . . .204-208                                                                                                                       | 17,420    | 17,960    | 7.1   | 7.4   |
| Other malignant neoplasms of lymphatic and hematopoietic tissues . . . . .200-203                                                               | 28,160    | 27,280    | 11.5  | 11.2  |
| Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature . . . . .210-239                             | 7,120     | 6,650     | 2.9   | 2.7   |
| Diabetes mellitus . . . . .250                                                                                                                  | 39,610    | 37,900    | 16.1  | 15.6  |
| Nutritional deficiencies . . . . .260-269                                                                                                       | 2,820     | 2,800     | 1.1   | 1.2   |
| Anemias . . . . .280-285                                                                                                                        | 3,740     | 3,650     | 1.5   | 1.5   |
| Meningitis . . . . .320-322                                                                                                                     | 1,230     | 1,290     | 0.5   | 0.5   |
| Major cardiovascular diseases . . . . .390-448                                                                                                  | 972,140   | 966,400   | 395.5 | 397.0 |
| Diseases of heart . . . . .390-398,402,404-429                                                                                                  | 767,400   | 762,820   | 312.2 | 313.4 |
| Rheumatic fever and rheumatic heart disease . . . . .390-398                                                                                    | 6,520     | 6,140     | 2.7   | 2.5   |
| Hypertensive heart disease . . . . .402                                                                                                         | 20,320    | 20,230    | 8.3   | 8.3   |
| Hypertensive heart and renal disease . . . . .404                                                                                               | 2,530     | 2,690     | 1.0   | 1.1   |
| Ischemic heart disease . . . . .410-414                                                                                                         | 511,050   | 513,680   | 207.9 | 211.0 |
| Acute myocardial infarction . . . . .410                                                                                                        | 249,950   | 253,140   | 101.7 | 104.0 |
| Other acute and subacute forms of ischemic heart disease . . . . .411                                                                           | 3,550     | 3,530     | 1.4   | 1.5   |
| Angina pectoris . . . . .413                                                                                                                    | 1,080     | 1,330     | 0.4   | 0.5   |
| Old myocardial infarction and other forms of chronic ischemic heart disease . . . . .412,414                                                    | 256,470   | 255,680   | 104.3 | 105.0 |
| Other diseases of endocardium . . . . .424                                                                                                      | 11,040    | 11,130    | 4.5   | 4.6   |
| All other forms of heart disease . . . . .415-423,425-429                                                                                       | 215,940   | 208,940   | 87.8  | 85.8  |
| Hypertension with or without renal disease . . . . .401,403                                                                                     | 8,110     | 7,990     | 3.3   | 3.3   |
| Cerebrovascular diseases . . . . .430-438                                                                                                       | 150,300   | 149,220   | 61.1  | 61.3  |
| Intracerebral and other intracranial hemorrhage . . . . .431-432                                                                                | 21,620    | 19,760    | 8.8   | 8.1   |
| Cerebral thrombosis and unspecified occlusion of cerebral arteries . . . . .434.0,434.9                                                         | 20,820    | 21,690    | 8.5   | 8.9   |
| Cerebral embolism . . . . .434.1                                                                                                                | 730       | 690       | 0.3   | 0.3   |
| All other and late effects of cerebrovascular diseases . . . . .430,433,435-438                                                                 | 107,130   | 107,070   | 43.6  | 44.0  |
| Atherosclerosis . . . . .440                                                                                                                    | 23,700    | 23,200    | 9.6   | 9.5   |
| Other diseases of arteries, arterioles, and capillaries . . . . .441-448                                                                        | 22,620    | 23,190    | 9.2   | 9.5   |
| Acute bronchitis and bronchiolitis . . . . .466                                                                                                 | 710       | 540       | 0.3   | 0.2   |
| Pneumonia and influenza . . . . .480-487                                                                                                        | 77,330    | 70,120    | 31.5  | 28.8  |
| Pneumonia . . . . .480-486                                                                                                                      | 75,430    | 69,500    | 30.7  | 28.6  |
| Influenza . . . . .487                                                                                                                          | 1,900     | 610       | 0.8   | 0.3   |
| Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496                                                                   | 81,960    | 78,270    | 33.3  | 32.2  |
| Bronchitis, chronic and unspecified . . . . .490-491                                                                                            | 3,440     | 3,300     | 1.4   | 1.4   |
| Emphysema . . . . .492                                                                                                                          | 15,750    | 14,550    | 6.4   | 6.0   |
| Asthma . . . . .493                                                                                                                             | 4,580     | 4,030     | 1.9   | 1.7   |
| Other chronic obstructive pulmonary diseases and allied conditions . . . . .494-496                                                             | 58,180    | 56,380    | 23.7  | 23.2  |
| Ulcer of stomach and duodenum . . . . .531-533                                                                                                  | 6,420     | 5,840     | 2.6   | 2.4   |
| Appendicitis . . . . .540-543                                                                                                                   | 400       | 500       | 0.2   | 0.2   |
| Hernia of abdominal cavity and intestinal obstruction without mention of hernia . . . . .550-553,560                                            | 5,040     | 5,690     | 2.1   | 2.3   |
| Chronic liver disease and cirrhosis . . . . .571                                                                                                | 26,080    | 26,050    | 10.6  | 10.7  |
| Cholelithiasis and other disorders of gallbladder . . . . .574-575                                                                              | 3,210     | 3,260     | 1.3   | 1.3   |
| Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589                                                                                   | 21,890    | 23,040    | 8.9   | 9.5   |
| Acute glomerulonephritis and nephrotic syndrome . . . . .580-581                                                                                | 280       | 370       | 0.1   | 0.2   |
| Chronic glomerulonephritis, nephritis and nephropathy, not specified as acute or chronic, and renal sclerosis, unspecified . . . . .582-583,587 | 1,240     | 1,570     | 0.5   | 0.6   |

