

# **Mortality Trends: Age, Color, and Sex United States - 1950 - 69**

An analysis of countervailing changes in components of the nearly stable crude death rate during 1950-69, trends of age-adjusted and age-specific death rates by color and sex, and changes in sex and color differentials for mortality by age. Important trends include the rise in the death rate for young people 15-24 years of age, the fall in the death rate for older Americans 45 years and over, and the upturn in the level of excess mortality for young men, particularly for other-than-white young men.

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### SYMBOLS

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| Data not available-----                                            | --- |
| Category not applicable-----                                       | ... |
| Quantity zero-----                                                 | -   |
| Quantity more than 0 but less than 0.05----                        | 0.0 |
| Figure does not meet standards of<br>reliability or precision----- | *   |

# MORTALITY TRENDS: AGE, COLOR, AND SEX, UNITED STATES, 1950-69

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## INTRODUCTION

The crude death rate for the United States experienced a clear downward trend throughout the first half of this century. It reached a low in 1954 (919.0 deaths per 100,000 population) and then began to level off (figure 1). The rate was relatively stable during 1954-69 with the exception of fluctuations associated for the most part with epidemics of influenza. For the severe influenza epidemic year of 1968—with peaks of mortality at both the beginning and end of the year—a high point of 965.7 deaths per 100,000 population was reached. The rate then dropped back for 1969 (951.9 deaths per 100,000) to about the same level recorded for 1966.

The pattern of the death rate for influenza reflects clearly the occurrence of the serious epidemics of this disease during 1950-69 (figure 2). Along with major influenza epidemics in the United States there have been increases in reported deaths from diseases of the heart and certain other chronic diseases. Evidence of these associated increases has been detailed for all influenza epidemics from 1918 through 1951 by Collins and Lehmann<sup>1</sup> and for the epidemic of 1963 by Klebba and Robinson.<sup>2</sup>

This report presents important changes in the patterns of vital events in the United States that have had offsetting effects on the crude death rate from 1950 through 1969. It analyzes how major changes in the age composition of

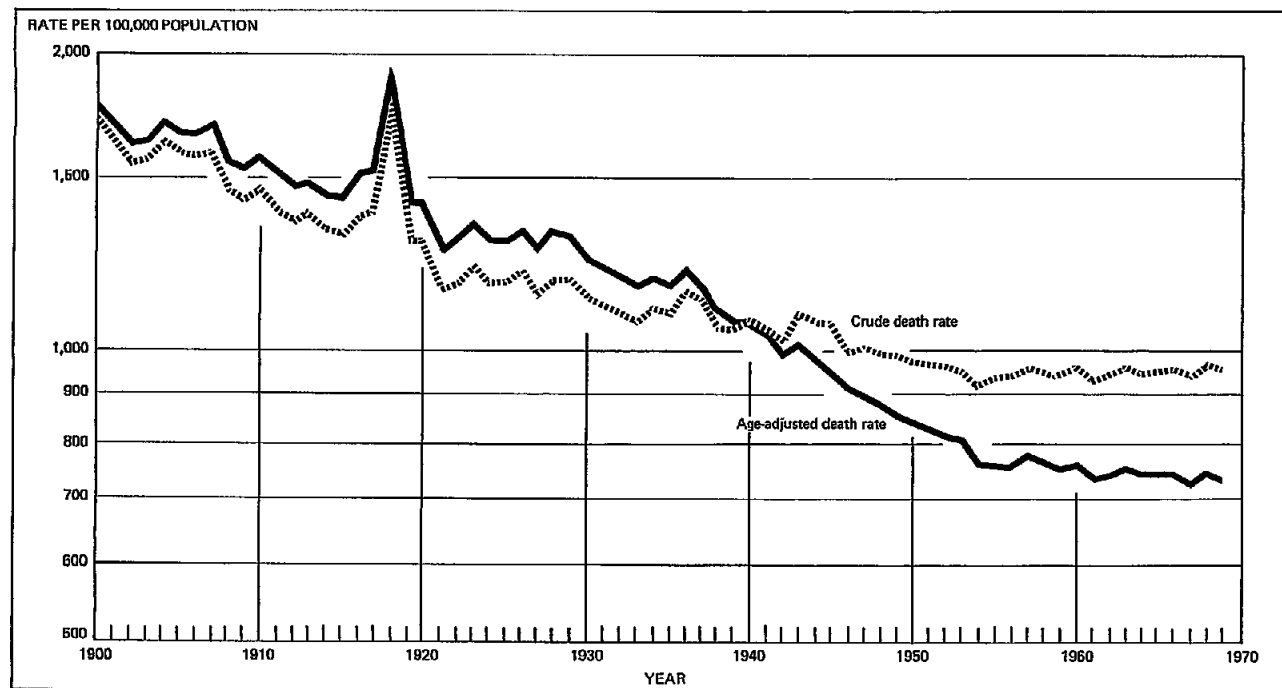


Figure 1. Crude and age-adjusted death rates: death-registration States, 1900-32, and United States, 1933-69.

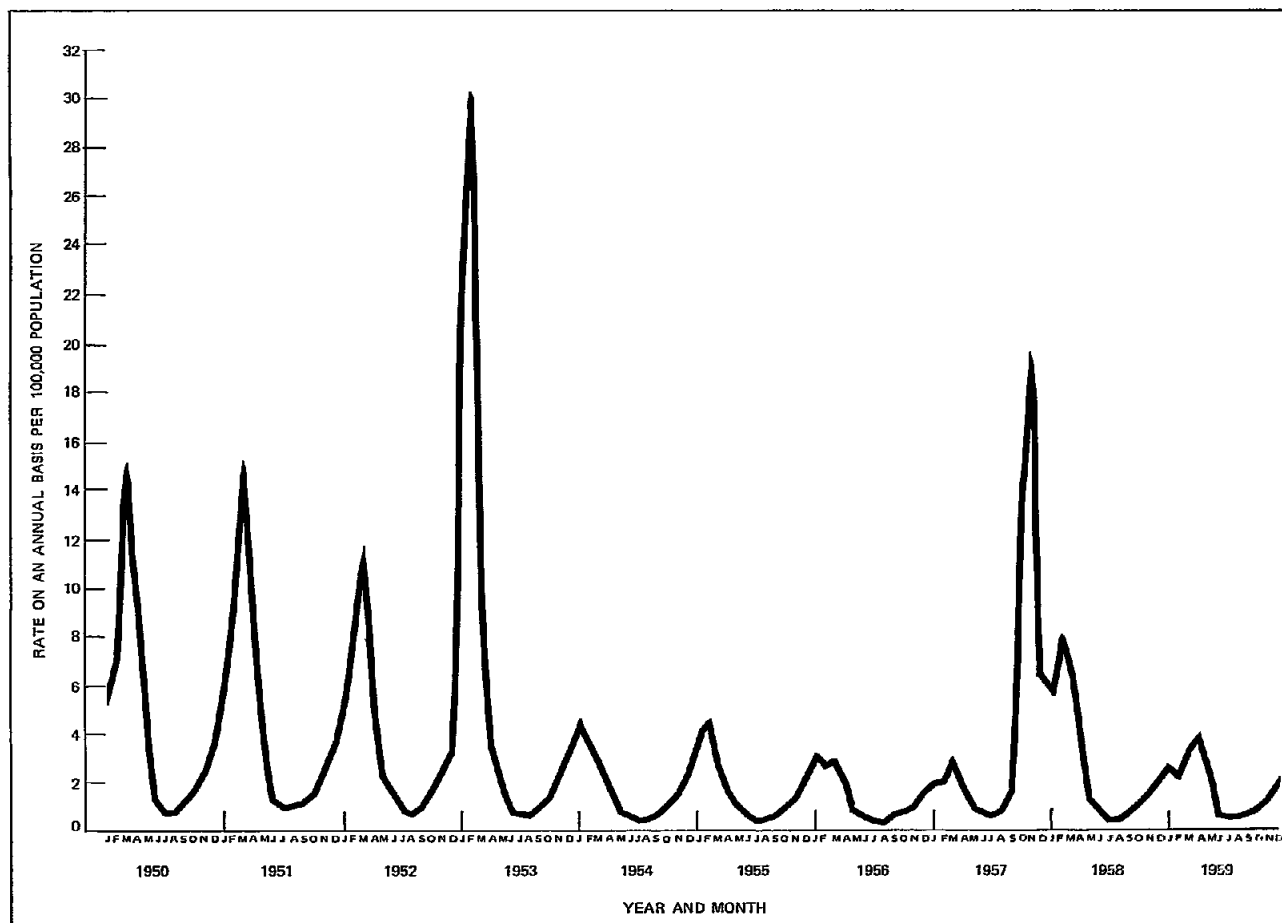


Figure 2. Death rates for influenza, by month: United States, 1950-69.

the population and widely varying mortality trends for the four color-sex groups have counterbalanced one another's effects on the crude death rate and have resulted in its near stability during the 1960's. The report also presents trends for 1950-69 of (1) age-adjusted death rates by color and sex, using the total population in the United States in 1940 as the standard (appendix I); (2) age-specific death rates by color and sex; (3) sex differentials for mortality by age; and (4) color differentials for mortality by age.

#### COUNTERVAILING CHANGES IN COMPONENTS OF THE CRUDE DEATH RATE

The nearly stable crude death rate during the 1960's suggests nothing of the major changes

in mortality trends for several large segments of the population that occurred during these years. One of the reasons for this is that the effect of these changes on the crude death rate was offset in part by major changes in the age composition of the population. In addition, although decreases occurred in the death rates for children under 15 years of age and for adults 45 years and over, they were counterbalanced in part by appreciable increases in the death rate for persons 15-44 years of age. These countervailing changes are discussed below.

#### The Changing Age Composition of the Population

Changes in population between 1960 and 1969 for the following five age groups tended to

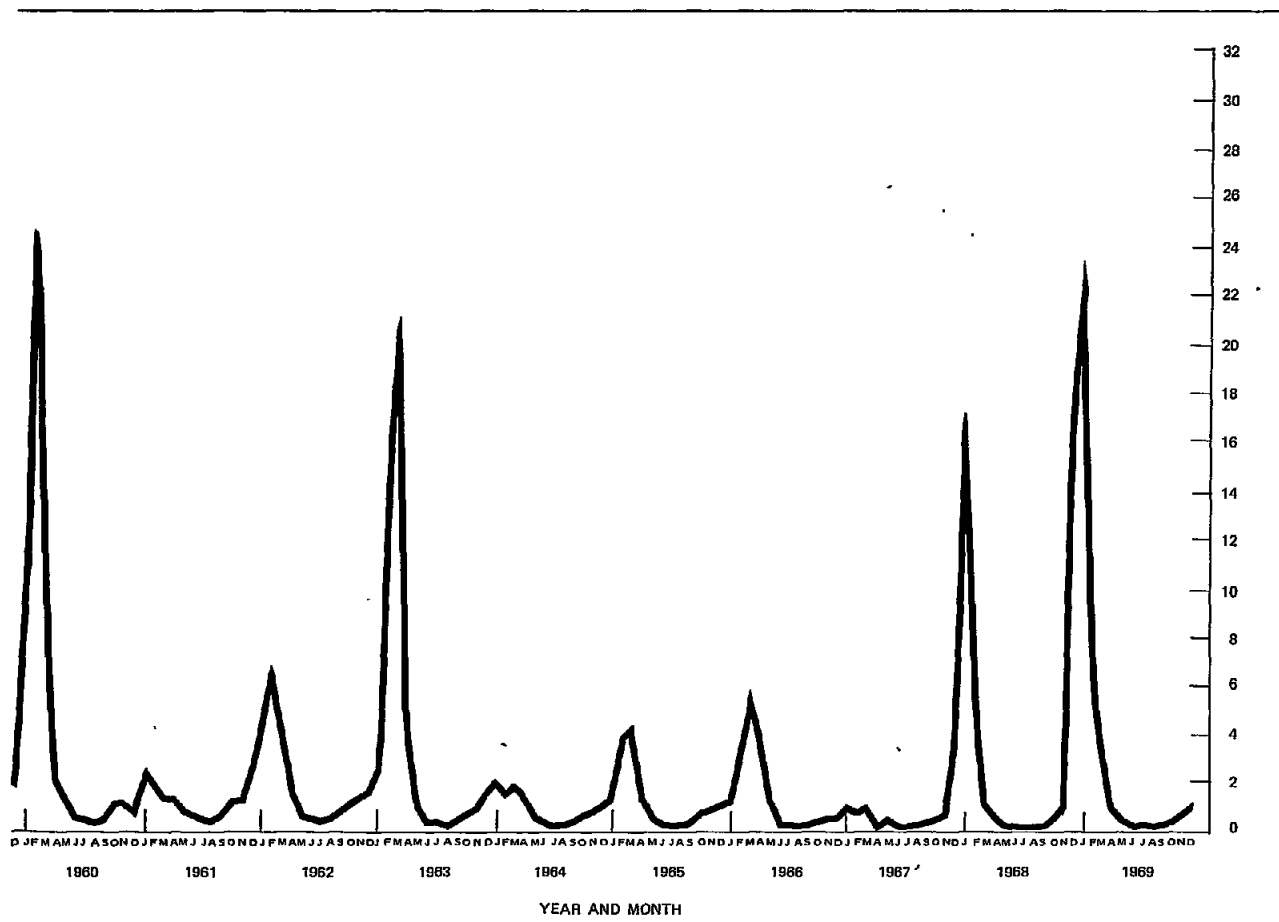


Figure 2. Death rates for influenza, by month: United States, 1950-69.—Con.

lower the crude death rate for 1969 below what it would have been without these changes: under 1, 5-9, 10-14, 15-24, and 25-44 years.

The age group under 1 year—a high-risk group—had a death rate for 1969 (2,148.0 deaths per 100,000) that was far above the crude death rate for that year (951.9 deaths per 100,000). The remaining four age groups—all relatively low risk groups—had age-specific death rates for 1969 that were below the crude death rate for that year. The high-risk age group under 1 year had a decrease in population between 1960 and 1969 of 15.0 percent; while the lower risk age groups 5-9, 10-14, 15-24, and 25-44 years had increases of, respectively, 11.4, 22.3, 42.4, and 1.4 percent. The unprecedented increase of 42.4 percent at ages 15-24 years repre-

sents an addition of 10,193,996 young people (from 24,020,004 for 1960 to 34,214,000 for 1969). This large segment of young people was born during the period of high birth rates following World War II, for the most part during 1947-56. As shown on page 4, this steep rise in the number of young people at ages 15-24 years occurred for each of the four color-sex groups.

The remaining three age groups (1-4, 45-64, and 65 years and over) had changes in population between 1960 and 1969 that tended to raise the 1969 crude death rate. There was a decrease in population of 10.8 percent in the low-risk group 1-4 years; an increase of 14.7 percent in the relatively high risk group 45-64 years; and an increase of 17.6 percent in the very high risk group 65 years and over.

| Color, sex, and year     | Persons 15-24 years of age |                                |                                         | Total population |
|--------------------------|----------------------------|--------------------------------|-----------------------------------------|------------------|
|                          | Number                     | Proportion of total population | Proportion of specified color-sex group |                  |
| <u>Total</u>             |                            |                                |                                         |                  |
| 1960. . . . .            | 24,020,004                 | 0.133948                       | 0.133948                                | 179,323,175      |
| 1969. . . . .            | 34,214,000                 | 0.169443                       | 0.169443                                | 201,921,000      |
| <u>White, male</u>       |                            |                                |                                         |                  |
| 1960. . . . .            | 10,482,915                 | 0.058458                       | 0.133767                                | 78,367,149       |
| 1969. . . . .            | 14,708,000                 | 0.072840                       | 0.170003                                | 86,516,000       |
| <u>White, female</u>     |                            |                                |                                         |                  |
| 1960. . . . .            | 10,596,093                 | 0.059089                       | 0.131686                                | 80,464,583       |
| 1969. . . . .            | 15,002,000                 | 0.074296                       | 0.165647                                | 90,560,000       |
| <u>All other, male</u>   |                            |                                |                                         |                  |
| 1960. . . . .            | 1,423,086                  | 0.007936                       | 0.142818                                | 9,964,345        |
| 1969. . . . .            | 2,193,000                  | 0.010861                       | 0.183269                                | 11,966,000       |
| <u>All other, female</u> |                            |                                |                                         |                  |
| 1960. . . . .            | 1,517,910                  | 0.008465                       | 0.144191                                | 10,527,098       |
| 1969. . . . .            | 2,311,000                  | 0.011445                       | 0.179523                                | 12,873,000       |

### Changes in Level of Mortality for Different Age Groups

Between 1960 and 1969 there was an appreciable lowering of the death rates for persons 45 years and over (tables 1 and 2). The largest decreases occurred for the age groups 75-79 years (with a decrease of 8.3 percent) and 80-84 years (with a decrease of 14.0 percent).

For this same time period there were also decreases in the death rate for children under 15 years of age. The largest of these decreases were for ages under 1 year (with a decrease of 20.3 percent) and for ages 1-4 years (with a decrease of 22.1 percent).

But the effect on the crude death rate for 1969 of these decreases in the death rates at both the beginning and later years of the life-span was canceled in part by the even more marked increases in the death rates for persons in each 5-year age group from 15 years through 44 years.

| Age<br>in years   | Death rate per<br>100,000 population |       | Percent<br>change |
|-------------------|--------------------------------------|-------|-------------------|
|                   | 1960                                 | 1969  |                   |
| 15 - 19 . . . . . | 92.2                                 | 114.7 | +24.4             |
| 20 - 24 . . . . . | 123.6                                | 147.6 | +19.4             |
| 25 - 29 . . . . . | 130.8                                | 144.5 | +10.5             |
| 30 - 34 . . . . . | 160.7                                | 175.5 | + 9.2             |
| 35 - 39 . . . . . | 233.6                                | 254.0 | + 8.7             |
| 40 - 44 . . . . . | 370.2                                | 385.2 | + 4.1             |

These increases in the death rates for teenagers, young adults, and people approaching the middle years of life reflected primarily an upturn in the death rates for men in these age groups. There were also, however, substantial increases in the death rates for white women at ages 15-24 and 35-44 years and for women of other races at ages 15-24 years (figures 3A and 3B).

In general, both the relative and absolute increases in mortality during 1960-69 were

lower for white men than for other men. It should be stressed that the excess mortality for younger men did not include the battle deaths and deaths of male civilians occurring in foreign countries during this period. These rates were based only on deaths occurring within the United States among the resident population, excluding the Armed Forces overseas and persons living abroad, but including the Armed Forces in the United States.

### Net Effect of Changes in Population and Death Rates Between 1960 and 1969, by Age

The net effect of the changes in population and death rates on the 1969 crude death rate is shown below for each age group (table A).

The number of infants in 1969 was 15.0 percent lower than the number in 1960, and their death rate for 1969 was 20.3 percent lower than that for 1960. The combined effect of these changes on the 1969 crude death rate was to lower it 14.7 deaths per 100,000.

The net effect of the reduction between 1960 and 1969 of 10.8 percent in the number of children at ages 1-4 years and of the 22.1 percent decrease in their death rate was to raise the 1969 crude death rate 5.6 deaths per 100,000.

For these children, with their low risk of mortality (85.0 deaths per 100,000 for 1969), the downward effect on the 1969 crude death rate of the decline in their death rate was more than offset by the upward effect of the reduction in their number.

For children at ages 5-9 years, with their low death rate (49.0 deaths per 100,000 for 1960 and 42.7, for 1969), the increase of 11.4 percent in their number, together with the decline of 12.9 percent in their death rate between 1960 and 1969 lowered the 1969 crude death rate 10.3 deaths per 100,000. It might be noted that the children who were 5-9 years of age in 1969 (20,827,000) were for the most part the survivors of the 20,950,672 infants born in the United States during July 1959 through June 1964, during the last 3 years of which period the number of live births was decreasing; whereas the children who were 5-9 years of age in 1960 (18,691,780) were the survivors of the 19,306,617 infants born during July 1950 through June 1955, during which period the number of live births was increasing.

Again for 1969, as for each year in the present century, children at ages 10-14 years had a lower risk of death than did persons in any other 5-year age group. Between 1960 and 1969

Table A. Percentage changes between 1960 and 1969 in death rates and population, by age; together with the net effect of the changes on the 1969 crude death rate

| Age in years     | Percentage change between 1960 and 1969 |               | Net change in deaths per 100,000 population in 1969 crude death rate <sup>1</sup> |
|------------------|-----------------------------------------|---------------|-----------------------------------------------------------------------------------|
|                  | In death rate                           | In population |                                                                                   |
| Under 1-----     | -20.3                                   | -15.0         | -14.7                                                                             |
| 1-4-----         | -22.1                                   | -10.8         | +5.6                                                                              |
| 5-9-----         | -12.9                                   | +11.4         | -10.3                                                                             |
| 10-14-----       | -5.5                                    | +22.3         | -17.4                                                                             |
| 15-24-----       | +22.1                                   | +42.4         | -40.7                                                                             |
| 25-44-----       | +6.0                                    | +1.4          | +0.8                                                                              |
| 45-64-----       | -2.8                                    | +14.7         | -0.7                                                                              |
| 65 and over----- | -0.3                                    | +17.6         | +73.8                                                                             |

<sup>1</sup>For each age group the net change was obtained in the following two steps. In the numerator of the 1969 crude death rate the number of deaths for the given age group was replaced by the corresponding number for 1960; and in the denominator the 1969 population for the age group was replaced by the corresponding population for 1960. The resulting hypothetical crude death rate was then subtracted from the actual 1969 crude death rate to obtain the net change for the given age group.

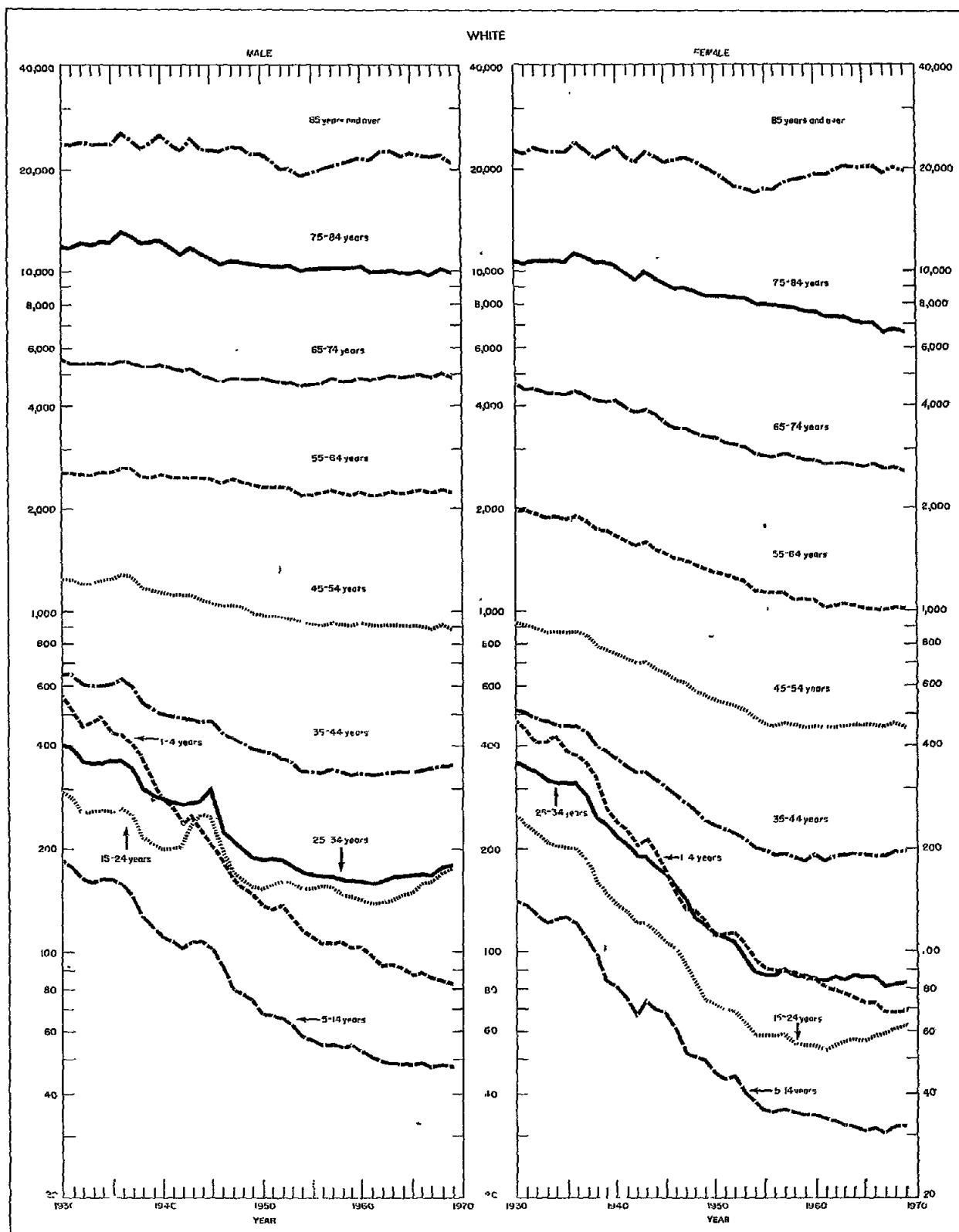


Figure 3A. Death rates per 100,000 population, by age and sex for the white population: death-registration States, 1900-32, and United States, 1933-69.

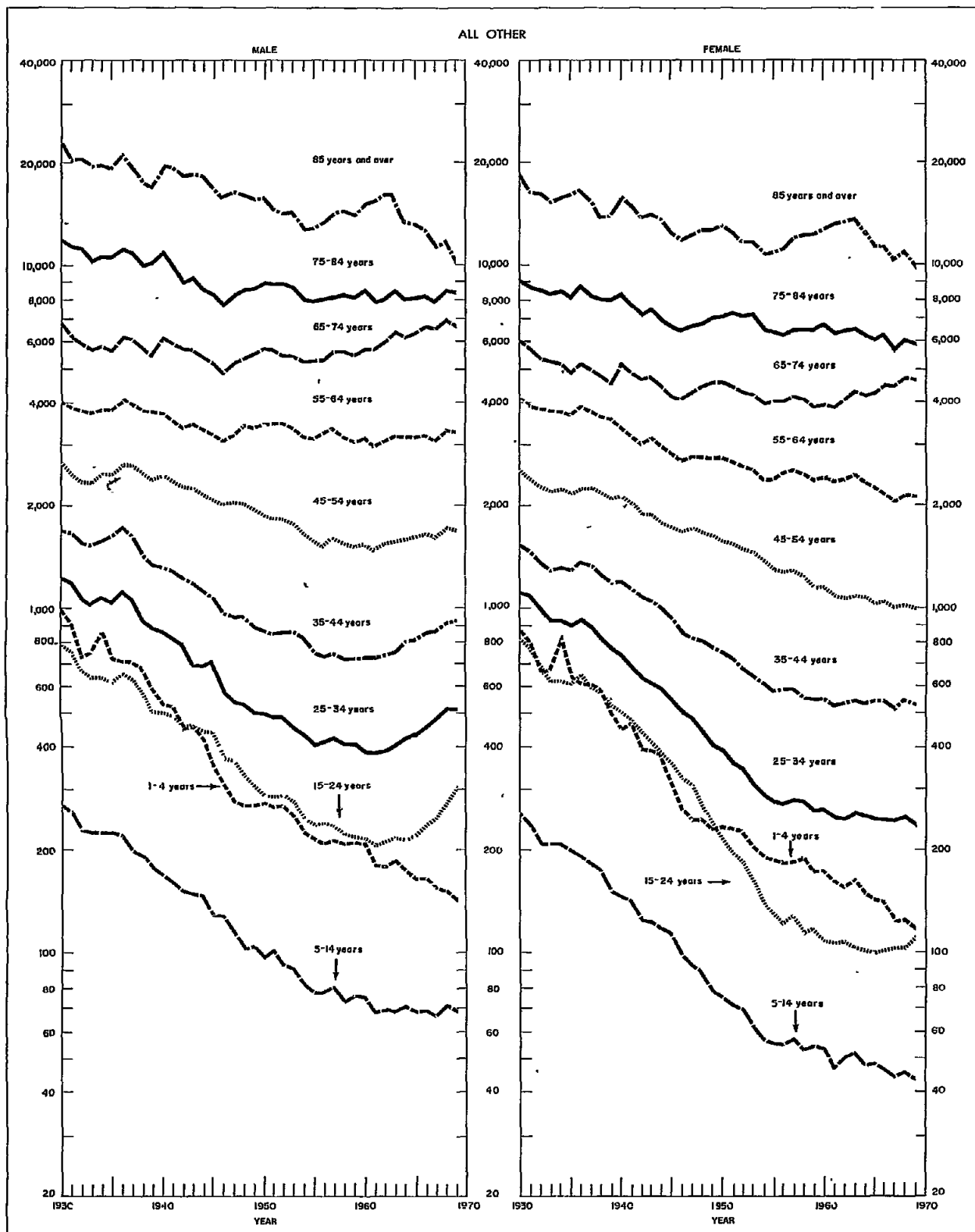


Figure 3B. Death rates per 100,000 population, by age and sex for the population of races other than white: death-registration States, 1930-32, and United States, 1933-69.

the population in this very low risk group increased 22.3 percent (from 16,773,492 for 1960 to 20,518,000 for 1969). Over the same period the death rate for these children declined 5.5 percent (from 44.0 deaths per 100,000 for 1960 to 41.6, for 1969). The net effect of these changes, both of which operated in the same direction, was to lower the 1969 crude death rate about 17.4 deaths per 100,000.

As stated above, between 1960 and 1969 there was an increase of 42.4 percent in the number of young people at ages 15-24 years—from 24,020,004 for 1960 to 34,214,000 for 1969. Despite the fact that during the same period there was also an increase of 22.1 percent in their death rate (from 106.3 deaths per 100,000 for 1960 to 129.8, for 1969), these young people continued to have, of course, a risk of death that is relatively low when compared to the risk for the entire population (951.9 deaths per 100,000 for 1969). The downward effect on the crude death rate of the increase of 42.4 percent in their number was greater than the upward effect of the increase in their death rate. The net effect of these two opposing changes was to lower the 1969 crude death rate by 40.7 deaths per 100,000.

The effect on the 1969 crude death rate of the 1.4 percent increase in the number of persons 25-44 years (from 46,899,662 for 1960 to 47,566,000 for 1969) was to lower it. But this downward effect was somewhat more than offset by the 6.0 percent rise in their death rate (from 225.0 deaths per 100,000 population for 1960, to 238.5 deaths, for 1969). The net effect of these opposing changes was to raise only slightly the 1969 crude death rate (by 0.8 deaths per 100,000).

The age group 45-64 years experienced between 1960 and 1969 a sizable reduction in its death rate (amounting to 2.8 percent, from 1,178.9 deaths per 100,000 to 1,146.2 per 100,000). But the effect on the 1969 crude death rate of the decline in their death rate was almost entirely offset by the large increase (14.7 percent) in their number (from 36,057,756 for 1960 to 41,366,000 for 1969). The net impact on the crude death rate of these offsetting changes was to lower it only 0.7 deaths per 100,000.

Between 1960 and 1969 the increase in the number of persons at ages 65 years and over

amounted to 17.6 percent—from 16,559,580 to 19,470,000. The upward effect on the 1969 crude death rate of this increase in the number of these high-risk older people was partly offset by the decrease in their death rate (from 6,099.5 deaths per 100,000 for 1960 to 6,084.0 deaths per 100,000 for 1969). Nevertheless the net effect on the crude death rate of these opposing changes was sizable: the crude death rate for 1969 was 73.8 deaths per 100,000 higher than it would have been if these changes had not occurred.

The total effect of the changes between 1960 and 1969 in the numbers of people and the death rates for the age groups under 1, 5-9, 10-14, 15-24, and 45-64 years tended to lower the crude rate by about 83.8 deaths per 100,000; and the total effect of the changes in the numbers of people and the death rates for the remaining age groups (1-4, 25-44, and 65 years and over) tended to raise the crude death rate for 1969 by 80.2 deaths per 100,000. The difference between these nearly counterbalancing amounts approximates the difference between the crude death rate for 1960 (954.7 deaths per 100,000) and that for 1969 (951.9 deaths per 100,000).

#### **CUMULATIVE EFFECT OF REDUCTION OF LIVE BIRTHS DURING THE 1960's**

The cumulative effect of the reduction of live births during the 1960's on the crude death rate for 1969 was to raise it about 8.3 deaths per 100,000 higher (or less than 1 percent) than it would have been if the number of births had remained constant at the July 1960-June 1961 level (appendix III). The reduction in live births led to an exclusion of an estimated 733,296 infants with their high risk of death who would have been a part of the population in 1969. However, this exclusion was more than offset by the exclusion of children from 1 to 10 years of age (2,503,518 children at ages 1-4 years and 458,351 children at ages 5-9 years) with their low risk of death who would also have been a part of the 1969 population.

The curve of the age-specific death rate (figure 4, called the "J-curve" because of its shape) sheds light on why the effect of the exclusion of the infants was offset by the effect of the exclusion of the 1-4 and 5-9 year age groups.

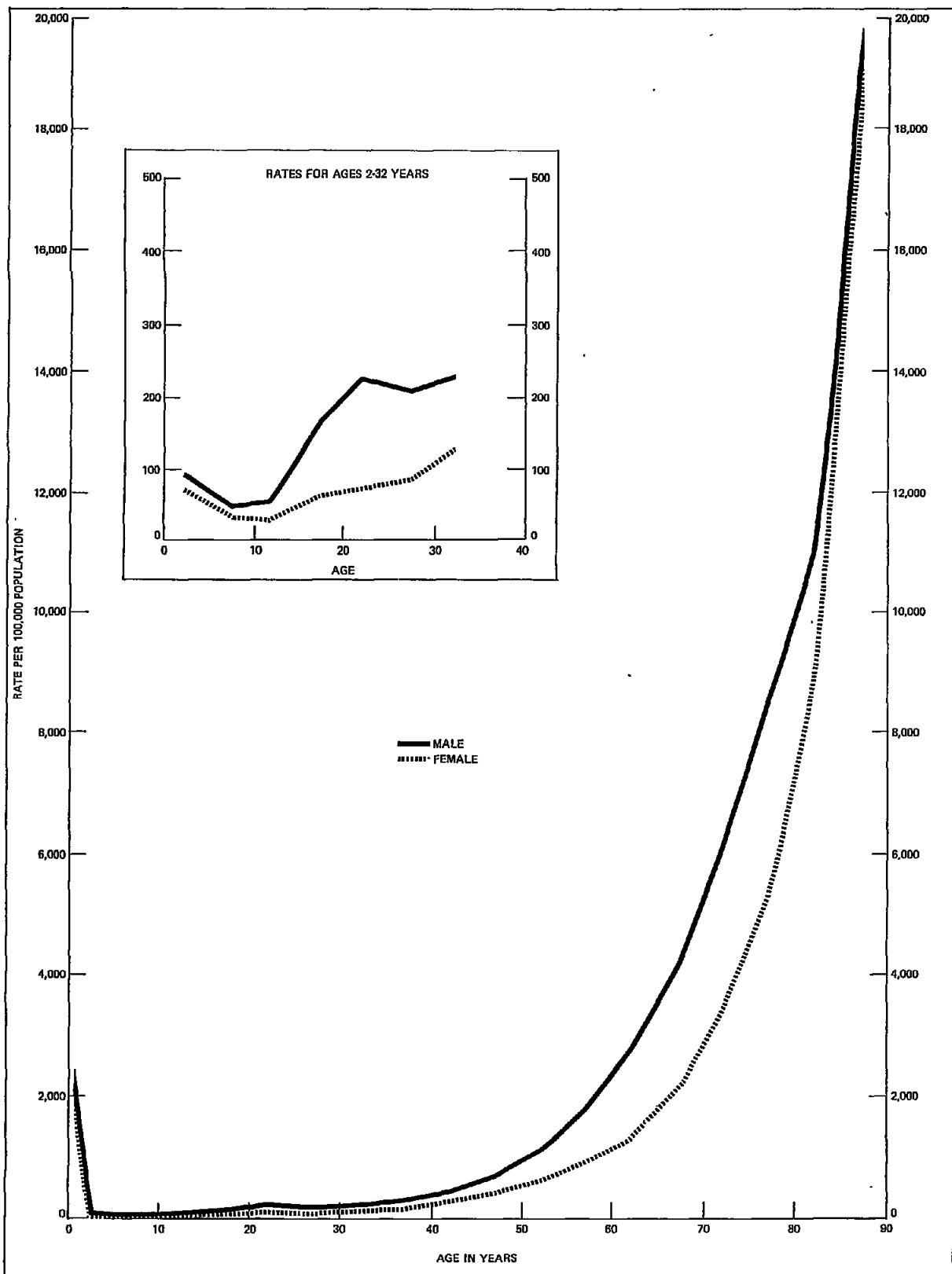


Figure 4. Death rates by age and sex: United States, 1969.