**Table 9. Estimated deaths and death rates for 72 selected causes: United States, 1987 and 1988—Con.**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population. 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 |      |
|-----------------------------------------------------------------------------------------------------------------------------|---------|---------|------|------|
|                                                                                                                             | 1988    | 1987    | 1988 | 1987 |
| Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause . . . . .584-586,588-589 | 20,360  | 21,100  | 8.3  | 8.7  |
| Infections of kidney . . . . .590                                                                                           | 1,440   | 1,840   | 0.6  | 0.8  |
| Hyperplasia of prostate . . . . .600                                                                                        | 420     | 520     | 0.2  | 0.2  |
| Complications of pregnancy, childbirth, and the puerperium . . . . .630-676                                                 | 300     | 240     | 0.1  | 0.1  |
| Pregnancy with abortive outcome . . . . .630-638                                                                            | 20      | 40      | 0.0  | 0.0  |
| Other complications of pregnancy, childbirth, and the puerperium . . . . .640-676                                           | 280     | 200     | 0.1  | 0.1  |
| Congenital anomalies . . . . .740-759                                                                                       | 12,770  | 12,130  | 5.2  | 5.0  |
| Certain conditions originating in the perinatal period . . . . .760-779                                                     | 18,510  | 18,460  | 7.5  | 7.6  |
| Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome . . . . .767-769                      | 4,190   | 4,490   | 1.7  | 1.8  |
| Other conditions originating in the perinatal period . . . . .760-766,770-779                                               | 14,320  | 13,960  | 5.8  | 5.7  |
| Symptoms, signs, and ill-defined conditions . . . . .780-799                                                                | 31,820  | 31,290  | 12.9 | 12.9 |
| All other diseases . . . . .Residual                                                                                        | 167,300 | 161,570 | 68.1 | 66.4 |
| Accidents and adverse effects . . . . .E800-E949                                                                            | 97,500  | 94,840  | 39.7 | 39.0 |
| Motor vehicle accidents . . . . .E810-E825                                                                                  | 50,060  | 48,950  | 20.4 | 20.1 |
| All other accidents and adverse effects . . . . .E800-E807,E826-E949                                                        | 47,440  | 45,890  | 19.3 | 18.9 |
| Suicide . . . . .E950-E959                                                                                                  | 30,260  | 30,980  | 12.3 | 12.7 |
| Homicide and legal intervention . . . . .E960-E978                                                                          | 22,190  | 20,580  | 9.0  | 8.5  |
| All other external causes . . . . .E980-E999                                                                                | 2,830   | 2,820   | 1.2  | 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, 1987 and 1988**