Table B. Population and percent distribution by age, United States, 1940, 1950, 1960, and 1969; death rates, differences, and percents of difference by age; and age-adjusted death rates, United States, 1950, 1960, and 1969

| Year and age in years   | Population  | Percent<br>distri-<br>bution | Rate per 100,000<br>population |                                | Difference:<br>deaths per<br>100,000 <sup>1-4</sup> | Percent<br>of<br>difference |
|-------------------------|-------------|------------------------------|--------------------------------|--------------------------------|-----------------------------------------------------|-----------------------------|
|                         |             |                              | Death rate                     | Age-<br>adjusted<br>death rate |                                                     |                             |
|                         | (1)         | (2)                          | (3)                            | (4)                            | (5)                                                 | (6)                         |
| <u>1940<sup>5</sup></u> |             |                              |                                |                                |                                                     |                             |
| All ages-----           | 131,669,275 | 100.0000                     | ...                            | ...                            | ...                                                 | ...                         |
| Under 1-----            | 2,020,174   | 1.5343                       | ...                            | ...                            | ...                                                 | ...                         |
| 1-4-----                | 8,521,350   | 6.4718                       | ...                            | ...                            | ...                                                 | ...                         |
| 5-14-----               | 22,430,557  | 17.0355                      | ...                            | ...                            | ...                                                 | ...                         |
| 15-24-----              | 23,921,358  | 18.1677                      | ...                            | ...                            | ...                                                 | ...                         |
| 25-34-----              | 21,339,026  | 16.2066                      | ...                            | ...                            | ...                                                 | ...                         |
| 35-44-----              | 18,333,220  | 13.9237                      | ...                            | ...                            | ...                                                 | ...                         |
| 45-54-----              | 15,512,071  | 11.7811                      | ...                            | ...                            | ...                                                 | ...                         |
| 55-64-----              | 10,572,205  | 8.0294                       | ...                            | ...                            | ...                                                 | ...                         |
| 65-74-----              | 6,376,189   | 4.8426                       | ...                            | ...                            | ...                                                 | ...                         |
| 75-84-----              | 2,278,373   | 1.7303                       | ...                            | ...                            | ...                                                 | ...                         |
| 85 and over-----        | 364,752     | 0.2770                       | ...                            | ...                            | ...                                                 | ...                         |
| <u>1950</u>             |             |                              |                                |                                |                                                     |                             |
| All ages-----           | 150,697,361 | 100.0000                     | 963.8                          | 841.5                          | <sup>1</sup> +122.3                                 | +100.0                      |
| Under 1-----            | 3,146,948   | 2.0883                       | 3,299.2                        | ...                            | <sup>2</sup> +18.3                                  | +14.9                       |
| 1-4-----                | 13,016,623  | 8.6376                       | 139.4                          | ...                            | <sup>2</sup> +3.0                                   | +2.5                        |
| 5-14-----               | 24,318,953  | 16.1376                      | 60.1                           | ...                            | <sup>2</sup> -0.5                                   | -0.4                        |
| 15-24-----              | 22,098,426  | 14.6641                      | 128.1                          | ...                            | <sup>2</sup> -4.5                                   | -3.7                        |
| 25-34-----              | 23,759,267  | 15.7662                      | 178.7                          | ...                            | <sup>2</sup> -0.8                                   | -0.6                        |
| 35-44-----              | 21,450,359  | 14.2341                      | 358.7                          | ...                            | <sup>2</sup> +1.1                                   | +0.9                        |
| 45-54-----              | 17,342,653  | 11.5083                      | 853.9                          | ...                            | <sup>2</sup> -2.3                                   | -1.9                        |
| 55-64-----              | 13,369,520  | 8.8718                       | 1,901.0                        | ...                            | <sup>2</sup> +16.0                                  | +13.1                       |
| 65-74-----              | 8,339,960   | 5.5342                       | 4,104.3                        | ...                            | <sup>2</sup> +28.4                                  | +23.2                       |
| 75-84-----              | 3,277,751   | 2.1751                       | 9,331.1                        | ...                            | <sup>2</sup> +41.5                                  | +33.9                       |
| 85 and over-----        | 576,901     | 0.3828                       | 20,196.9                       | ...                            | <sup>2</sup> +21.4                                  | +17.5                       |
| <u>1960</u>             |             |                              |                                |                                |                                                     |                             |
| All ages-----           | 179,323,175 | 100.0000                     | 954.7                          | 760.9                          | <sup>1</sup> +193.8                                 | +100.0                      |
| Under 1-----            | 4,111,949   | 2.2930                       | 2,696.4                        | ...                            | <sup>3</sup> +20.5                                  | +10.6                       |
| 1-4-----                | 16,208,852  | 9.0390                       | 109.1                          | ...                            | <sup>3</sup> +2.8                                   | +1.4                        |
| 5-14-----               | 35,465,272  | 19.7773                      | 46.6                           | ...                            | <sup>3</sup> +1.3                                   | +0.7                        |
| 15-24-----              | 24,020,004  | 13.3948                      | 106.3                          | ...                            | <sup>3</sup> -5.1                                   | -2.6                        |
| 25-34-----              | 22,818,310  | 12.7247                      | 146.4                          | ...                            | <sup>3</sup> -5.1                                   | -2.6                        |
| 35-44-----              | 24,081,352  | 13.4290                      | 299.4                          | ...                            | <sup>3</sup> -1.5                                   | -0.8                        |
| 45-54-----              | 20,485,439  | 11.4238                      | 756.0                          | ...                            | <sup>3</sup> -2.7                                   | -1.4                        |
| 55-64-----              | 15,572,317  | 8.6839                       | 1,735.1                        | ...                            | <sup>3</sup> +11.4                                  | +5.9                        |
| 65-74-----              | 10,996,842  | 6.1324                       | 3,822.1                        | ...                            | <sup>3</sup> +49.3                                  | +25.4                       |
| 75-84-----              | 4,633,486   | 2.5839                       | 8,745.2                        | ...                            | <sup>3</sup> +74.6                                  | +38.5                       |
| 85 and over-----        | 929,252     | 0.5182                       | 19,857.5                       | ...                            | <sup>3</sup> +47.9                                  | +24.7                       |

<sup>1</sup>For all ages, the difference is column 3 minus column 4.

<sup>2</sup>For the age group, the difference is the 1950 percent distribution (column 2) minus the 1940 percent distribution (column 2) times the 1950 death rate (column 3) times 0.01.

<sup>3</sup>For the age group, the difference is the 1960 percent distribution (column 2) minus the 1940 percent distribution (column 2) times the 1960 death rate (column 3) times 0.01.

<sup>4</sup>For the age group, the difference is the 1969 percent distribution (column 2) minus the 1940 percent distribution (column 2) times the 1969 death rate (column 3) times 0.01.

<sup>5</sup>The 1940 population is used as the standard (appendix I).

Table B. Population and percent distribution by age, United States, 1940, 1950, 1960, and 1969; death rates, differences, and percents of difference by age; and age-adjusted death rates, United States, 1950, 1960, and 1969—Con.

| Year and age in years | Population  | Percent distribution | Rate per 100,000 population |                         | Difference: deaths per 100,000 <sup>1-4</sup> | Percent of difference |
|-----------------------|-------------|----------------------|-----------------------------|-------------------------|-----------------------------------------------|-----------------------|
|                       |             |                      | Death rate                  | Age-adjusted death rate |                                               |                       |
|                       | (1)         | (2)                  | (3)                         | (4)                     | (5)                                           | (6)                   |
| <b>1969</b>           |             |                      |                             |                         |                                               |                       |
| All ages-----         | 201,921,000 | 100.0000             | 951.9                       | 730.9                   | <sup>1</sup> +221.0                           | +100.0                |
| Under 1-----          | 3,495,000   | 1.7309               | 2,148.0                     | ...                     | <sup>4</sup> +4.2                             | +1.9                  |
| 1-4-----              | 14,463,000  | 7.1627               | 85.0                        | ...                     | <sup>4</sup> +0.6                             | +0.3                  |
| 5-14-----             | 41,345,000  | 20.4758              | 42.2                        | ...                     | <sup>4</sup> +1.5                             | +0.7                  |
| 15-24-----            | 34,214,000  | 16.9443              | 129.8                       | ...                     | <sup>4</sup> -1.6                             | -0.7                  |
| 25-34-----            | 24,390,000  | 12.0790              | 158.8                       | ...                     | <sup>4</sup> -6.6                             | -3.0                  |
| 35-44-----            | 23,176,000  | 11.4778              | 322.4                       | ...                     | <sup>4</sup> -7.9                             | -3.6                  |
| 45-54-----            | 23,154,000  | 11.4669              | 728.3                       | ...                     | <sup>4</sup> -2.3                             | -1.0                  |
| 55-64-----            | 18,212,000  | 9.0194               | 1,677.5                     | ...                     | <sup>4</sup> +16.6                            | +7.5                  |
| 65-74-----            | 11,954,000  | 5.9201               | 3,738.2                     | ...                     | <sup>4</sup> +40.3                            | +18.2                 |
| 75-84-----            | 6,227,000   | 3.0839               | 7,896.0                     | ...                     | <sup>4</sup> +106.9                           | +48.4                 |
| 85 and over-----      | 1,289,000   | 0.6384               | 19,084.6                    | ...                     | <sup>4</sup> +69.0                            | +31.2                 |

<sup>1</sup>For all ages, the difference is column 3 minus column 4.

<sup>2</sup>For the age group, the difference is the 1950 percent distribution (column 2) minus the 1940 percent distribution (column 2) times the 1950 death rate (column 3) times 0.01.

<sup>3</sup>For the age group, the difference is the 1960 percent distribution (column 2) minus the 1940 percent distribution (column 2) times the 1960 death rate (column 3) times 0.01.

<sup>4</sup>For the age group, the difference is the 1969 percent distribution (column 2) minus the 1940 percent distribution (column 2) times the 1969 death rate (column 3) times 0.01.

<sup>5</sup>The 1940 population is used as the standard (appendix I).

This curve starts with a high rate at ages under 1 year (2,148.0 deaths per 100,000 for 1969). Then it drops for ages 1-4 years (to 85.0 deaths per 100,000 for 1969) and 5-9 years (to 42.7 deaths per 100,000 for 1969) and continues downward to its lowest level for ages 10-14 years (to 41.6 deaths per 100,000 for 1969). Thereafter the curve rises steeply with advance in age (to 2,051.2 deaths per 100,000 at ages 60-64 years for 1969). The rate does not surpass the high level at ages under 1 year until ages 65-69 years. For the latter 5-year age group the 1969 rate was 3,055.7 deaths per 100,000, and for the succeeding age group (70-74 years) it was 4,636.2 deaths per 100,000.

For 1961, 6.3 percent of all deaths occurred at ages under 1 year (107,956 deaths out of 1,701,522). By 1969 this figure had fallen to 3.9 percent (75,073 deaths at ages under 1 year out of a total of 1,921,990).

## GROWING GAP BETWEEN CRUDE AND AGE-ADJUSTED DEATH RATES

A glance backward to 1940 shows that the gap between the actual crude death rate and the age-adjusted death rate (the rate adjusted to the age composition of the 1940 population) widened during 1940-69 (figure 1). An examination of the trends of the components of these two sets of rates shows clearly that this rapid decrease in the age-adjusted death rate relative to the decrease in the crude death rate resulted primarily from the increasing proportion during 1940-69 of older people in the population.

The upward trend that began about 1920 in the proportion of people 65 years and over in the population of the death-registration States continued through 1933, the year in which Texas, the last of the first 48 States to be admitted, entered the death-registration area; and the

trend remained upward for the United States through 1933-69. The proportion of persons 65 years and over doubled between 1920 and 1969—rising from 4.8 percent for 1920 to 9.6 percent for 1969.

Between 1960 and 1969 there were increases in the proportion of people in most age groups over 45 years, resulting in part from the decline in the birth rate and from the decline in the death rate for older persons (table B). As shown below the proportion of children under 10 years of age decreased from 21.75 percent for 1960 to 19.20 percent for 1969.

| Year and age in years | Number,    | Percent of total population |
|-----------------------|------------|-----------------------------|
| <u>July 1, 1969</u>   |            |                             |
| Total under 10 .      | 38,785,000 | 19.20                       |
| Under 1 . . . . .     | 3,495,000  | 1.73                        |
| 1-4 . . . . .         | 14,463,000 | 7.16                        |
| 5-9 . . . . .         | 20,827,000 | 10.31                       |
| <u>April 1, 1960</u>  |            |                             |
| Total under 10 .      | 39,012,681 | 21.75                       |
| Under 1 . . . . .     | 4,111,949  | 2.29                        |
| 1-4 . . . . .         | 16,208,952 | 9.04                        |
| 5-9 . . . . .         | 18,691,780 | 10.42                       |

By 1950 the difference between the crude death rate and the age-adjusted death rate was 122.3 deaths per 100,000 population (table B). The three age groups of people 65 years and over contributed 74.6 percent to this difference: 65-74 years, 23.2 percent; 75-84 years, 33.9 percent; and 85 years and over, 17.5 percent. Inasmuch as the death rates for these three age groups declined between 1940 and 1950 while the proportions of persons in these age groups increased appreciably, the contribution from these age groups to the enlargement during this period of the difference between the crude and age-adjusted death rates is attributable entirely to the increased proportions of the population in these age groups.

By 1960 the difference between the crude death rate and the age-adjusted death rate had

grown still larger—to 193.8 deaths per 100,000 population; and by 1969 the difference had reached 221.0 deaths per 100,000. To this difference for 1969 the age groups 65-74, 75-84, and 85 years and over contributed, respectively, 18.2 percent, 48.4 percent, and 31.2 percent, for a total of 97.8 percent of the difference. Again, inasmuch as the death rates for these three age groups for 1969 were lower than the corresponding death rates for 1940, this enlargement from 1940 to 1969 of the difference between the crude and age-adjusted death rates that was contributed by these age groups is attributable entirely to the increased proportions of the population in these age groups.

#### TRENDS OF AGE-ADJUSTED DEATH RATES BY COLOR AND SEX

For both white male and white female persons the gap between the absolute values of the unadjusted death rate and the age-adjusted death rate widened during 1950-69, reflecting primarily the increasing proportion of older men and women in the white population (table C and figure 5). Both the absolute and relative differences for 1969 between the adjusted and unadjusted death rates for white persons were markedly greater for female than for male persons. This reflected both the larger proportion of white women in the older age groups and the greater reduction in their death rate during 1940-69.

For both sexes among white persons the age-adjusted rate remained above the unadjusted rate until the late 1930's, and thereafter the adjusted rate dropped below the unadjusted rate. This reflected primarily the fact that until the year of the crossover the proportion of white people in the older age groups was smaller than the corresponding proportion in the total population for 1940, and that since the year of the crossover, the proportion of people in the older age groups has been greater than the proportion in the total population for 1940.

The pattern for male and female persons of races other than white differed from that for white male and female persons. The unadjusted death rates for both sexes among races other than white remained lower than their age-adjusted death rates throughout 1900-69. This was so primarily because the proportion of per-

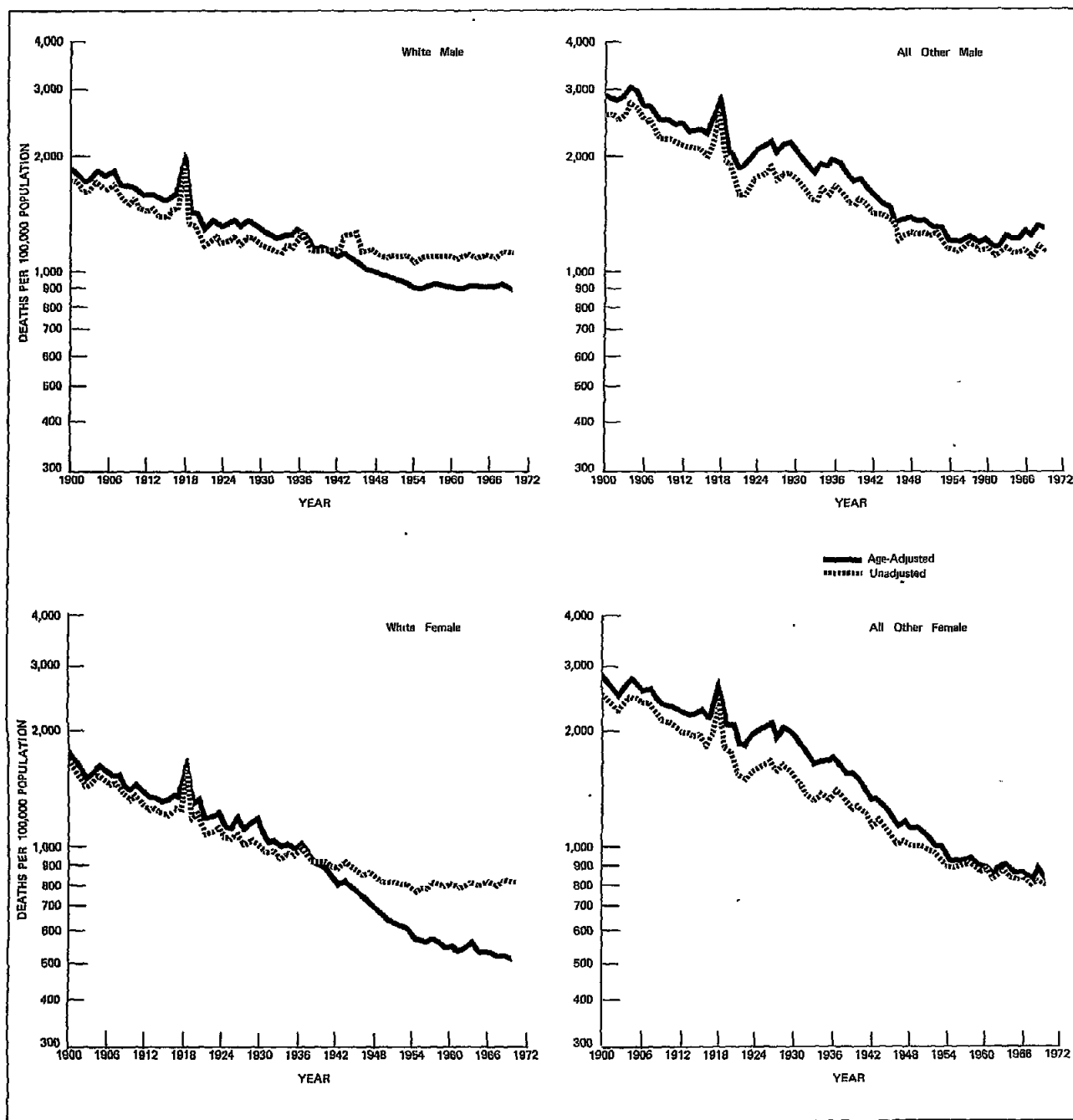


Figure 5. Death rates and age-adjusted death rates, by color and sex: death-registration States, 1900-32, and United States, 1933-69.

Table C. Age-adjusted death rates for all causes, by color and sex: United States, 1950-69

| Year                        | Total      |         |        | White      |       |        | All other  |         |         |
|-----------------------------|------------|---------|--------|------------|-------|--------|------------|---------|---------|
|                             | Both sexes | Male    | Female | Both sexes | Male  | Female | Both sexes | Male    | Female  |
| Rate per 100,000 population |            |         |        |            |       |        |            |         |         |
| 1969-----                   | 730.9      | 945.0   | 548.4  | 694.4      | 904.5 | 516.3  | 1,046.2    | 1,300.1 | 825.5   |
| 1968-----                   | 746.7      | 962.8   | 561.9  | 708.6      | 921.1 | 527.6  | 1,077.3    | 1,330.5 | 858.6   |
| 1967-----                   | 728.7      | 936.6   | 549.9  | 694.7      | 900.9 | 518.1  | 1,017.9    | 1,243.3 | 820.7   |
| 1966-----                   | 745.1      | 952.5   | 565.3  | 709.2      | 915.2 | 531.2  | 1,051.1    | 1,271.2 | 856.4   |
| 1965-----                   | 741.8      | 943.9   | 565.7  | 707.2      | 909.3 | 531.7  | 1,033.9    | 1,238.2 | 851.9   |
| 1964-----                   | 741.6      | 937.9   | 569.2  | 707.2      | 903.9 | 534.7  | 1,031.2    | 1,221.8 | 860.0   |
| 1963 <sup>1</sup> -----     | 758.6      | 956.4   | 584.2  | 721.5      | 920.5 | 546.2  | 1,061.5    | 1,248.3 | 894.9   |
| 1962 <sup>1</sup> -----     | 746.3      | 935.2   | 578.2  | 711.6      | 902.9 | 541.7  | 1,025.7    | 1,195.1 | 873.8   |
| 1961-----                   | 735.5      | 919.9   | 570.2  | 703.9      | 891.0 | 536.6  | 999.8      | 1,157.9 | 855.1   |
| 1960-----                   | 760.9      | 949.3   | 590.6  | 727.0      | 917.7 | 555.0  | 1,046.1    | 1,211.0 | 893.3   |
| 1959-----                   | 750.9      | 932.4   | 586.0  | 718.5      | 902.1 | 551.9  | 1,026.0    | 1,186.9 | 877.5   |
| 1958-----                   | 764.6      | 944.0   | 600.9  | 730.5      | 912.4 | 564.7  | 1,060.1    | 1,216.2 | 917.5   |
| 1957-----                   | 776.3      | 955.6   | 611.5  | 741.3      | 922.9 | 574.5  | 1,082.8    | 1,239.8 | 938.1   |
| 1956-----                   | 763.3      | 937.4   | 602.6  | 730.7      | 907.5 | 567.6  | 1,048.3    | 1,193.1 | 912.1   |
| 1955-----                   | 764.6      | 934.3   | 606.9  | 732.7      | 905.0 | 572.8  | 1,044.7    | 1,187.5 | 909.9   |
| 1954-----                   | 763.2      | 928.5   | 609.0  | 730.1      | 897.2 | 574.2  | 1,055.5    | 1,202.2 | 918.2   |
| 1953-----                   | 804.7      | 975.2   | 644.7  | 767.7      | 939.3 | 606.8  | 1,139.7    | 1,297.1 | 989.1   |
| 1952-----                   | 815.8      | 982.1   | 658.9  | 777.0      | 944.4 | 619.1  | 1,169.6    | 1,325.1 | 1,021.7 |
| 1951-----                   | 829.1      | 993.2   | 673.2  | 790.2      | 956.5 | 632.6  | 1,185.7    | 1,327.9 | 1,049.5 |
| 1950 <sup>2</sup> -----     | 841.5      | 1,001.6 | 688.4  | 800.4      | 963.1 | 645.0  | 1,225.7    | 1,358.5 | 1,095.7 |

<sup>1</sup> Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

<sup>2</sup> Figures based on enumerated population adjusted for age bias in the population of races other than white.

sons of races other than white in the older age groups continued to be smaller than the proportion at these ages in the total population for 1940.