[Data are provisional, estimated from a 10-percent sample of deaths. Rates per 100,000 population in specified group. 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  |                   |        |                   |
|------------------------------------------|------------------------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|
|                                          | 1988                   |                   | 1987   |                   | 1988   |                   | 1987   |                   | 1988   |                   | 1987   |                   |
|                                          | 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 . . . . .                       | 16,210                 | 6.6               | 13,130 | 5.4               | 10,720 | 5.2               | 9,160  | 4.5               | 5,300  | 17.5              | 3,920  | 13.2              |
| Under 15 years . . . . .                 | 360                    | 0.7               | 210    | 0.4               | 190    | 0.4               | 130    | 0.3               | 170    | 2.1               | 80     | 1.0               |
| 15-24 years . . . . .                    | 680                    | 1.8               | 570    | 1.5               | 430    | 1.4               | 360    | 1.1               | 230    | 4.2               | 210    | 3.8               |
| 25-34 years . . . . .                    | 5,700                  | 13.1              | 5,040  | 11.6              | 3,470  | 9.5               | 3,410  | 9.4               | 2,160  | 39.2              | 1,610  | 29.8              |
| 35-44 years . . . . .                    | 6,090                  | 17.3              | 4,560  | 13.3              | 4,100  | 13.6              | 3,110  | 10.6              | 1,950  | 51.2              | 1,420  | 38.9              |
| 45-54 years . . . . .                    | 2,260                  | 9.4               | 1,900  | 8.2               | 1,660  | 8.0               | 1,440  | 7.2               | 580    | 22.7              | 440    | 17.7              |
| 55 years and over . . . . .              | 1,090                  | 2.1               | 850    | 1.6               | 870    | 1.9               | 690    | 1.5               | 200    | 4.3               | 160    | 3.5               |
| Not stated . . . . .                     | 10                     | ...               | 10     | ...               | -      | ...               | 10     | ...               | 10     | ...               | -      | ...               |
| Age-adjusted rate <sup>3</sup> . . . . . | ...                    | 6.5               | ...    | 5.3               | ...    | 5.0               | ...    | 4.3               | ...    | 18.1              | ...    | 13.8              |
| <b>Male</b>                              |                        |                   |        |                   |        |                   |        |                   |        |                   |        |                   |
| All ages . . . . .                       | 14,300                 | 11.9              | 11,880 | 10.0              | 9,840  | 9.7               | 8,580  | 8.5               | 4,290  | 29.9              | 3,250  | 23.0              |
| Under 15 years . . . . .                 | 200                    | 0.7               | 90     | 0.3               | 120    | 0.5               | 60     | 0.3               | 80     | 1.9               | 30     | 0.7               |
| 15-24 years . . . . .                    | 570                    | 3.0               | 530    | 2.7               | 370    | 2.4               | 350    | 2.2               | 180    | 6.6               | 180    | 6.6               |
| 25-34 years . . . . .                    | 4,980                  | 22.8              | 4,400  | 20.3              | 3,190  | 17.3              | 3,090  | 16.8              | 1,720  | 66.2              | 1,290  | 50.6              |
| 35-44 years . . . . .                    | 5,490                  | 31.6              | 4,230  | 25.0              | 3,850  | 25.6              | 3,030  | 20.6              | 1,600  | 92.2              | 1,180  | 71.0              |
| 45-54 years . . . . .                    | 2,110                  | 18.0              | 1,840  | 16.3              | 1,580  | 15.4              | 1,410  | 14.3              | 510    | 44.5              | 410    | 36.7              |
| 55 years and over . . . . .              | 930                    | 4.1               | 770    | 3.4               | 730    | 3.6               | 620    | 3.1               | 190    | 9.6               | 150    | 7.7               |
| Not stated . . . . .                     | 10                     | ...               | 10     | ...               | -      | ...               | 10     | ...               | 10     | ...               | -      | ...               |
| Age-adjusted rate <sup>3</sup> . . . . . | ...                    | 11.5              | ...    | 9.8               | ...    | 9.3               | ...    | 8.2               | ...    | 31.9              | ...    | 24.9              |
| <b>Female</b>                            |                        |                   |        |                   |        |                   |        |                   |        |                   |        |                   |
| All ages . . . . .                       | 1,910                  | 1.5               | 1,250  | 1.0               | 880    | 0.8               | 580    | 0.6               | 1,010  | 6.4               | 670    | 4.3               |
| Under 15 years . . . . .                 | 160                    | 0.6               | 120    | 0.5               | 70     | 0.3               | 70     | 0.3               | 90     | 2.2               | 50     | 1.3               |
| 15-24 years . . . . .                    | 110                    | 0.6               | 40     | 0.2               | 60     | 0.4               | 10     | 0.1               | 50     | 1.8               | 30     | 1.1               |
| 25-34 years . . . . .                    | 720                    | 3.3               | 630    | 2.9               | 280    | 1.5               | 320    | 1.8               | 440    | 15.1              | 310    | 10.9              |
| 35-44 years . . . . .                    | 600                    | 3.4               | 320    | 1.8               | 250    | 1.7               | 80     | 0.5               | 350    | 16.9              | 240    | 12.1              |
| 45-54 years . . . . .                    | 150                    | 1.2               | 60     | 0.5               | 80     | 0.8               | 30     | 0.3               | 70     | 5.0               | 30     | 2.2               |
| 55 years and over . . . . .              | 160                    | 0.5               | 80     | 0.3               | 140    | 0.5               | 70     | 0.3               | 10     | 0.4               | 10     | 0.4               |
| Not stated . . . . .                     | -                      | ...               | -      | ...               | -      | ...               | -      | ...               | -      | ...               | -      | ...               |
| Age-adjusted rate <sup>3</sup> . . . . . | ...                    | 1.5               | ...    | 1.0               | ...    | 0.8               | ...    | 0.5               | ...    | 6.3               | ...    | 4.3               |

<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 1980-88**

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

| Year               |            |      |        |            |      |        | All other  |      |        |            |      |        |
|--------------------|------------|------|--------|------------|------|--------|------------|------|--------|------------|------|--------|
|                    | All races  |      |        | White      |      |        | Total      |      |        | Black      |      |        |
|                    | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| <b>Provisional</b> |            |      |        |            |      |        |            |      |        |            |      |        |
| 1988.....          | 9.9        | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    |
| 1987.....          | 10.0       | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    |
| 1986.....          | 10.4       | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    |
| 1985.....          | 10.6       | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    | ---        | ---  | ---    |
| <b>Final</b>       |            |      |        |            |      |        |            |      |        |            |      |        |
| 1988.....          | 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 | 18.6   | 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, 1985-88**

[Provisional data for 1986-88 are estimated from a 10-percent sample of deaths. Rates per 100,000 live births. For information on standard errors of the estimates and further discussion, see Technical notes]

| Age and cause of death (Ninth Revision, International Classification of Diseases, 1975) | 1988<br>(prov.) | 1987<br>(prov.) | 1986    |         | 1985<br>(final) |
|-----------------------------------------------------------------------------------------|-----------------|-----------------|---------|---------|-----------------|
|                                                                                         |                 |                 | (prov.) | (final) |                 |
| Total, under 1 year. . . . .                                                            | 992.9           | 997.0           | 1,039.2 | 1,035.3 | 1,064.5         |
| Under 28 days . . . . .                                                                 | 641.7           | 653.8           | 669.5   | 671.1   | 696.1           |
| 28 days to 11 months. . . . .                                                           | 351.5           | 343.3           | 369.7   | 364.1   | 368.3           |
| Certain gastrointestinal diseases. . . . .008-009,535,555-558                           | 4.4             | 5.0             | 5.9     | 5.3     | 5.4             |
| Pneumonia and influenza . . . . .480-487                                                | 14.4            | 17.6            | 18.0    | 17.6    | 18.7            |
| Congenital anomalies. . . . .740-759                                                    | 207.2           | 207.0           | 218.9   | 219.5   | 227.7           |
| Disorders relating to short gestation and unspecified low birth weight . . . . .765     | 90.9            | 84.8            | 87.9    | 86.4    | 86.6            |
| Birth trauma. . . . .767                                                                | 4.6             | 5.0             | 8.6     | 7.1     | 8.7             |
| Intrauterine hypoxia and birth asphyxia. . . . .768                                     | 20.3            | 25.5            | 24.2    | 26.2    | 30.8            |
| Respiratory distress syndrome . . . . .769                                              | 80.4            | 86.4            | 94.4    | 90.6    | 96.2            |
| Other conditions originating in the perinatal period . . . . .760-764,766,770-779       | 273.2           | 277.9           | 266.2   | 275.0   | 282.8           |
| Sudden infant death syndrome. . . . .798.0                                              | 117.4           | 116.1           | 130.4   | 140.5   | 141.3           |
| All other causes . . . . .Residual                                                      | 179.7           | 172.1           | 184.7   | 167.2   | 164.3           |

## Technical Notes

### Nature and sources of data

All data for 1987 and 1988 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 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, and 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. 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 approximation 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

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

covers the "true" number of events.