For male persons of races other than white the two rates (adjusted and unadjusted for age) moved slowly closer together from about 1924 to 1956. Between 1956 and 1961, during which period both the adjusted and unadjusted death rates continued to decline, the difference between these two rates tended to level off. But since 1961 the gap between these rates has been widening, as a result of a sharp upturn in the age-adjusted death rate. This upturn resulted primarily from the striking increases in the death rates for men of races other than white in the age groups between 15 and 84 years that occurred between 1961 and 1969:

| Age<br>in years | Death rate per<br>100,000 population |         | Percent<br>change |
|-----------------|--------------------------------------|---------|-------------------|
|                 | 1961                                 | 1969    |                   |
| 15 - 24 . . . . | 207.7                                | 303.5   | +46.1             |
| 25 - 34 . . . . | 384.7                                | 516.0   | +34.1             |
| 35 - 44 . . . . | 723.3                                | 935.0   | +29.3             |
| 45 - 54 . . . . | 1,474.6                              | 1,687.0 | +14.4             |
| 55 - 64 . . . . | 2,995.9                              | 3,252.8 | + 8.6             |
| 65 - 74 . . . . | 5,615.6                              | 6,654.5 | +18.5             |
| 75 - 84 . . . . | 7,818.4                              | 8,407.8 | + 7.5             |

Because the unadjusted death rate for the years 1961-69 for men of races other than white was nearly stable, it fails to suggest this steep upturn in mortality for these men in the age groups from 15 through 84. The reason for the stability of the unadjusted death rate is that

these rises in the age-specific death rates were offset by appreciable decreases in the proportions of men of races other than white in each of these age groups except 15-24 and 75-84 years during 1961-69.

The percent increases between 1961 and 1969 for six of the 10 leading causes of death for male persons of races other than white are shown below.

| Cause of death                        | Age-adjusted death rate per 100,000 population |       | Percent change |
|---------------------------------------|------------------------------------------------|-------|----------------|
|                                       | 1961                                           | 1969  |                |
| Malignant neoplasms                   | 157.9                                          | 194.9 | +23.4          |
| Accidents . . .                       | 95.1                                           | 118.9 | +25.0          |
| Homicide . . .                        | 41.5                                           | 72.4  | +74.5          |
| Cirrhosis of liver .                  | 15.9                                           | 31.4  | +97.5          |
| Diabetes mellitus .                   | 14.9                                           | 21.3  | +43.0          |
| Bronchitis, emphysema, and asthma . . | 11.5                                           | 15.7  | +36.5          |

For female persons of races other than white both the age-adjusted and the unadjusted death rates were in general downward during 1936-69 (figure 5). These two rates moved relatively close together during the latter half of the 1950's and 1960's, reflecting the fact that the percentage distribution of female persons of races other than white came to resemble more closely over the years the percentage distribution of the total population in 1940.

There were appreciable downturns in mortality for female persons of races other than white during 1960-69 for infants and for the following age groups (in years): 1-4, 5-14, 45-54, 55-64, and 75-84, as shown in figure 3B. But the lowering of mortality at these ages was offset in part by marked increases during the 1960's in the death rate at ages 15-24 and 65-74 years.

The mortality trends for the first six of the 10 leading causes of death in 1969 for female persons of races other than white were downward between 1950 and 1969. These six causes were diseases of heart, malignant neoplasms, cerebrovascular diseases, accidents, certain causes of mortality in early infancy, and influenza and pneumonia. For the remaining four of the 10 leading causes the mortality trend between 1950

and 1969 for these persons was upward. These four causes were diabetes mellitus, cirrhosis of the liver, homicide, and congenital anomalies.

## SEX DIFFERENTIALS FOR MORTALITY BY AGE

The 1969 death rate for the total male population (1,097.6 per 100,000 population) was 1.35 times the corresponding rate for the total female population (813.1 deaths per 100,000 population) (table 2). This mortality sex ratio for 1969 did not differ appreciably from that for 1960 (with a ratio of 1.36) or for 1950 (with a ratio of 1.34). For each of these 3 years the mortality sex ratio varied widely by age with a major peak at ages 20-24 years (table 3 and figure 6). This peak ratio increased from 1.93 for 1950 to 2.57 for 1960, and to 3.03 for 1969.

For white people the largest mortality sex differential also occurred at ages 20-24 years. The ratio of the death rate at these ages for the male population over the corresponding rate for the female population increased from 2.17 for 1950 to 2.76 for 1960, and to 3.08 for 1969. A pronounced secondary peak in the ratio of the death rate for the white male population over the corresponding rate for the white female population occurred for the age group 60-64 years—with a ratio of 2.24 for 1969 (table 3 and figure 6). The mortality curves for the sex ratio for white persons was also bimodal for 1960 and 1950, but for these years the secondary peak occurred for the next lower age group (55-59 years).

For people of races other than white the peak ratio of the death rate (at ages 20-24 years) for male persons over the corresponding rate for female persons started at a lower level but increased more steeply than that for their white counterparts—from 1.44 for 1950 to 2.02 for 1960, and to 2.90 for 1969.

The principal causes of this excess mortality for the male population are summarized by age for both white men and men of races other than white in an earlier report.<sup>3</sup> Additional information concerning the specific causes that contributed the most to this unfavorable sex differential for men is presented in a forthcoming report.<sup>4</sup>

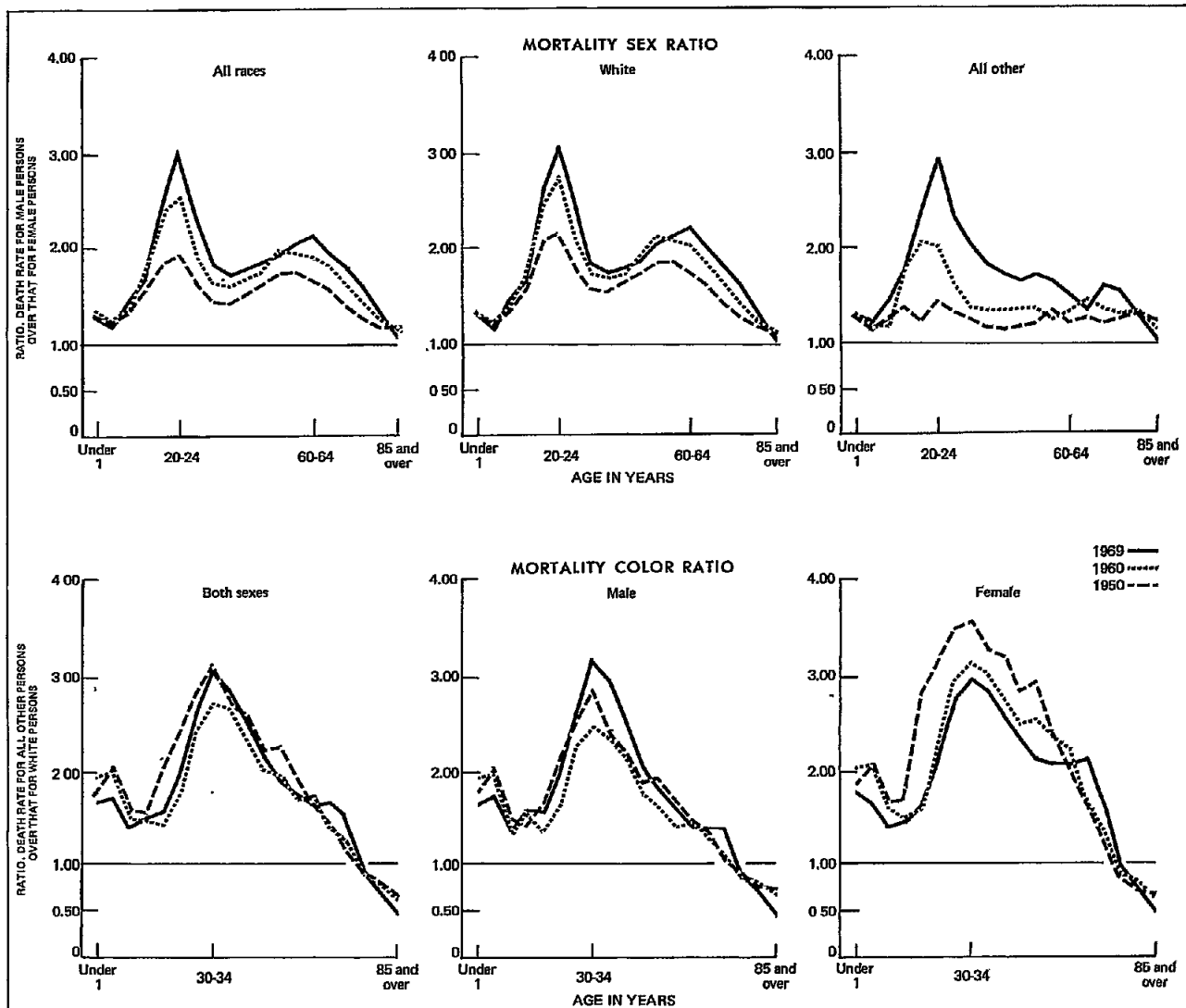


Figure 6. Mortality sex and color ratios, by age: United States, 1950, 1960, and 1969.

## COLOR DIFFERENTIALS FOR MORTALITY BY AGE

### Both Sexes by Age

The 1969 death rate for persons of races other than white was 959.7 deaths per 100,000, and that for white persons, 950.8; this gives a color ratio of 1.01. In other words, the death rate for 1969 for the other-than-white population was 1.01 times the corresponding rate for the white population. For 1960 the corresponding ratio was 1.06, and for 1950, 1.18 (table 3 and figure 6).

It would be incorrect to conclude from these three summary figures that the gaps between the high age-specific death rates for people of races other than white and the lower age-specific death rates for white people were almost closed during 1950-69.

Although there was some reduction between 1950 and 1969 in excess mortality for people of races other than white, for most age groups large mortality differentials still persisted for 1969 (table 3 and figure 6). The reduction represented by these three summary figures is attributable in part to the changing age composition of the population, primarily to the increased proportion of white people at ages 65

years and over. The presence of these older people with their high risk of death tended to raise the total death rate for white people. In turn this higher rate for white people helped to narrow the gap between their rate and that for persons of races other than white.

For 1969 excess mortality was very large for a number of age groups of people of races other than white (table 3 and figure 6). For the age groups under 75 years the 1969 mortality color ratios ranged from 1.37 for the age group 5-9 years to 3.05 for the age group 30-34 years.

For the total population (and for each sex) the mortality color ratio declined from the high at ages 30-34 years with advancing age. This was true for each of the 3 study years (1950, 1960, and 1969). Beginning with ages 75-79 years, for both men and women, the mortality color ratio dropped below 1.00 and continued to decline for the remaining years of life (see section, "Individual Cohorts for Older Ages," below).

Between 1950 and 1960 excess mortality for people of races other than white was reduced substantially for every age group under 75 years except three (under 1 year, 60-64, and 70-74 years); but between 1960 and 1969 there was a steep rise in mortality for people of races other than white. This steep upturn in mortality for the other-than-white population accounts in great part for the fact that for every age group from 15 to 75 years except one (50-54 years) the mortality color ratio was higher for 1969 than for 1960.

But this increase between 1960 and 1969 in excess mortality for people of races other than white was not large enough for most age groups to completely counterbalance the effect of the decrease in excess mortality that was accomplished between 1950 and 1960. As a result for every age group under 65 years (except 35-39 years) the mortality color ratio was lower for 1969 than for 1950.

### Male Population by Age

For male persons of races other than white the 1950 death rate was 1.15 times the corresponding rate for white male persons. This ratio dropped to 1.05 for 1960 and to 1.04 for 1969. For the latter year the death rate for male persons of races other than white was 1,132.8

deaths per 100,000, and that for white male persons was 1,092.7.

It might be mentioned for the male population, as was done above for the total population, that it would be incorrect to conclude from these three summary figures (1.04 for 1969, 1.05 for 1960, and 1.15 for 1950) that the gaps between the high age-specific death rates for the other-than-white male population and the lower age-specific death rates for the white male population were all but closed during 1950-69. The male population of races other than white did experience appreciable decreases in excess mortality between 1950 and 1960 for most age groups, but they experienced increases in excess mortality between 1960 and 1969.

The net result of these changes between 1950 and 1960 and between 1960 and 1969 was an increase in excess mortality between 1950 and 1969 for each 5-year age group in the productive years of life from 25 to 50 years of age, and for the age groups 10-14, 65-69, and 70-74 years.

For the male population the mortality color ratio peaks at ages 30-34 years for each of the years 1950, 1960, and 1969 (table 3 and figure 6). The color ratio at these ages increased substantially between 1960 and 1969—from 2.47 to 3.20.

### Female Population by Age

For the total female population the color differential for mortality decreased from a ratio of 1.24 for 1950 to 1.09 for 1960, and to 0.98 for 1969.

It should not be concluded from the dropping of the mortality color ratio from 1.24 for 1950 to 0.98 for 1969 that most of the age-specific death rates for the female population of races other than white fell below the corresponding age-specific death rates for the white female population. In fact, for every 5-year age group under 75 years the age-specific death rates for 1969 for the other-than-white female population are considerably higher than those for the white female population—with mortality color ratios ranging from 1.38 at ages 5-9 years to 2.98 at ages 30-34 years (table 3 and figure 6).

Nevertheless, both between 1950 and 1960 and between 1960 and 1969 the female population of races other than white did experience

appreciable decreases in excess mortality for most age groups. In other words, for the female population of races other than white the entire period 1950-69 was in general favorable: for them a decrease in excess mortality occurred for every 5-year age group under 60 years. The mortality color ratio for the peak ages 30-34 years decreased for the female population from 1950 through 1969—from 3.55 to 2.98.

### Individual Cohorts for Older Ages

These mortality color ratios are based on the death rates for specified calendar years. Inasmuch as these death statistics represent the differing mortality experiences for an admixture of cohorts born in different time periods, they may not represent what actually was the mortality experience of any cohort of individuals from birth through the successive ages over their lifetimes. Cohort or generation mortality data are, however, representations of what actually happens in life. And when the mortality color ratios for any separate cohort (a group of persons born during the same period—taken to be 5 years for this particular discussion) are examined over successive decades, the pattern of the dropping of the death rate for people of other races below that for white people at about ages 75-79 years is found to occur for both men and women. Following are shown for six cohorts of male persons and six cohorts of female persons, born at 5-year intervals between 1865 and 1894, the ratio of the death rate for persons of races other than white over the corresponding rate for white persons, at ages 65-69, 70-74, 75-79, and 80-84 years.

| Sex and age in years | Period of birth of cohort |           |           |           |           |           |
|----------------------|---------------------------|-----------|-----------|-----------|-----------|-----------|
|                      | 1890-1894                 | 1885-1889 | 1880-1884 | 1875-1879 | 1870-1874 | 1865-1869 |
| <b>Male</b>          |                           |           |           |           |           |           |
| 65-69 . . . . .      | 1.24                      | 1.11      | 1.29      | 1.16      | 1.08      | 1.15      |
| 70-74 . . . . .      | 1.10                      | 1.09      | 1.07      | 1.01      | 0.99      | 1.00      |
| 75-79 . . . . .      | 0.94                      | 0.89      | 0.86      | 0.88      | 0.91      | 0.86      |
| 80-84 . . . . .      | —                         | 0.74      | 0.68      | 0.77      | 0.70      | 0.69      |
| <b>Female</b>        |                           |           |           |           |           |           |
| 65-69 . . . . .      | 1.55                      | 1.42      | 1.64      | 1.41      | 1.21      | 1.29      |
| 70-74 . . . . .      | 1.30                      | 1.28      | 1.18      | 1.16      | 1.01      | 1.06      |
| 75-79 . . . . .      | 0.98                      | 1.00      | 0.93      | 0.95      | 0.96      | 0.83      |
| 80-84 . . . . .      | —                         | 0.78      | 0.72      | 0.76      | 0.64      | 0.68      |

For each of the 12 cohorts the dropping of the death rate for persons of races other than white below the corresponding rate for white persons with rare exceptions does not occur until ages 75-79 years. At ages 80-84 years the death rate for persons of races other than white drops even further below that for white persons than at ages 75-79 years.

The above data for these 12 cohorts indicate that for both age groups 75-79 years and 80-84 years the gap between the death rate for other persons and for white persons narrowed during 1944-69.

For cohorts of women 75-79 years born in 1885-89 and 1890-94 the ratio of the age-specific death rate for women of races other than white over the corresponding rate for white women was, respectively, 1.00 and 0.98.

The findings of a number of studies including those of Rosenwaike<sup>5</sup> and Hambricht<sup>6</sup> suggest that part of this dropping of the death rate of persons other than white below that for white persons at advanced ages may result from an artifact—namely the misreporting of age for older persons either in the decennial censuses or on the death certificate, or both in the censuses and on the death certificate. This crossover at advanced ages of the death rate for persons of races other than white below that for white persons occurs with great regularity. For example, it shows up clearly for both men and women in each of the four marital status groups—single, married, widowed, and divorced.<sup>7</sup> It also shows up for a number of causes of death.<sup>4</sup>

### SUMMARY

The crude death rate in the United States had a clearly downward trend in the first half of the century. It reached its low in 1954 and began to level off. Except for years of pronounced influenza epidemics the rate during 1954-69 was relatively stable. This stability resulted from offsetting effects of important changes in the patterns of vital events in the United States.

### Effect of Changes in Death Rates and Age Composition on 1969 Crude Death Rate

The total effect of the changes between 1960 and 1969 in the population and age-

specific death rates for age groups under 1, 5-9, 10-14, 15-24, and 45-64 years tended to lower the crude death rate for 1969 by about 83.8 deaths per 100,000; and the total effect of the changes between 1960 and 1969 in the population and age-specific death rates for age groups 1-4, 25-44, and 65 years and over tended to raise the crude death rate for 1969 by 80.2 deaths per 100,000. The difference between these offsetting amounts approximates the difference between the crude death rate for 1960 (954.7 deaths per 100,000) and that for 1969 (951.9 deaths per 100,000).

On the one hand the following major changes in death rates and age composition of the population during the 1960's tended to *raise* the 1969 crude death rate to a higher level than it would otherwise have been:

- Decrease of 10.8 percent in number of children at ages 1-4 years, with their low risk of mortality (85.0 deaths per 100,000 for 1969)
- Increase of 14.7 percent in number of persons 45-64 years of age, with their relatively high risk of mortality (1,146.2 deaths per 100,000 for 1969)
- Increase of 17.6 percent in number of persons 65 years and over, with their very high risk of mortality (6,084.0 deaths per 100,000 for 1969)
- Increase of 22.1 percent in the death rate for young people at ages 15-24 years (from 106.3 deaths per 100,000 for 1960 to 129.8, for 1969)
- Increase of 6.0 percent in the death rate for people at ages 25-44 years (from 225.0 deaths per 100,000 for 1960 to 238.5, for 1969)

On the other hand the following important changes in death rates and age composition of the population during the 1960's tended to *lower* the 1969 crude death rate below what it would otherwise have been:

- Decrease of 15 percent in the number of infants, with their high risk of mortality (2,148.0 deaths per 100,000 for 1969)
- Increase of 11.4 percent in the number of children at ages 5-9 years, with their low risk of mortality (42.7 deaths per 100,000 for 1969)
- Increase of 22.3 percent in children at ages 10-14 years, with an even lower risk of mortality (41.6 deaths per 100,000 for 1969)
- Increase of 42.4 percent in the number of young people at ages 15-24 years (from 24,020,004 for 1960 to 34,214,000 for 1969), who, despite the rise in their death rate, still have a comparatively low risk of mortality
- Increase of 1.4 percent in the number of people at ages 25-44 years (from 46,899,662 for 1960 to 47,566,000 for 1969), who also, despite a rise in their death rate, still have a relatively low risk of mortality
- Decrease of 20.3 percent in the death rate at ages under 1 year (from 2,696.4 deaths per 100,000 for 1960 to 2,148.0 for 1969)
- Decrease of 22.1 percent in the death rate for children at ages 1-4 years (from 109.1 deaths per 100,000 to 85.0 for 1969)
- Decrease of 12.9 percent in the death rate for children 5-9 years of age (from 49.0 deaths per 100,000 for 1960 to 42.7, for 1969)
- Decrease of 5.5 percent in the death rate for children 10-14 years of age (from 44.0 deaths per 100,000 for 1960 to 41.6, for 1969)
- Decrease of 2.8 percent in the death rate for people 45-64 years of age (from 1,178.9 per 100,000 for 1960 to 1,146.2, for 1969)
- Decrease of 0.3 percent in the death rate for people at ages 65 years and over (from 6,099.5 deaths per 100,000 for 1960 to 6,084.0 for 1969)

## Color Differentials for Mortality

There was some reduction between 1950 and 1969 in the excess mortality for people of races other than white, but for most age groups large mortality differentials still persisted for 1969. During the 1950's there was a narrowing of the gap between the higher death rates for people of races other than white and the lower death rates for white people for almost every age group under 75 years. But during the 1960's this favorable trend was reversed primarily because of a substantial rise in mortality for a number of age groups of the male population of races other than white. As a result of these changes the male population of races other than white had greater excess mortality for 1969 than for 1960 for every 5-year age group under 60 years except for the age group under 5 years. In contrast the female population of races other than white had smaller excess mortality for 1969 than for 1960 for every 5-year age group under 65 years, except the age group 15-19 years. For the total population and for both male and female people the mortality color ratio peaks at ages 30-34 years and then declines with advancing age, dropping below 1.00 beginning with ages 75-79 years.

Cohort analysis shows that the pattern of dropping of the death rate for persons of other

races below that for white persons at ages 75-79 years occurs for both male and female persons. But this differential, which may result from misreporting of age, appears to be disappearing.

## Sex Differentials for Mortality

The mortality sex ratio, for the population as a whole, did not change appreciably over the study years: for 1950, 1960, and 1969 the death rates for the male population were, respectively, 1.34, 1.36, and 1.35 times the corresponding rates for the female population. But for the ages at which the mortality sex ratio peaked (20-24 years), there were considerable increases: from 1.93 for 1950 to 2.57 for 1960, and to 3.03 for 1969.

These increases in the mortality sex ratio reflect the upturn in the course of mortality for men during the 1960's. Contributing to this unfavorable trend for men were increases in the death rates for external causes (homicides, accidents—especially motor vehicle accidents—and suicides) and for diseases. Among the diseases with large increases were malignant neoplasms; diabetes mellitus; bronchitis, emphysema, and asthma; and cirrhosis of liver. Other studies in this series analyze in detail the causes for the rise in mortality for men.<sup>3,4</sup>

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Table 1. Death rates for all causes, by birth cohort, color, sex, and age at death: United States, 5-year intervals during 1974-69

[Rates per 100,000 population in specified age color-sex group]

| Color, sex,<br>and age at<br>death in<br>years | Period of birth of cohort |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
|------------------------------------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                                                | 1950-<br>1954             | 1945-<br>1949 | 1940-<br>1944 | 1935-<br>1939 | 1930-<br>1934 | 1925-<br>1929 | 1920-<br>1924 | 1915-<br>1919 | 1910-<br>1914 | 1905-<br>1909 | 1900-<br>1904 | 1895-<br>1899 | 1890-<br>1894 | 1885-<br>1889 | 1880-<br>1884 | 1875-<br>1879 | 1870-<br>1874 | 1865-<br>1869 |
| Total,<br>both sexes                           |                           |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
| 15-19.....                                     | 114.7                     | 93.5          | 92.8          | 96.1          | 111.8         | 157.9         | 179.8         | 224.0         |               |               |               |               |               |               |               |               |               |               |
| 20-24.....                                     |                           | 147.6         | 127.1         | 125.4         | 132.7         | 151.9         | 253.4         | 247.2         | 330.1         |               |               |               |               |               |               |               |               |               |
| 25-29.....                                     |                           |               | 144.5         | 133.4         | 129.4         | 137.3         | 163.8         | 238.0         | 289.7         | 380.3         |               |               |               |               |               |               |               |               |
| 30-34.....                                     |                           |               |               | 175.5         | 170.9         | 164.5         | 168.5         | 204.7         | 294.5         | 347.4         | 436.7         |               |               |               |               |               |               |               |
| 35-39.....                                     |                           |               |               |               | 254.0         | 242.4         | 230.3         | 239.5         | 298.8         | 387.7         | 451.6         | 531.8         |               |               |               |               |               |               |
| 40-44.....                                     |                           |               |               |               |               | 385.2         | 368.6         | 362.4         | 385.1         | 449.7         | 541.7         | 616.6         | 725.5         |               |               |               |               |               |
| 45-49.....                                     |                           |               |               |               |               |               | 581.1         | 577.0         | 581.6         | 604.7         | 703.8         | 768.0         | 884.8         | 995.0         |               |               |               |               |
| 50-54.....                                     |                           |               |               |               |               |               |               | 891.4         | 915.2         | 927.4         | 974.3         | 1,054.6       | 1,192.5       | 1,288.0       | 1,392.2       |               |               |               |
| 55-59.....                                     |                           |               |               |               |               |               |               |               | 1,363.9       | 1,382.6       | 1,386.3       | 1,406.5       | 1,586.9       | 1,751.4       | 1,853.5       | 1,937.5       |               |               |
| 60-64.....                                     |                           |               |               |               |               |               |               |               |               | 2,051.2       | 2,066.6       | 2,092.7       | 2,116.1       | 2,334.4       | 2,466.2       | 2,659.7       | 2,866.8       |               |
| 65-69.....                                     |                           |               |               |               |               |               |               |               |               |               | 3,055.7       | 3,147.5       | 3,112.9       | 3,141.8       | 3,351.1       | 3,569.5       | 3,911.3       | 4,034.4       |
| 70-74.....                                     |                           |               |               |               |               |               |               |               |               |               |               | 4,636.2       | 4,543.5       | 4,610.6       | 4,685.9       | 5,130.4       | 5,591.1       | 5,913.1       |
| 75-79.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               | 6,605.8       | 6,788.0       | 7,100.3       | 7,214.6       | 8,056.4       | 8,585.5       |
| 80-84.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               |               | 10,080.6      | 10,739.0      | 11,413.9      | 11,228.0      | 11,639.3      |
| White, male                                    |                           |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
| 15-19.....                                     | 153.7                     | 127.7         | 125.6         | 126.1         | 132.1         | 187.0         | 177.8         | 219.3         |               |               |               |               |               |               |               |               |               |               |
| 20-24.....                                     |                           | 202.3         | 171.8         | 170.3         | 182.2         | 176.2         | 348.5         | 233.9         | 300.9         |               |               |               |               |               |               |               |               |               |
| 25-29.....                                     |                           |               | 172.7         | 155.6         | 149.1         | 158.2         | 171.0         | 264.6         | 256.1         | 329.8         |               |               |               |               |               |               |               |               |
| 30-34.....                                     |                           |               |               | 184.4         | 182.8         | 176.3         | 181.2         | 204.3         | 291.6         | 314.4         | 391.3         |               |               |               |               |               |               |               |
| 35-39.....                                     |                           |               |               |               | 265.1         | 256.5         | 250.5         | 257.5         | 310.1         | 394.7         | 420.0         | 498.7         |               |               |               |               |               |               |
| 40-44.....                                     |                           |               |               |               |               | 424.5         | 413.6         | 412.0         | 424.0         | 484.1         | 551.5         | 613.2         | 716.6         |               |               |               |               |               |
| 45-49.....                                     |                           |               |               |               |               |               | 684.5         | 688.0         | 697.0         | 711.2         | 781.0         | 837.3         | 928.1         | 1,039.9       |               |               |               |               |
| 50-54.....                                     |                           |               |               |               |               |               |               | 1,107.6       | 1,132.8       | 1,161.6       | 1,156.4       | 1,229.8       | 1,331.1       | 1,378.9       | 1,460.8       |               |               |               |
| 55-59.....                                     |                           |               |               |               |               |               |               |               | 1,773.5       | 1,801.1       | 1,765.0       | 1,754.6       | 1,915.4       | 2,052.5       | 2,050.0       | 2,108.6       |               |               |
| 60-64.....                                     |                           |               |               |               |               |               |               |               |               | 2,757.6       | 2,693.8       | 2,703.9       | 2,645.5       | 2,846.7       | 2,899.8       | 2,962.8       | 3,141.2       |               |
| 65-69.....                                     |                           |               |               |               |               |               |               |               |               |               | 4,010.8       | 4,104.0       | 3,988.5       | 3,943.1       | 3,997.7       | 4,115.4       | 4,416.7       | 4,455.1       |
| 70-74.....                                     |                           |               |               |               |               |               |               |               |               |               |               | 6,106.5       | 5,875.9       | 5,721.5       | 5,642.3       | 5,958.0       | 6,290.4       | 6,501.7       |
| 75-79.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               | 8,556.2       | 8,401.7       | 8,493.2       | 8,400.8       | 9,173.7       | 9,570.4       |
| 80-84.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               |               | 12,191.6      | 12,698.3      | 13,156.4      | 13,099.7      | 13,120.3      |
| All other,<br>male                             |                           |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
| 15-19.....                                     | 235.8                     | 160.6         | 167.3         | 191.2         | 232.4         | 332.1         | 382.2         | 465.1         |               |               |               |               |               |               |               |               |               |               |
| 20-24.....                                     |                           | 394.3         | 282.7         | 279.7         | 318.8         | 381.5         | 582.4         | 630.5         | 819.6         |               |               |               |               |               |               |               |               |               |
| 25-29.....                                     |                           |               | 455.2         | 371.5         | 355.6         | 401.9         | 442.9         | 586.4         | 792.2         | 966.2         |               |               |               |               |               |               |               |               |
| 30-34.....                                     |                           |               |               | 589.5         | 481.4         | 452.9         | 453.5         | 559.2         | 797.0         | 967.4         | 1,195.0       |               |               |               |               |               |               |               |
| 35-39.....                                     |                           |               |               |               | 788.1         | 678.4         | 589.4         | 565.1         | 742.4         | 895.8         | 1,171.2       | 1,381.0       |               |               |               |               |               |               |
| 40-44.....                                     |                           |               |               |               |               | 1,080.9       | 894.3         | 867.2         | 890.7         | 1,059.1       | 1,350.8       | 1,540.7       | 1,815.0       |               |               |               |               |               |
| 45-49.....                                     |                           |               |               |               |               |               | 1,419.8       | 1,277.9       | 1,255.2       | 1,304.7       | 1,610.5       | 1,759.8       | 2,012.5       | 2,183.4       |               |               |               |               |
| 50-54.....                                     |                           |               |               |               |               |               |               | 2,002.4       | 1,891.6       | 1,849.9       | 2,037.5       | 2,302.7       | 2,606.6       | 2,824.9       | 2,869.8       |               |               |               |
| 55-59.....                                     |                           |               |               |               |               |               |               |               | 2,789.0       | 2,627.2       | 2,614.7       | 2,701.5       | 3,084.7       | 3,060.3       | 3,484.4       | 3,363.5       |               |               |
| 60-64.....                                     |                           |               |               |               |               |               |               |               |               | 3,843.3       | 3,763.3       | 3,773.0       | 3,949.4       | 3,728.4       | 3,606.8       | 4,134.1       | 4,421.9       |               |
| 65-69.....                                     |                           |               |               |               |               |               |               |               |               |               | 5,589.7       | 5,877.2       | 4,929.1       | 4,385.3       | 5,140.9       | 4,774.2       | 4,781.4       | 5,117.0       |
| 70-74.....                                     |                           |               |               |               |               |               |               |               |               |               |               | 8,499.4       | 6,467.0       | 6,227.7       | 6,015.7       | 6,026.3       | 6,254.0       | 6,522.9       |
| 75-79.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               | 8,027.3       | 7,510.3       | 7,309.1       | 7,420.5       | 8,363.5       | 8,226.9       |
| 80-84.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               |               | 9,048.7       | 8,622.1       | 10,097.8      | 9,087.8       | 9,114.3       |
| White,<br>female                               |                           |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
| 15-19.....                                     | 58.7                      | 50.9          | 49.9          | 51.6          | 65.3          | 92.3          | 124.1         | 163.9         |               |               |               |               |               |               |               |               |               |               |
| 20-24.....                                     |                           | 65.7          | 63.8          | 60.1          | 63.7          | 83.4          | 133.7         | 170.9         | 245.2         |               |               |               |               |               |               |               |               |               |
| 25-29.....                                     |                           |               | 71.1          | 70.7          | 72.5          | 75.7          | 101.0         | 151.9         | 211.8         | 299.6         |               |               |               |               |               |               |               |               |
| 30-34.....                                     |                           |               |               | 98.7          | 103.2         | 101.0         | 103.7         | 138.6         | 202.5         | 255.9         | 328.6         |               |               |               |               |               |               |               |
| 35-39.....                                     |                           |               |               |               | 152.8         | 152.0         | 145.7         | 157.5         | 197.7         | 274.8         | 330.2         | 398.1         |               |               |               |               |               |               |
| 40-44.....                                     |                           |               |               |               |               | 240.8         | 234.1         | 228.2         | 250.6         | 293.5         | 368.6         | 440.5         | 535.6         |               |               |               |               |               |
| 45-49.....                                     |                           |               |               |               |               |               | 365.3         | 361.7         | 361.7         | 382.8         | 452.3         | 529.3         | 640.8         | 732.6         |               |               |               |               |
| 50-54.....                                     |                           |               |               |               |               |               |               | 550.8         | 562.0         | 558.2         | 605.1         | 680.3         | 824.1         | 935.8         | 1,045.0       |               |               |               |
| 55-59.....                                     |                           |               |               |               |               |               |               |               | 818.8         | 830.7         | 835.5         | 894.1         | 1,056.7       | 1,248.4       | 1,403.0       | 1,527.9       |               |               |
| 60-64.....                                     |                           |               |               |               |               |               |               |               |               | 1,230.5       | 1,260.4       | 1,341.0       | 1,411.0       | 1,642.4       | 1,872.2       | 2,140.9       | 2,368.0       |               |
| 65-69.....                                     |                           |               |               |               |               |               |               |               |               |               | 1,965.6       | 2,086.5       | 2,172.8       | 2,289.7       | 2,548.1       | 2,908.8       | 3,322.6       | 3,492.0       |
| 70-74.....                                     |                           |               |               |               |               |               |               |               |               |               |               | 3,278.4       | 3,363.8       | 3,552.8       | 3,769.5       | 4,316.6       | 4,919.7       | 5,311.1       |
| 75-79.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               | 5,599.7       | 5,599.7       | 6,076.9       | 6,287.1       | 7,136.8       | 7,851.6       |
| 80-84.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               |               | 8,997.8       | 9,794.3       | 10,438.7      | 10,308.0      | 10,889.7      |
| All other,<br>female                           |                           |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
| 15-19.....                                     | 94.7                      | 79.8          | 89.3          | 106.6         | 181.5         | 297.0         | 437.5         | 496.1         |               |               |               |               |               |               |               |               |               |               |
| 20-24.....                                     |                           | 135.8         | 127.9         | 146.4         | 165.6         | 291.7         | 473.3         | 607.1         | 746.1         |               |               |               |               |               |               |               |               |               |
| 25-29.....                                     |                           |               | 192.0         | 207.6         | 238.1         | 238.1         | 360.2         | 503.2         | 713.3         | 832.1         |               |               |               |               |               |               |               |               |
| 30-34.....                                     |                           |               |               | 293.9         | 293.1         | 311.5         | 341.7         | 458.5         | 699.5         | 839.1         | 1,047.2       |               |               |               |               |               |               |               |
| 35-39.....                                     |                           |               |               |               | 435.0         | 446.4         | 442.6         | 480.7         | 632.3         | 800.0         | 1,009.6       |               |               |               |               |               |               |               |
| 40-44.....                                     |                           |               |               |               |               | 613.0         | 623.0         | 659.2         | 740.3         | 955.5         | 1,244.6       | 1,359.3       | 1,543.1       |               |               |               |               |               |
| 45-49.....                                     |                           |               |               |               |               |               | 848.1         | 863.9         | 927.5         | 1,072.2       | 1,402.9       | 1,445.6       | 1,732.1       | 1,850.0       |               |               |               |               |
| 50-54.....                                     |                           |               |               |               |               |               |               | 1,172.2       | 1,333.7       | 1,407.4       | 1,698.3       | 1,857.5       | 2,199.4       | 2,569.9       | 2,727.6       |               |               |               |
| 55-59.....                                     |                           |               |               |               |               |               |               |               | 1,692.9       | 1,790.6       | 2,029.5       | 2,404.3       | 2,400.7       | 2,639.4       | 3,252.3       |               |               |               |
| 60-64.....                                     |                           |               |               |               |               |               |               |               |               | 2,524.2       | 2,919.5       | 2,757.2       | 2,938.3       | 3,176.9       | 3,268.1       | 4,035.7       | 4,169.4       | 4,503.5       |
| 65-69.....                                     |                           |               |               |               |               |               |               |               |               |               | 3,954.7       | 3,371.0       | 3,242.4       | 4,188.7       | 4,109.1       | 4,026.9       | 4,026.9       | 4,503.5       |
| 70-74.....                                     |                           |               |               |               |               |               |               |               |               |               | 4,141.5       | 4,362.9       | 4,564.0       | 4,446.2       | 5,006.2       | 4,963.2       | 4,963.2       | 5,625.0       |
| 75-79.....                                     |                           |               |               |               |               |               |               |               |               |               |               | 5,310.4       | 5,170.1       | 5,617.0       | 5,670.4       | 5,947.4       | 6,823.0       | 6,542.3       |
| 80-84.....                                     |                           |               |               |               |               |               |               |               |               |               |               |               |               | 7,062.2       | 7,007.5       | 7,926.4       | 6,634.0       | 7,351.3       |