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

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, 1986*, Volumes I and II.

### Nativity

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 1987 and 1988 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.

### 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 1987 and 1988 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 1988 representing deaths occurring in the current month and those occurring in other months are shown in table I.

Table I. Percent of death certificates received in the sample each month by month of occurrence: United States, 1988

| Month               | Deaths occurring in— |                |                  |
|---------------------|----------------------|----------------|------------------|
|                     | Same month           | Previous month | All other months |
| January . . . . .   | 71.5                 | 21.5           | 6.9              |
| February . . . . .  | 68.2                 | 23.5           | 8.4              |
| March . . . . .     | 68.9                 | 23.0           | 8.1              |
| April . . . . .     | 68.8                 | 24.2           | 7.1              |
| May . . . . .       | 71.7                 | 20.6           | 7.7              |
| June . . . . .      | 70.3                 | 22.3           | 7.4              |
| July . . . . .      | 72.7                 | 20.5           | 6.8              |
| August . . . . .    | 72.6                 | 19.7           | 7.8              |
| September . . . . . | 69.7                 | 21.6           | 8.8              |
| October . . . . .   | 72.1                 | 21.1           | 6.9              |
| November . . . . .  | 71.5                 | 22.0           | 6.5              |
| December . . . . .  | 71.4                 | 22.3           | 6.3              |

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 77 percent of the total as opposed to 72 percent of the entire sample. As for the year of occurrence, 97 percent of the 216,592 transcripts in the 1988 sample were for deaths occurring in 1988 and 3 percent for deaths occurring in 1987.

**Correction for bias and adjustment to provisional counts**—The sample data in this report are corrected for bias and adjusted to provisional counts using rules and methodology described in the annual summary for 1978(3). 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 1988 were adjusted for bias based on the experience of three years—1984, 1985, and 1986. If for a given cause the sample count for these years departs 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, 1988

| Cause of death <sup>1</sup> (Ninth Revision, International Classification of Diseases, 1975)                 | Adjusted weight                                                             |       |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------|
| All ages                                                                                                     |                                                                             |       |
| All other infectious and parasitic diseases . . . . .                                                        | .001-003,005,020-032,037,039-041, *042-*044,046-054,056-066,071-088,098-139 | 10.27 |
| Malignant neoplasms of respiratory and intrathoracic organs. . . . .                                         | .160-165                                                                    | 10.12 |
| Malignant neoplasms of all other and unspecified sites . . . . .                                             | .170-173,190-199                                                            | 9.84  |
| Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature . . . . . | .210-239                                                                    | 9.12  |
| Other acute and subacute forms of ischemic heart disease . . . . .                                           | .411                                                                        | 10.76 |
| Angina pectoris . . . . .                                                                                    | .413                                                                        | 12.50 |
| Hypertension with or without renal disease . . . . .                                                         | .401,403                                                                    | 10.75 |
| Intracerebral and other intracranial hemorrhage. . . . .                                                     | .431-432                                                                    | 10.27 |
| Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause . . . . . | .584-586,588-589                                                            | 9.71  |
| Symptoms, signs, and ill-defined conditions . . . . .                                                        | .780-799                                                                    | 7.25  |
| All other diseases. . . . .                                                                                  | .Residual                                                                   | 10.12 |
| Motor vehicle accidents . . . . .                                                                            | .E810-E825                                                                  | 10.34 |
| Suicide . . . . .                                                                                            | .E950-E959                                                                  | 10.46 |
| Homicide and legal intervention . . . . .                                                                    | .E960-E978                                                                  | 10.31 |
| All other external causes . . . . .                                                                          | .E980-E999                                                                  | 11.42 |
| Under 1 year                                                                                                 |                                                                             |       |
| Symptoms, signs, and ill-defined conditions . . . . .                                                        | .780-799                                                                    | 9.11  |

<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 1988.

expected on the basis of sampling variability alone, the sample deaths for this cause are corrected by using an adjusted weight. For all causes without an adjusted weight, a weight of 10 is used. The adjusted weights that were applied to the 1988 sample for all ages and for ages under 1 year are shown in table II.