Table 2. Death rates for all causes, by 10-year age groups, color, and sex: United States, 1950-69

| Color, sex, and year     | All ages | Under<br>1 year             | 1-4<br>years | 5-14<br>years | 15-24<br>years | 25-34<br>years |
|--------------------------|----------|-----------------------------|--------------|---------------|----------------|----------------|
| <u>Total, both sexes</u> |          | Rate per 100,000 population |              |               |                |                |
| 1969-----                | 951.9    | 2,148.0                     | 85.0         | 42.2          | 129.8          | 158.8          |
| 1968-----                | 965.7    | 2,226.0                     | 86.4         | 42.6          | 124.2          | 157.3          |
| 1967-----                | 935.7    | 2,233.1                     | 86.3         | 41.4          | 116.9          | 152.4          |
| 1966-----                | 951.3    | 2,332.7                     | 93.2         | 42.6          | 115.8          | 154.1          |
| 1965-----                | 943.2    | 2,407.7                     | 92.9         | 42.2          | 109.3          | 151.6          |
| 1964-----                | 939.6    | 2,463.2                     | 96.0         | 43.2          | 108.3          | 152.1          |
| 1963-----                | 961.3    | 2,526.6                     | 99.5         | 43.4          | 105.6          | 148.6          |
| 1962-----                | 945.0    | 2,534.3                     | 98.0         | 43.8          | 103.4          | 145.3          |
| 1961-----                | 929.5    | 2,538.9                     | 101.4        | 43.9          | 102.5          | 143.5          |
| 1960-----                | 954.7    | 2,696.4                     | 109.1        | 46.6          | 106.3          | 146.4          |
| 1959-----                | 938.6    | 2,748.7                     | 106.9        | 47.7          | 107.5          | 147.8          |
| 1958-----                | 950.8    | 2,814.5                     | 111.7        | 46.6          | 107.5          | 147.4          |
| 1957-----                | 958.6    | 2,797.5                     | 111.8        | 48.8          | 115.6          | 152.8          |
| 1956-----                | 935.1    | 2,823.1                     | 110.2        | 47.4          | 115.5          | 149.1          |
| 1955-----                | 930.4    | 2,848.5                     | 113.4        | 48.8          | 115.6          | 149.6          |
| 1954-----                | 919.0    | 2,928.2                     | 118.3        | 50.4          | 113.8          | 153.2          |
| 1953-----                | 959.0    | 3,076.2                     | 130.0        | 54.8          | 123.8          | 162.7          |
| 1952-----                | 961.4    | 3,207.7                     | 141.1        | 59.3          | 130.1          | 172.7          |
| 1951-----                | 966.7    | 3,234.4                     | 136.9        | 59.3          | 128.0          | 176.6          |
| 1950 <sup>1</sup> -----  | 963.8    | 3,299.2                     | 139.4        | 60.1          | 128.1          | 178.7          |
| <u>Total, male</u>       |          |                             |              |               |                |                |
| 1969-----                | 1,097.6  | 2,424.6                     | 92.0         | 51.0          | 192.3          | 216.5          |
| 1968-----                | 1,114.3  | 2,515.8                     | 94.5         | 51.8          | 183.0          | 213.2          |
| 1967-----                | 1,081.7  | 2,516.2                     | 95.8         | 49.9          | 170.4          | 204.7          |
| 1966-----                | 1,097.6  | 2,626.8                     | 101.5        | 51.3          | 168.1          | 203.1          |
| 1965-----                | 1,088.4  | 2,713.0                     | 100.8        | 50.9          | 157.3          | 198.4          |
| 1964-----                | 1,082.8  | 2,771.8                     | 104.6        | 51.9          | 154.8          | 198.3          |
| 1963-----                | 1,108.4  | 2,858.1                     | 107.8        | 51.4          | 149.8          | 191.8          |
| 1962-----                | 1,088.2  | 2,869.1                     | 104.7        | 52.1          | 146.9          | 185.7          |
| 1961-----                | 1,073.0  | 2,862.7                     | 110.2        | 52.5          | 146.7          | 183.8          |
| 1960-----                | 1,104.5  | 3,059.3                     | 119.5        | 55.7          | 152.1          | 187.9          |
| 1959-----                | 1,084.4  | 3,105.8                     | 116.2        | 57.8          | 154.0          | 189.4          |
| 1958-----                | 1,096.7  | 3,163.9                     | 119.3        | 55.7          | 154.6          | 188.0          |
| 1957-----                | 1,108.1  | 3,156.7                     | 119.7        | 58.5          | 165.2          | 193.5          |
| 1956-----                | 1,082.5  | 3,201.3                     | 118.8        | 56.8          | 167.3          | 191.6          |
| 1955-----                | 1,076.4  | 3,213.8                     | 123.1        | 59.0          | 165.8          | 191.8          |
| 1954-----                | 1,065.3  | 3,308.3                     | 128.4        | 60.2          | 163.7          | 196.2          |
| 1953-----                | 1,112.0  | 3,478.9                     | 141.7        | 65.9          | 176.4          | 206.4          |
| 1952-----                | 1,111.9  | 3,613.2                     | 152.0        | 69.6          | 180.6          | 215.6          |
| 1951-----                | 1,114.8  | 3,665.2                     | 147.6        | 71.0          | 173.2          | 218.2          |
| 1950 <sup>1</sup> -----  | 1,106.1  | 3,728.0                     | 151.7        | 70.9          | 167.9          | 216.5          |
| <u>Total, female</u>     |          |                             |              |               |                |                |
| 1969-----                | 813.1    | 1,859.2                     | 77.6         | 33.0          | 68.8           | 103.0          |
| 1968-----                | 824.0    | 1,923.4                     | 77.9         | 33.1          | 66.8           | 103.3          |
| 1967-----                | 796.1    | 1,938.0                     | 76.4         | 32.6          | 64.5           | 102.1          |
| 1966-----                | 810.8    | 2,026.9                     | 84.6         | 33.7          | 64.3           | 106.8          |
| 1965-----                | 803.3    | 2,089.4                     | 84.6         | 33.3          | 61.5           | 106.3          |
| 1964-----                | 801.3    | 2,141.0                     | 87.0         | 34.2          | 62.2           | 107.5          |
| 1963-----                | 819.1    | 2,180.6                     | 90.9         | 35.1          | 61.9           | 106.9          |
| 1962-----                | 806.5    | 2,186.5                     | 91.0         | 35.3          | 60.6           | 106.2          |
| 1961-----                | 790.4    | 2,201.5                     | 92.3         | 35.0          | 59.0           | 104.8          |
| 1960-----                | 809.2    | 2,321.3                     | 98.4         | 37.3          | 61.3           | 106.6          |
| 1959-----                | 797.1    | 2,379.9                     | 97.3         | 37.2          | 62.1           | 107.8          |
| 1958-----                | 809.0    | 2,452.5                     | 103.8        | 37.2          | 61.8           | 108.4          |
| 1957-----                | 813.2    | 2,425.2                     | 103.6        | 38.8          | 68.0           | 113.8          |
| 1956-----                | 791.6    | 2,431.7                     | 101.3        | 37.7          | 66.1           | 108.4          |
| 1955-----                | 788.2    | 2,469.4                     | 103.3        | 38.2          | 67.9           | 109.4          |
| 1954-----                | 776.8    | 2,534.7                     | 107.8        | 40.2          | 67.5           | 112.3          |
| 1953-----                | 810.4    | 2,659.0                     | 118.0        | 43.3          | 75.3           | 121.4          |
| 1952-----                | 815.0    | 2,786.8                     | 129.8        | 48.6          | 83.4           | 132.1          |
| 1951-----                | 821.9    | 2,789.0                     | 125.9        | 47.2          | 85.2           | 137.3          |
| 1950 <sup>1</sup> -----  | 823.5    | 2,854.6                     | 126.7        | 48.9          | 89.1           | 142.7          |

<sup>1</sup>Figures based on enumerated population adjusted for age bias in the population of races other than white.

Table 2. Death rates for all causes, by 10-year age groups, color, and sex: United States, 1950-69—Con.

| Color, sex, and year     | 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 |
|--------------------------|-----------------------------|----------------|----------------|----------------|----------------|----------------------|
| <u>Total, both sexes</u> | Rate per 100,000 population |                |                |                |                |                      |
| 1969-----                | 322.4                       | 728.3          | 1,677.5        | 3,738.2        | 7,896.0        | 19,084.6             |
| 1968-----                | 320.8                       | 747.1          | 1,724.3        | 3,848.5        | 8,078.8        | 19,614.3             |
| 1967-----                | 310.6                       | 730.7          | 1,674.0        | 3,749.9        | 7,900.2        | 19,419.7             |
| 1966-----                | 310.6                       | 742.7          | 1,699.7        | 3,836.7        | 8,171.8        | 20,052.3             |
| 1965-----                | 307.5                       | 739.5          | 1,694.5        | 3,790.3        | 8,192.7        | 20,199.7             |
| 1964-----                | 306.1                       | 739.2          | 1,697.4        | 3,778.4        | 8,178.8        | 20,020.5             |
| 1963-----                | 303.2                       | 747.9          | 1,726.3        | 3,886.3        | 8,518.1        | 21,012.1             |
| 1962-----                | 298.2                       | 741.3          | 1,692.8        | 3,799.0        | 8,426.5        | 20,468.3             |
| 1961-----                | 292.5                       | 731.6          | 1,674.3        | 3,723.4        | 8,363.0        | 19,593.7             |
| 1960-----                | 299.4                       | 756.0          | 1,735.1        | 3,822.1        | 8,745.2        | 19,857.5             |
| 1959-----                | 293.9                       | 743.3          | 1,711.7        | 3,757.3        | 8,584.9        | 19,417.5             |
| 1958-----                | 298.9                       | 753.5          | 1,739.8        | 3,836.0        | 8,794.4        | 19,795.3             |
| 1957-----                | 307.1                       | 764.9          | 1,780.6        | 3,902.7        | 8,807.5        | 19,789.8             |
| 1956-----                | 300.9                       | 746.8          | 1,744.0        | 3,809.3        | 8,785.6        | 19,229.7             |
| 1955-----                | 306.8                       | 756.3          | 1,729.7        | 3,811.1        | 8,794.6        | 18,983.3             |
| 1954-----                | 309.8                       | 776.2          | 1,737.4        | 3,785.1        | 8,603.5        | 18,157.5             |
| 1953-----                | 332.0                       | 817.2          | 1,838.5        | 3,939.0        | 9,063.5        | 19,187.3             |
| 1952-----                | 343.9                       | 833.9          | 1,859.9        | 3,940.7        | 9,054.6        | 19,056.6             |
| 1951-----                | 353.6                       | 847.2          | 1,881.2        | 4,005.5        | 9,235.9        | 19,758.8             |
| 1950 <sup>1</sup> -----  | 358.7                       | 853.9          | 1,901.0        | 4,104.3        | 9,331.1        | 20,196.9             |
| <u>Total, male</u>       |                             |                |                |                |                |                      |
| 1969-----                | 410.8                       | 962.7          | 2,312.5        | 5,034.7        | 9,760.3        | 19,554.9             |
| 1968-----                | 406.5                       | 984.2          | 2,370.6        | 5,185.4        | 9,883.8        | 20,388.3             |
| 1967-----                | 394.3                       | 963.5          | 2,299.7        | 5,022.8        | 9,616.5        | 20,382.5             |
| 1966-----                | 392.3                       | 979.1          | 2,333.3        | 5,115.7        | 9,848.2        | 20,933.7             |
| 1965-----                | 385.2                       | 970.1          | 2,305.8        | 5,046.4        | 9,823.2        | 21,278.9             |
| 1964-----                | 384.3                       | 965.8          | 2,295.0        | 4,989.8        | 9,711.3        | 21,042.5             |
| 1963-----                | 377.4                       | 981.1          | 2,319.4        | 5,114.3        | 10,069.2       | 22,460.3             |
| 1962-----                | 371.2                       | 971.5          | 2,264.7        | 4,943.2        | 9,868.5        | 21,902.1             |
| 1961-----                | 366.2                       | 955.9          | 2,238.9        | 4,811.2        | 9,779.4        | 20,914.4             |
| 1960-----                | 372.8                       | 992.2          | 2,309.5        | 4,914.4        | 10,178.4       | 21,186.3             |
| 1959-----                | 367.8                       | 972.5          | 2,275.1        | 4,787.6        | 9,912.1        | 20,543.4             |
| 1958-----                | 373.1                       | 977.1          | 2,298.1        | 4,852.4        | 10,135.3       | 20,833.4             |
| 1957-----                | 381.1                       | 987.6          | 2,346.7        | 4,916.9        | 10,098.4       | 20,726.1             |
| 1956-----                | 370.7                       | 964.1          | 2,288.7        | 4,762.2        | 10,078.0       | 20,045.3             |
| 1955-----                | 377.0                       | 973.9          | 2,256.9        | 4,734.6        | 10,044.1       | 19,588.4             |
| 1954-----                | 377.2                       | 987.1          | 2,254.2        | 4,673.8        | 9,800.6        | 18,741.1             |
| 1953-----                | 406.3                       | 1,038.1        | 2,377.8        | 4,814.2        | 10,275.9       | 19,915.9             |
| 1952-----                | 417.0                       | 1,054.5        | 2,386.4        | 4,786.6        | 10,228.7       | 19,673.6             |
| 1951-----                | 427.8                       | 1,061.8        | 2,386.2        | 4,862.0        | 10,350.5       | 20,818.0             |
| 1950 <sup>1</sup> -----  | 428.8                       | 1,067.1        | 2,395.3        | 4,931.4        | 10,426.0       | 21,636.0             |
| <u>Total, female</u>     |                             |                |                |                |                |                      |
| 1969-----                | 238.3                       | 509.7          | 1,105.5        | 2,708.5        | 6,632.9        | 18,796.2             |
| 1968-----                | 239.5                       | 525.3          | 1,139.7        | 2,783.7        | 6,829.2        | 19,167.8             |
| 1967-----                | 231.2                       | 512.2          | 1,105.1        | 2,730.4        | 6,687.9        | 18,855.7             |
| 1966-----                | 233.0                       | 519.8          | 1,119.8        | 2,806.6        | 6,964.3        | 19,506.2             |
| 1965-----                | 233.7                       | 521.0          | 1,131.9        | 2,768.9        | 6,998.5        | 19,526.4             |
| 1964-----                | 231.8                       | 523.4          | 1,144.9        | 2,781.9        | 7,043.5        | 19,381.9             |
| 1963-----                | 232.8                       | 524.7          | 1,175.6        | 2,864.8        | 7,350.5        | 20,141.1             |
| 1962-----                | 228.8                       | 520.1          | 1,159.6        | 2,833.3        | 7,328.4        | 19,597.2             |
| 1961-----                | 222.4                       | 514.9          | 1,146.2        | 2,792.2        | 7,275.6        | 18,783.9             |
| 1960-----                | 229.4                       | 526.7          | 1,196.4        | 2,871.8        | 7,633.1        | 19,008.4             |
| 1959-----                | 223.3                       | 520.7          | 1,182.3        | 2,856.5        | 7,551.0        | 18,681.4             |
| 1958-----                | 227.9                       | 535.9          | 1,212.7        | 2,940.2        | 7,738.9        | 19,103.3             |
| 1957-----                | 236.2                       | 547.6          | 1,243.2        | 3,000.7        | 7,781.6        | 19,151.0             |
| 1956-----                | 233.9                       | 534.1          | 1,223.7        | 2,956.1        | 7,750.5        | 18,662.3             |
| 1955-----                | 239.2                       | 543.0          | 1,222.6        | 2,978.0        | 7,785.5        | 18,554.8             |
| 1954-----                | 244.8                       | 569.0          | 1,236.7        | 2,979.1        | 7,625.9        | 17,740.0             |
| 1953-----                | 260.3                       | 599.7          | 1,312.3        | 3,139.9        | 8,064.8        | 18,663.4             |
| 1952-----                | 273.2                       | 615.8          | 1,341.0        | 3,164.0        | 8,081.8        | 18,614.4             |
| 1951-----                | 281.6                       | 634.3          | 1,379.0        | 3,213.4        | 8,296.7        | 19,005.6             |
| 1950 <sup>1</sup> -----  | 290.3                       | 641.5          | 1,404.8        | 3,333.2        | 8,399.6        | 19,194.7             |

<sup>1</sup>Figures based on enumerated population adjusted for age bias in the population of races other than white.

Table 2. Death rates for all causes, by 10-year age groups, color, and sex: United States, 1950-69—Con.

| Color, sex, and year        | All ages | Under<br>1 year | 1-4<br>years | 5-14<br>years | 15-24<br>years | 25-34<br>years |
|-----------------------------|----------|-----------------|--------------|---------------|----------------|----------------|
| Rate per 100,000 population |          |                 |              |               |                |                |
| <u>White, both sexes</u>    |          |                 |              |               |                |                |
| 1969-----                   | 950.8    | 1,918.8         | 75.9         | 39.6          | 118.3          | 130.4          |
| 1968-----                   | 962.7    | 1,982.3         | 76.3         | 39.9          | 114.4          | 128.0          |
| 1967-----                   | 935.6    | 1,961.6         | 76.4         | 39.1          | 108.5          | 125.1          |
| 1966-----                   | 948.3    | 2,021.9         | 81.7         | 40.1          | 108.3          | 128.0          |
| 1965-----                   | 940.3    | 2,087.5         | 81.4         | 39.6          | 102.3          | 126.6          |
| 1964-----                   | 935.4    | 2,148.5         | 84.1         | 40.5          | 101.7          | 127.7          |
| 1963 <sup>2</sup> -----     | 953.7    | 2,218.0         | 86.4         | 40.7          | 98.9           | 125.4          |
| 1962 <sup>2</sup> -----     | 938.6    | 2,237.7         | 86.3         | 41.4          | 96.6           | 123.8          |
| 1961-----                   | 925.2    | 2,252.7         | 89.8         | 41.8          | 95.2           | 121.2          |
| 1960-----                   | 947.8    | 2,357.7         | 95.2         | 43.9          | 99.1           | 123.6          |
| 1959-----                   | 931.6    | 2,404.1         | 93.3         | 45.0          | 99.7           | 125.0          |
| 1958-----                   | 941.3    | 2,451.9         | 97.9         | 44.4          | 99.8           | 123.7          |
| 1957-----                   | 947.8    | 2,459.6         | 98.2         | 45.9          | 106.7          | 128.3          |
| 1956-----                   | 926.3    | 2,501.6         | 97.4         | 44.8          | 107.0          | 125.9          |
| 1955-----                   | 921.8    | 2,530.4         | 100.1        | 46.4          | 106.6          | 126.9          |
| 1954-----                   | 908.4    | 2,610.4         | 105.1        | 47.8          | 103.4          | 129.1          |
| 1953-----                   | 944.8    | 2,750.9         | 116.0        | 51.9          | 111.5          | 136.6          |
| 1952-----                   | 944.8    | 2,859.4         | 125.3        | 56.3          | 116.0          | 144.3          |
| 1951-----                   | 950.0    | 2,928.9         | 121.4        | 55.5          | 113.0          | 148.4          |
| 1950 <sup>1</sup> -----     | 945.7    | 2,992.6         | 124.1        | 56.4          | 111.7          | 148.3          |
| <u>White, male</u>          |          |                 |              |               |                |                |
| 1969-----                   | 1,092.7  | 2,186.1         | 82.0         | 47.8          | 175.7          | 178.1          |
| 1968-----                   | 1,108.3  | 2,267.0         | 83.6         | 48.5          | 169.0          | 174.4          |
| 1967-----                   | 1,080.2  | 2,236.2         | 84.9         | 47.3          | 159.2          | 169.6          |
| 1966-----                   | 1,093.3  | 2,302.4         | 89.6         | 48.3          | 158.4          | 170.2          |
| 1965-----                   | 1,084.9  | 2,373.9         | 89.3         | 48.1          | 148.7          | 168.0          |
| 1964-----                   | 1,078.6  | 2,435.7         | 92.2         | 48.8          | 146.9          | 169.2          |
| 1963 <sup>2</sup> -----     | 1,101.7  | 2,524.6         | 94.4         | 48.8          | 141.8          | 165.8          |
| 1962 <sup>2</sup> -----     | 1,083.5  | 2,554.5         | 92.7         | 49.6          | 139.2          | 161.5          |
| 1961-----                   | 1,070.2  | 2,560.7         | 98.6         | 50.1          | 138.4          | 158.6          |
| 1960-----                   | 1,098.5  | 2,694.1         | 104.9        | 52.7          | 143.7          | 163.2          |
| 1959-----                   | 1,078.4  | 2,741.5         | 101.2        | 55.1          | 145.5          | 163.4          |
| 1958-----                   | 1,088.7  | 2,773.0         | 105.8        | 53.4          | 145.9          | 162.2          |
| 1957-----                   | 1,098.7  | 2,799.5         | 105.5        | 55.3          | 156.0          | 166.0          |
| 1956-----                   | 1,075.6  | 2,849.7         | 105.7        | 54.0          | 157.5          | 166.0          |
| 1955-----                   | 1,069.6  | 2,877.9         | 109.6        | 56.6          | 156.1          | 167.3          |
| 1954-----                   | 1,055.9  | 2,969.9         | 114.6        | 57.4          | 152.3          | 169.9          |
| 1953-----                   | 1,098.3  | 3,142.2         | 126.4        | 62.7          | 163.3          | 177.6          |
| 1952-----                   | 1,095.6  | 3,233.4         | 135.3        | 66.5          | 166.1          | 185.4          |
| 1951-----                   | 1,099.3  | 3,329.4         | 131.2        | 66.8          | 158.5          | 188.7          |
| 1950 <sup>1</sup> -----     | 1,089.5  | 3,400.5         | 135.5        | 67.2          | 152.4          | 185.3          |
| <u>White, female</u>        |          |                 |              |               |                |                |
| 1969-----                   | 815.1    | 1,638.1         | 69.6         | 31.1          | 62.0           | 83.8           |
| 1968-----                   | 823.4    | 1,683.6         | 68.7         | 31.0          | 60.8           | 82.7           |
| 1967-----                   | 797.0    | 1,673.7         | 67.4         | 30.5          | 58.8           | 81.7           |
| 1966-----                   | 808.6    | 1,727.4         | 73.4         | 31.5          | 58.7           | 86.7           |
| 1965-----                   | 800.5    | 1,787.5         | 73.1         | 30.9          | 56.0           | 86.0           |
| 1964-----                   | 796.7    | 1,847.3         | 75.5         | 31.9          | 56.7           | 87.0           |
| 1963 <sup>2</sup> -----     | 810.1    | 1,896.3         | 78.0         | 32.2          | 56.3           | 85.7           |
| 1962 <sup>2</sup> -----     | 797.8    | 1,907.0         | 79.8         | 33.0          | 54.3           | 86.8           |
| 1961-----                   | 784.2    | 1,929.9         | 80.7         | 33.2          | 52.4           | 84.7           |
| 1960-----                   | 800.9    | 2,007.7         | 85.2         | 34.7          | 54.9           | 85.0           |
| 1959-----                   | 788.5    | 2,053.3         | 85.0         | 34.5          | 54.6           | 87.5           |
| 1958-----                   | 797.6    | 2,117.2         | 89.7         | 35.0          | 54.7           | 86.2           |
| 1957-----                   | 800.6    | 2,105.1         | 90.5         | 36.1          | 59.1           | 91.7           |
| 1956-----                   | 780.4    | 2,137.5         | 88.8         | 35.2          | 58.5           | 87.1           |
| 1955-----                   | 777.4    | 2,167.5         | 90.3         | 35.8          | 59.2           | 87.9           |
| 1954-----                   | 764.6    | 2,235.6         | 95.2         | 37.9          | 57.6           | 90.0           |
| 1953-----                   | 795.1    | 2,341.0         | 105.1        | 40.7          | 63.2           | 97.4           |
| 1952-----                   | 797.5    | 2,468.3         | 114.8        | 45.8          | 69.4           | 105.2          |
| 1951-----                   | 803.3    | 2,512.1         | 111.2        | 43.7          | 69.5           | 110.1          |
| 1950 <sup>1</sup> -----     | 803.3    | 2,566.8         | 112.2        | 45.1          | 71.5           | 112.8          |

<sup>1</sup>Figures based on enumerated population adjusted for age bias in the population of races other than white.

<sup>2</sup>Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

Table 2. Death rates for all causes, by 10-year age groups, color, and sex: United States, 1950-69—Con.

| Color, sex, and year        | 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  |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|-----------------------|
| Rate per 100,000 population |                |                |                |                |                |                       |
| <u>White, both sexes</u>    |                |                |                |                |                |                       |
| 1969-----                   | 272.4          | 662.9          | 1,582.9        | 3,584.0        | 7,975.9        | 20,222.5              |
| 1968-----                   | 270.6          | 680.8          | 1,623.0        | 3,687.0        | 8,156.7        | 20,589.6              |
| 1967-----                   | 265.6          | 669.3          | 1,586.0        | 3,614.2        | 7,996.1        | 20,378.7              |
| 1966-----                   | 265.2          | 679.6          | 1,605.7        | 3,695.8        | 8,256.1        | 20,890.6              |
| 1965-----                   | 263.8          | 678.4          | 1,597.8        | 3,667.1        | 8,287.0        | 20,982.5              |
| 1964-----                   | 263.4          | 676.1          | 1,595.5        | 3,670.3        | 8,274.2        | 20,696.5              |
| 1963 <sup>2</sup> -----     | 262.4          | 683.6          | 1,616.3        | 3,751.6        | 8,578.6        | 21,554.5              |
| 1962 <sup>2</sup> -----     | 259.5          | 680.2          | 1,586.4        | 3,682.1        | 8,501.4        | 20,922.8              |
| 1961-----                   | 254.2          | 673.0          | 1,576.4        | 3,639.1        | 8,466.7        | 20,025.5 <sup>1</sup> |
| 1960-----                   | 260.4          | 692.3          | 1,632.8        | 3,739.8        | 8,827.2        | 20,354.5              |
| 1959-----                   | 255.6          | 681.2          | 1,616.2        | 3,686.4        | 8,681.7        | 19,928.9              |
| 1958-----                   | 261.5          | 685.9          | 1,638.3        | 3,757.8        | 8,888.8        | 20,327.3              |
| 1957-----                   | 267.2          | 693.4          | 1,673.2        | 3,831.0        | 8,910.1        | 20,308.7              |
| 1956-----                   | 261.4          | 678.5          | 1,642.2        | 3,752.5        | 8,894.0        | 19,778.8              |
| 1955-----                   | 267.7          | 685.1          | 1,636.2        | 3,758.3        | 8,905.4        | 19,532.4              |
| 1954-----                   | 269.2          | 699.8          | 1,645.5        | 3,739.8        | 8,708.5        | 18,617.3              |
| 1953-----                   | 286.7          | 733.0          | 1,737.0        | 3,884.3        | 9,160.9        | 19,627.4              |
| 1952-----                   | 296.0          | 747.9          | 1,756.1        | 3,889.2        | 9,150.1        | 19,478.2              |
| 1951-----                   | 304.8          | 759.3          | 1,774.8        | 3,955.1        | 9,331.9        | 20,219.3              |
| 1950 <sup>1</sup> -----     | 307.6          | 765.0          | 1,799.6        | 4,023.1        | 9,416.5        | 20,678.6              |
| <u>White, male</u>          |                |                |                |                |                |                       |
| 1969-----                   | 348.3          | 885.6          | 2,218.8        | 4,891.7        | 9,879.6        | 20,889.0              |
| 1968-----                   | 345.8          | 907.6          | 2,269.6        | 5,029.7        | 10,004.2       | 21,560.6              |
| 1967-----                   | 340.6          | 895.1          | 2,220.4        | 4,893.7        | 9,761.0        | 21,512.9              |
| 1966-----                   | 339.5          | 909.8          | 2,248.1        | 4,979.4        | 9,987.5        | 21,862.6              |
| 1965-----                   | 335.8          | 904.3          | 2,222.5        | 4,929.5        | 9,974.6        | 22,243.4              |
| 1964-----                   | 335.8          | 901.3          | 2,208.2        | 4,891.2        | 9,861.5        | 21,822.7              |
| 1963 <sup>2</sup> -----     | 334.2          | 918.2          | 2,228.5        | 4,982.1        | 10,178.7       | 22,998.8              |
| 1962 <sup>2</sup> -----     | 331.3          | 911.6          | 2,179.0        | 4,839.3        | 9,995.9        | 22,387.9              |
| 1961-----                   | 325.7          | 900.4          | 2,162.8        | 4,740.3        | 9,942.6        | 21,392.5              |
| 1960-----                   | 332.6          | 932.2          | 2,225.2        | 4,848.4        | 10,299.6       | 21,750.0              |
| 1959-----                   | 328.7          | 914.7          | 2,195.2        | 4,731.1        | 10,047.6       | 21,085.9              |
| 1958-----                   | 336.6          | 916.1          | 2,212.8        | 4,788.2        | 10,267.8       | 21,345.6              |
| 1957-----                   | 341.9          | 922.6          | 2,251.1        | 4,863.7        | 10,241.8       | 21,162.7              |
| 1956-----                   | 333.0          | 903.7          | 2,201.0        | 4,726.7        | 10,229.6       | 20,508.6              |
| 1955-----                   | 338.5          | 910.1          | 2,175.2        | 4,698.7        | 10,199.2       | 20,063.6              |
| 1954-----                   | 338.3          | 917.6          | 2,170.7        | 4,645.8        | 9,936.3        | 19,081.2              |
| 1953-----                   | 361.4          | 958.8          | 2,282.4        | 4,771.5        | 10,407.6       | 20,234.0              |
| 1952-----                   | 369.6          | 975.0          | 2,289.4        | 4,751.2        | 10,335.2       | 19,990.9              |
| 1951-----                   | 381.5          | 980.5          | 2,289.4        | 4,827.2        | 10,476.2       | 21,192.8              |
| 1950 <sup>1</sup> -----     | 380.9          | 984.5          | 2,304.4        | 4,864.9        | 10,526.3       | 22,116.3              |
| <u>White, female</u>        |                |                |                |                |                |                       |
| 1969-----                   | 198.9          | 453.7          | 1,009.5        | 2,553.7        | 6,694.7        | 19,796.7              |
| 1968-----                   | 198.1          | 467.3          | 1,038.1        | 2,622.8        | 6,887.5        | 20,012.9              |
| 1967-----                   | 193.6          | 456.1          | 1,009.3        | 2,593.7        | 6,761.3        | 19,699.2              |
| 1966-----                   | 193.7          | 461.3          | 1,018.9        | 2,666.0        | 7,021.1        | 20,267.4              |
| 1965-----                   | 194.5          | 463.1          | 1,024.2        | 2,644.3        | 7,064.7        | 20,213.2              |
| 1964-----                   | 193.7          | 460.4          | 1,030.5        | 2,670.4        | 7,108.6        | 20,003.9              |
| 1963 <sup>2</sup> -----     | 193.4          | 458.2          | 1,049.2        | 2,729.0        | 7,390.5        | 20,659.6              |
| 1962 <sup>2</sup> -----     | 190.6          | 457.1          | 1,035.8        | 2,707.9        | 7,379.1        | 19,967.9              |
| 1961-----                   | 185.5          | 452.7          | 1,029.8        | 2,700.4        | 7,343.0        | 19,201.5              |
| 1960-----                   | 191.1          | 458.8          | 1,078.9        | 2,779.3        | 7,696.6        | 19,477.7              |
| 1959-----                   | 185.4          | 453.8          | 1,073.0        | 2,775.1        | 7,628.1        | 19,180.6              |
| 1958-----                   | 189.2          | 461.5          | 1,097.3        | 2,851.6        | 7,814.5        | 19,654.2              |
| 1957-----                   | 195.1          | 469.1          | 1,125.5        | 2,915.6        | 7,859.6        | 19,727.6              |
| 1956-----                   | 192.2          | 457.8          | 1,109.6        | 2,882.3        | 7,836.4        | 19,271.0              |
| 1955-----                   | 199.1          | 464.3          | 1,119.4        | 2,911.4        | 7,876.1        | 19,156.1              |
| 1954-----                   | 202.3          | 485.5          | 1,137.8        | 2,918.8        | 7,716.0        | 18,284.5              |
| 1953-----                   | 214.2          | 510.4          | 1,205.9        | 3,075.5        | 8,148.3        | 19,189.2              |
| 1952-----                   | 224.3          | 523.4          | 1,232.0        | 3,100.3        | 8,177.2        | 19,109.7              |
| 1951-----                   | 229.9          | 539.9          | 1,265.1        | 3,151.8        | 8,382.0        | 19,524.4              |
| 1950 <sup>1</sup> -----     | 235.8          | 546.4          | 1,293.8        | 3,242.8        | 8,481.5        | 19,679.5              |

<sup>1</sup>Figures based on enumerated population adjusted for age bias in the population of races other than white.

<sup>2</sup>Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

Table 2. Death rates for all causes, by 10-year age groups, color, and sex United States, 1950-69--Con.

| Color, sex, and year         | All ages | Under<br>1 year | 1-4<br>years | 5-14<br>years | 15-24<br>years | 25-34<br>years |
|------------------------------|----------|-----------------|--------------|---------------|----------------|----------------|
| Rate per 100,000 population  |          |                 |              |               |                |                |
| <u>All other, both sexes</u> |          |                 |              |               |                |                |
| 1969-----                    | 959.7    | 3,204.7         | 129.2        | 56.7          | 205.8          | 369.5          |
| 1968-----                    | 987.6    | 3,359.9         | 136.9        | 58.3          | 190.0          | 375.5          |
| 1967-----                    | 936.3    | 3,541.2         | 136.8        | 55.1          | 173.9          | 354.1          |
| 1966-----                    | 973.4    | 3,883.5         | 153.3        | 57.7          | 168.1          | 345.9          |
| 1965-----                    | 965.0    | 4,016.9         | 153.6        | 58.0          | 158.3          | 335.1          |
| 1964-----                    | 970.6    | 4,062.3         | 160.9        | 59.4          | 155.5          | 332.0          |
| 1963 <sup>2</sup> -----      | 1,006.2  | 4,129.4         | 174.9        | 60.6          | 157.7          | 323.8          |
| 1962 <sup>2</sup> -----      | 981.3    | 4,120.3         | 166.6        | 59.9          | 157.3          | 311.5          |
| 1961-----                    | 962.4    | 4,080.3         | 168.7        | 57.1          | 154.8          | 310.5          |
| 1960-----                    | 1,008.5  | 4,626.4         | 190.8        | 64.3          | 158.2          | 318.6          |
| 1959-----                    | 994.9    | 4,744.6         | 189.6        | 65.9          | 164.8          | 325.6          |
| 1958-----                    | 1,027.1  | 4,983.4         | 196.4        | 62.1          | 163.2          | 335.6          |
| 1957-----                    | 1,046.1  | 4,814.3         | 197.5        | 69.3          | 178.3          | 351.3          |
| 1956-----                    | 1,007.4  | 4,758.2         | 192.2        | 65.8          | 175.6          | 339.1          |
| 1955-----                    | 1,001.0  | 4,804.0         | 198.9        | 66.0          | 179.1          | 338.0          |
| 1954-----                    | 1,006.9  | 4,938.0         | 204.1        | 68.6          | 188.5          | 354.5          |
| 1953-----                    | 1,077.9  | 5,194.9         | 222.9        | 75.3          | 213.7          | 382.2          |
| 1952-----                    | 1,101.8  | 5,517.0         | 247.9        | 80.3          | 233.2          | 412.4          |
| 1951-----                    | 1,109.0  | 5,209.0         | 248.1        | 86.1          | 239.6          | 416.5          |
| 1950 <sup>1</sup> -----      | 1,119.4  | 5,368.4         | 250.8        | 86.0          | 251.3          | 440.2          |
| <u>All other, male</u>       |          |                 |              |               |                |                |
| 1969-----                    | 1,132.8  | 3,542.0         | 141.7        | 69.5          | 303.5          | 516.0          |
| 1968-----                    | 1,158.5  | 3,689.9         | 149.9        | 71.7          | 277.7          | 518.9          |
| 1967-----                    | 1,093.0  | 3,881.4         | 151.9        | 65.9          | 247.9          | 478.3          |
| 1966-----                    | 1,129.8  | 4,259.9         | 164.3        | 69.1          | 236.0          | 458.5          |
| 1965-----                    | 1,114.3  | 4,447.5         | 162.6        | 68.2          | 219.3          | 435.4          |
| 1964-----                    | 1,114.8  | 4,505.1         | 173.0        | 71.3          | 212.3          | 425.9          |
| 1963 <sup>2</sup> -----      | 1,152.0  | 4,600.9         | 186.9        | 68.8          | 215.4          | 402.3          |
| 1962 <sup>2</sup> -----      | 1,117.7  | 4,562.5         | 178.7        | 69.6          | 210.4          | 388.1          |
| 1961-----                    | 1,094.3  | 4,516.7         | 179.1        | 67.9          | 207.7          | 384.7          |
| 1960-----                    | 1,152.0  | 5,189.4         | 207.3        | 75.2          | 213.8          | 386.4          |
| 1959-----                    | 1,133.2  | 5,255.3         | 209.0        | 76.9          | 216.9          | 405.1          |
| 1958-----                    | 1,162.4  | 5,555.4         | 204.2        | 72.0          | 219.1          | 405.6          |
| 1957-----                    | 1,186.0  | 5,337.6         | 210.9        | 81.4          | 232.6          | 429.9          |
| 1956-----                    | 1,140.4  | 5,369.5         | 205.0        | 76.9          | 239.0          | 413.8          |
| 1955-----                    | 1,133.3  | 5,348.3         | 212.2        | 76.4          | 237.0          | 405.9          |
| 1954-----                    | 1,144.7  | 5,500.8         | 220.3        | 80.8          | 248.9          | 428.3          |
| 1953-----                    | 1,228.1  | 5,708.5         | 244.7        | 89.2          | 276.8          | 460.3          |
| 1952-----                    | 1,251.6  | 6,205.4         | 266.9        | 92.0          | 291.8          | 482.5          |
| 1951-----                    | 1,248.2  | 5,889.1         | 266.6        | 101.3         | 287.0          | 480.5          |
| 1950 <sup>1</sup> -----      | 1,251.1  | 5,991.6         | 271.2        | 97.1          | 289.9          | 496.2          |
| <u>All other, female</u>     |          |                 |              |               |                |                |
| 1969-----                    | 798.7    | 2,861.8         | 116.2        | 43.8          | 113.1          | 239.7          |
| 1968-----                    | 828.4    | 3,023.3         | 123.2        | 44.9          | 106.3          | 249.2          |
| 1967-----                    | 789.8    | 3,195.3         | 121.6        | 44.3          | 103.1          | 245.4          |
| 1966-----                    | 826.7    | 3,499.7         | 142.0        | 46.2          | 102.7          | 247.4          |
| 1965-----                    | 824.3    | 3,590.8         | 144.5        | 47.9          | 99.2           | 247.3          |
| 1964-----                    | 834.6    | 3,611.5         | 148.5        | 47.5          | 100.9          | 250.4          |
| 1963 <sup>2</sup> -----      | 868.7    | 3,649.1         | 163.1        | 52.3          | 102.7          | 255.6          |
| 1962 <sup>2</sup> -----      | 852.6    | 3,658.4         | 154.6        | 50.2          | 106.9          | 245.0          |
| 1961-----                    | 837.7    | 3,638.7         | 158.3        | 46.2          | 105.0          | 246.6          |
| 1960-----                    | 872.6    | 4,067.1         | 174.4        | 53.4          | 106.1          | 260.0          |
| 1959-----                    | 864.2    | 4,221.5         | 170.3        | 54.8          | 115.9          | 257.2          |
| 1958-----                    | 899.1    | 4,413.4         | 188.5        | 52.1          | 111.7          | 275.3          |
| 1957-----                    | 913.9    | 4,292.7         | 184.1        | 57.1          | 128.8          | 283.3          |
| 1956-----                    | 881.6    | 4,151.5         | 179.5        | 54.6          | 118.3          | 274.4          |
| 1955-----                    | 875.9    | 4,282.1         | 185.7        | 55.4          | 127.3          | 279.0          |
| 1954-----                    | 877.1    | 4,379.6         | 188.0        | 56.3          | 136.0          | 290.5          |
| 1953-----                    | 936.4    | 4,683.4         | 201.0        | 61.3          | 159.7          | 314.2          |
| 1952-----                    | 960.3    | 4,837.8         | 228.8        | 68.6          | 182.6          | 350.9          |
| 1951-----                    | 976.9    | 4,535.1         | 229.4        | 70.9          | 197.6          | 360.2          |
| 1950 <sup>1</sup> -----      | 993.5    | 4,749.0         | 230.3        | 75.0          | 216.4          | 390.4          |