The 1987 cause-of-death data in this report were adjusted for bias using data for 1983, 1984, and 1985. Therefore, the adjusted weights for 1988 data are not the same as those used for 1987 (4).

**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 specified States) are based on a sample of the death certificates, they are subject to sampling variability. The estimated relative standard error shown in this report is a measure of the sampling error of the estimated number of deaths (or of the estimated death rate) expressed as a percent of the estimate. The chances are about two out of 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 out of 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 error 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 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  $X$   
 $X$  = the estimated number of deaths (or estimated death rate) from a given cause or age-race-sex group  
 $x$  = 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  
(216,592 for 1988)

$Y$  = the final number of deaths  
from the given cause oc-  
curring in the three years  
used for bias correction  
combined

$M$  = the final number of all  
deaths occurring in the  
three years used for bias  
correction combined

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 esti-  
mate  $X$

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

$N$  = the provisional number of  
registered deaths for the  
specified year (2,171,000  
for 1988)

The relative standard error due to  
sampling may be obtained by using the  
above formula where  $X$  is the estimated  
number of deaths for a given group.  
Data required to compute relative stan-  
dard errors for 1987 are given in an  
earlier report (4). For easy reference,  
the relative standard errors due to sam-  
pling for estimates based on several  
levels in the number of deaths are  
shown in table III.

Comparisons made in the text be-  
tween 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 signifi-  
cant at this level.

### Cause-of-death classification

The mortality statistics presented  
here are compiled in accordance with

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

| Estimated number<br>of deaths | Relative<br>standard<br>error<br>(as percent) | Estimated number<br>of deaths | Relative<br>standard<br>error<br>(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                                           |

World Health Organization regula-  
tions, which specify that member na-  
tions classify causes of death in  
accordance with the current revision of  
the International Statistical Classifica-  
tion of Diseases, Injuries, and Causes  
of Death.

Causes of death for 1979-88 were  
classified according to the Ninth Revi-  
sion (5). 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 disconti-  
nuities in cause-of-death trends. Conse-  
quently, cause-of-death comparisons  
between revisions require consider-  
ation of the comparability ratios and,  
where available, estimates of their stan-  
dard errors. For information about  
comparability ratios between the  
Eighth and Ninth Revisions, see  
*Monthly Vital Statistics Report*, Volume  
28, Number 11 Supplement (6).

For information about comparabil-  
ity ratios between the Seventh and  
Eighth Revisions, see *Vital and Health  
Statistics*, Series 2, Number 66 (7). 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 (8).

Besides specifying the classifica-  
tion, 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 phy-

sician as the underlying cause of death  
is the cause tabulated.

Causes of death for data presented  
in this publication were coded by pro-  
cedures outlined in issues of Part 2a of  
the *NCHS Instruction Manual* (9).

*Codes for HIV infection*—Begin-  
ning 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 as-  
terisk before the category numbers in-  
dicates 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 immunode-  
ficiency virus infection are shown for  
1987 and 1988 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 1987  
and 1988 are included in All other  
infectious 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 infec-  
tious and parasitic diseases; to Malignant  
neoplasms, including neoplasms of

NOTE: A list of references follows the text.

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 1988 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 1987 and 1988. 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 (10). For explanation of the col-

umns of the life table, see *Vital Statistics of the United States, 1986*, Volume II, Section 6 (11).

### 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 H, 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, fertility, and marriage rates is described in *The X-11 Variant of the Census Method II Seasonal Adjustment Program* (12). Marriage rates were also adjusted for monthly variation in the specified days of the week (Sundays, Mondays, and so forth) because marriages are more likely on some days than on others.

### Population bases for computing rates

The populations used for computing rates shown in this report (fur-

nished 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 populations were estimated as of July 1.

The populations for 1988 have been published by the U.S. Bureau of the Census (13,14).

Beginning with 1984 data in this report population estimates incorporate new estimates for net migration and net undocumented immigration. As a result, rates for 1984-88 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 (15).

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 (16-18). 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 (16).

NOTE: A list of references follows the text.

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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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