<sup>1</sup>Figures based on enumerated population adjusted for age bias in the population of races other than white.

<sup>2</sup>Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

Table 2. Death rates for all causes, by 10-year age groups, color, and sex: United States, 1950-69—Con.

| Color, sex, and year         | 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 |
|------------------------------|-----------------------------|----------------|----------------|----------------|----------------|----------------------|
| <u>All other, both sexes</u> | Rate per 100,000 population |                |                |                |                |                      |
| 1969-----                    | 711.4                       | 1,317.4        | 2,621.1        | 5,563.8        | 6,932.7        | 9,963.8              |
| 1968-----                    | 716.7                       | 1,346.9        | 2,734.8        | 5,769.6        | 7,120.6        | 11,148.4             |
| 1967-----                    | 668.5                       | 1,287.9        | 2,552.3        | 5,372.1        | 6,729.6        | 10,848.3             |
| 1966-----                    | 677.1                       | 1,319.1        | 2,639.0        | 5,517.9        | 7,117.7        | 12,001.9             |
| 1965-----                    | 664.3                       | 1,299.3        | 2,660.2        | 5,257.0        | 7,019.5        | 12,345.3             |
| 1964-----                    | 659.0                       | 1,317.1        | 2,714.7        | 5,064.0        | 6,975.9        | 12,801.2             |
| 1963 <sup>2</sup> -----      | 646.5                       | 1,322.4        | 2,790.6        | 5,295.0        | 7,436.6        | 14,569.2             |
| 1962 <sup>2</sup> -----      | 631.5                       | 1,294.0        | 2,704.2        | 4,965.9        | 7,200.3        | 14,397.3             |
| 1961-----                    | 618.2                       | 1,270.6        | 2,661.2        | 4,707.6        | 7,009.8        | 14,231.9             |
| 1960-----                    | 633.4                       | 1,342.9        | 2,774.6        | 4,784.9        | 7,631.1        | 13,907.6             |
| 1959-----                    | 627.1                       | 1,330.8        | 2,712.4        | 4,610.2        | 7,247.5        | 13,175.0             |
| 1958-----                    | 624.5                       | 1,397.1        | 2,824.3        | 4,780.3        | 7,480.8        | 13,395.5             |
| 1957-----                    | 654.8                       | 1,448.5        | 2,963.6        | 4,760.8        | 7,394.6        | 13,253.1             |
| 1956-----                    | 643.2                       | 1,400.4        | 2,896.2        | 4,488.0        | 7,247.8        | 12,604.9             |
| 1955-----                    | 644.7                       | 1,439.5        | 2,812.7        | 4,443.0        | 7,236.3        | 12,270.7             |
| 1954-----                    | 660.4                       | 1,509.5        | 2,826.8        | 4,327.4        | 7,111.1        | 12,183.6             |
| 1953-----                    | 724.6                       | 1,623.2        | 3,077.0        | 4,593.4        | 7,637.2        | 13,778.8             |
| 1952-----                    | 761.1                       | 1,654.3        | 3,159.7        | 4,556.6        | 7,653.5        | 13,851.0             |
| 1951-----                    | 779.4                       | 1,685.3        | 3,235.9        | 4,597.8        | 7,814.7        | 14,183.0             |
| 1950 <sup>1</sup> -----      | 805.3                       | 1,706.1        | 3,126.6        | 5,205.0        | 8,039.7        | 14,473.6             |
| <u>All other, male</u>       |                             |                |                |                |                |                      |
| 1969-----                    | 935.0                       | 1,687.0        | 3,252.8        | 6,654.5        | 8,407.8        | 10,172.1             |
| 1968-----                    | 920.3                       | 1,703.3        | 3,379.0        | 6,979.9        | 8,508.5        | 11,563.6             |
| 1967-----                    | 851.4                       | 1,605.4        | 3,088.4        | 6,501.0        | 7,974.4        | 11,430.0             |
| 1966-----                    | 845.1                       | 1,631.2        | 3,176.6        | 6,691.5        | 8,213.3        | 12,704.3             |
| 1965-----                    | 811.4                       | 1,590.4        | 3,126.6        | 6,382.7        | 8,132.8        | 13,070.7             |
| 1964-----                    | 805.1                       | 1,572.1        | 3,146.8        | 6,144.0        | 7,921.2        | 13,429.7             |
| 1963 <sup>2</sup> -----      | 759.2                       | 1,567.5        | 3,182.0        | 6,437.6        | 8,503.4        | 16,157.6             |
| 1962 <sup>2</sup> -----      | 736.9                       | 1,532.7        | 3,052.6        | 5,954.6        | 8,048.5        | 16,103.2             |
| 1961-----                    | 723.3                       | 1,474.6        | 2,995.9        | 5,615.6        | 7,818.4        | 15,593.5             |
| 1960-----                    | 729.2                       | 1,551.0        | 3,151.5        | 5,664.0        | 8,662.6        | 15,238.7             |
| 1959-----                    | 719.5                       | 1,529.1        | 3,098.5        | 5,450.5        | 8,180.6        | 14,444.8             |
| 1958-----                    | 699.2                       | 1,568.8        | 3,200.2        | 5,608.5        | 8,438.8        | 15,611.1             |
| 1957-----                    | 730.4                       | 1,615.3        | 3,382.3        | 5,556.7        | 8,255.6        | 15,503.8             |
| 1956-----                    | 704.3                       | 1,547.1        | 3,265.8        | 5,180.1        | 8,116.9        | 14,448.0             |
| 1955-----                    | 716.1                       | 1,589.0        | 3,191.2        | 5,159.4        | 8,018.4        | 13,766.7             |
| 1954-----                    | 720.2                       | 1,656.2        | 3,227.1        | 5,006.0        | 7,995.0        | 14,381.8             |
| 1953-----                    | 803.6                       | 1,798.4        | 3,511.5        | 5,304.1        | 8,501.8        | 15,857.1             |
| 1952-----                    | 839.1                       | 1,814.4        | 3,575.0        | 5,220.0        | 8,781.8        | 15,660.0             |
| 1951-----                    | 842.6                       | 1,834.8        | 3,593.9        | 5,272.8        | 8,721.7        | 16,142.1             |
| 1950 <sup>1</sup> -----      | 860.7                       | 1,857.3        | 3,480.8        | 5,794.9        | 9,029.6        | 16,022.1             |
| <u>All other, female</u>     |                             |                |                |                |                |                      |
| 1969-----                    | 524.4                       | 997.0          | 2,056.1        | 4,609.6        | 5,851.8        | 9,805.0              |
| 1968-----                    | 545.3                       | 1,033.5        | 2,153.0        | 4,759.7        | 6,094.7        | 10,986.1             |
| 1967-----                    | 513.6                       | 1,005.6        | 2,064.8        | 4,414.3        | 5,742.6        | 10,407.6             |
| 1966-----                    | 533.3                       | 1,040.0        | 2,138.4        | 4,521.3        | 6,223.8        | 11,463.3             |
| 1965-----                    | 537.7                       | 1,036.8        | 2,220.8        | 4,291.0        | 6,092.5        | 11,794.4             |
| 1964-----                    | 531.8                       | 1,085.4        | 2,304.2        | 4,144.6        | 6,134.4        | 12,326.5             |
| 1963 <sup>2</sup> -----      | 547.2                       | 1,098.5        | 2,415.1        | 4,310.2        | 6,541.2        | 13,709.1             |
| 1962 <sup>2</sup> -----      | 538.0                       | 1,072.6        | 2,368.4        | 4,124.2        | 6,441.8        | 13,481.0             |
| 1961-----                    | 525.0                       | 1,079.0        | 2,341.7        | 3,891.6        | 6,293.5        | 13,202.4             |
| 1960-----                    | 547.3                       | 1,144.9        | 2,409.7        | 3,981.4        | 6,708.4        | 12,871.2             |
| 1959-----                    | 543.5                       | 1,144.0        | 2,341.1        | 3,848.7        | 6,413.0        | 12,230.8             |
| 1958-----                    | 555.8                       | 1,235.9        | 2,469.1        | 4,014.8        | 6,610.5        | 12,173.7             |
| 1957-----                    | 585.2                       | 1,289.2        | 2,555.5        | 4,034.0        | 6,593.1        | 12,029.7             |
| 1956-----                    | 587.3                       | 1,257.7        | 2,533.3        | 3,831.9        | 6,429.0        | 11,325.0             |
| 1955-----                    | 577.9                       | 1,294.5        | 2,437.5        | 3,783.2        | 6,440.9        | 11,214.7             |
| 1954-----                    | 604.8                       | 1,366.5        | 2,426.5        | 3,700.5        | 6,219.8        | 11,053.1             |
| 1953-----                    | 651.1                       | 1,451.3        | 2,631.0        | 3,918.4        | 6,759.5        | 12,371.0             |
| 1952-----                    | 688.7                       | 1,496.2        | 2,733.0        | 3,934.2        | 6,583.6        | 12,603.4             |
| 1951-----                    | 721.1                       | 1,534.8        | 2,863.2        | 3,959.8        | 6,948.6        | 12,853.6             |
| 1950 <sup>1</sup> -----      | 754.0                       | 1,554.9        | 2,763.0        | 4,610.7        | 7,064.7        | 13,366.8             |

<sup>1</sup>Figures based on enumerated population adjusted for age bias in the population of races other than white.

<sup>2</sup>Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

Table 3. Mortality sex and color ratios, by age: United States, 1950, 1960, and 1969

| Year and age in years | Mortality sex ratio <sup>1</sup> | Mortality color ratio <sup>2</sup> | Mortality sex ratio by color |                        | Mortality color ratio by sex |                     |
|-----------------------|----------------------------------|------------------------------------|------------------------------|------------------------|------------------------------|---------------------|
|                       |                                  |                                    | White <sup>3</sup>           | All other <sup>3</sup> | Male <sup>4</sup>            | Female <sup>4</sup> |
| <b>1969</b>           |                                  |                                    |                              |                        |                              |                     |
| All ages-----         | 1.35                             | 1.01                               | 1.34                         | 1.42                   | 1.04                         | 0.98                |
| Under 1-----          | 1.30                             | 1.67                               | 1.33                         | 1.24                   | 1.62                         | 1.75                |
| 1-4-----              | 1.19                             | 1.70                               | 1.18                         | 1.22                   | 1.73                         | 1.67                |
| 5-9-----              | 1.44                             | 1.37                               | 1.44                         | 1.43                   | 1.37                         | 1.38                |
| 10-14-----            | 1.67                             | 1.50                               | 1.64                         | 1.78                   | 1.55                         | 1.43                |
| 15-19-----            | 2.59                             | 1.54                               | 2.62                         | 2.49                   | 1.53                         | 1.61                |
| 20-24-----            | 3.03                             | 1.96                               | 3.08                         | 2.90                   | 1.95                         | 2.07                |
| 25-29-----            | 2.39                             | 2.62                               | 2.43                         | 2.37                   | 2.64                         | 2.70                |
| 30-34-----            | 1.87                             | 3.05                               | 1.87                         | 2.01                   | 3.20                         | 2.98                |
| 35-39-----            | 1.71                             | 2.86                               | 1.73                         | 1.81                   | 2.97                         | 2.85                |
| 40-44-----            | 1.73                             | 2.50                               | 1.76                         | 1.76                   | 2.55                         | 2.55                |
| 45-49-----            | 1.82                             | 2.14                               | 1.87                         | 1.67                   | 2.07                         | 2.32                |
| 50-54-----            | 1.94                             | 1.90                               | 2.01                         | 1.71                   | 1.81                         | 2.13                |
| 55-59-----            | 2.07                             | 1.73                               | 2.17                         | 1.65                   | 1.57                         | 2.07                |
| 60-64-----            | 2.12                             | 1.62                               | 2.24                         | 1.52                   | 1.39                         | 2.05                |
| 65-69-----            | 1.94                             | 1.67                               | 2.04                         | 1.35                   | 1.39                         | 2.11                |
| 70-74-----            | 1.84                             | 1.50                               | 1.86                         | 1.60                   | 1.39                         | 1.62                |
| 75-79-----            | 1.61                             | 0.96                               | 1.61                         | 1.55                   | 0.94                         | 0.98                |
| 80-84-----            | 1.35                             | 0.77                               | 1.36                         | 1.28                   | 0.74                         | 0.78                |
| 85 and over-----      | 1.04                             | 0.49                               | 1.06                         | 1.04                   | 0.49                         | 0.50                |
| <b>1960</b>           |                                  |                                    |                              |                        |                              |                     |
| All ages-----         | 1.36                             | 1.06                               | 1.37                         | 1.32                   | 1.05                         | 1.09                |
| Under 1-----          | 1.32                             | 1.96                               | 1.34                         | 1.28                   | 1.93                         | 2.03                |
| 1-4-----              | 1.21                             | 2.00                               | 1.23                         | 1.19                   | 1.98                         | 2.05                |
| 5-9-----              | 1.36                             | 1.44                               | 1.40                         | 1.19                   | 1.35                         | 1.59                |
| 10-14-----            | 1.69                             | 1.49                               | 1.68                         | 1.78                   | 1.53                         | 1.44                |
| 15-19-----            | 2.41                             | 1.40                               | 2.49                         | 2.06                   | 1.32                         | 1.60                |
| 20-24-----            | 2.57                             | 1.79                               | 2.76                         | 2.02                   | 1.65                         | 2.25                |
| 25-29-----            | 1.95                             | 2.44                               | 2.12                         | 1.63                   | 2.26                         | 2.94                |
| 30-34-----            | 1.64                             | 2.70                               | 1.78                         | 1.39                   | 2.47                         | 3.17                |
| 35-39-----            | 1.60                             | 2.61                               | 1.72                         | 1.34                   | 2.36                         | 3.04                |
| 40-44-----            | 1.64                             | 2.34                               | 1.75                         | 1.33                   | 2.10                         | 2.78                |
| 45-49-----            | 1.79                             | 2.00                               | 1.92                         | 1.35                   | 1.75                         | 2.49                |
| 50-54-----            | 1.95                             | 1.92                               | 2.11                         | 1.35                   | 1.62                         | 2.53                |
| 55-59-----            | 1.98                             | 1.72                               | 2.15                         | 1.28                   | 1.40                         | 2.35                |
| 60-64-----            | 1.91                             | 1.74                               | 2.02                         | 1.34                   | 1.47                         | 2.22                |
| 65-69-----            | 1.83                             | 1.40                               | 1.88                         | 1.47                   | 1.26                         | 1.61                |
| 70-74-----            | 1.62                             | 1.20                               | 1.65                         | 1.37                   | 1.10                         | 1.32                |
| 75-79-----            | 1.42                             | 0.93                               | 1.43                         | 1.30                   | 0.88                         | 0.97                |
| 80-84-----            | 1.27                             | 0.81                               | 1.27                         | 1.30                   | 0.81                         | 0.80                |
| 85 and over-----      | 1.11                             | 0.68                               | 1.12                         | 1.18                   | 0.70                         | 0.66                |
| <b>1950</b>           |                                  |                                    |                              |                        |                              |                     |
| All ages-----         | 1.34                             | 1.18                               | 1.36                         | 1.26                   | 1.15                         | 1.24                |
| Under 1-----          | 1.31                             | 1.79                               | 1.32                         | 1.26                   | 1.76                         | 1.85                |
| 1-4-----              | 1.20                             | 2.02                               | 1.21                         | 1.18                   | 2.00                         | 2.05                |
| 5-9-----              | 1.36                             | 1.54                               | 1.40                         | 1.23                   | 1.46                         | 1.66                |
| 10-14-----            | 1.57                             | 1.51                               | 1.62                         | 1.39                   | 1.43                         | 1.67                |
| 15-19-----            | 1.84                             | 2.03                               | 2.09                         | 1.23                   | 1.66                         | 2.84                |
| 20-24-----            | 1.93                             | 2.43                               | 2.17                         | 1.44                   | 2.11                         | 3.18                |
| 25-29-----            | 1.60                             | 2.84                               | 1.75                         | 1.30                   | 2.52                         | 3.40                |
| 30-34-----            | 1.45                             | 3.11                               | 1.56                         | 1.25                   | 2.85                         | 3.55                |
| 35-39-----            | 1.43                             | 2.73                               | 1.56                         | 1.15                   | 2.39                         | 3.27                |
| 40-44-----            | 1.50                             | 2.57                               | 1.65                         | 1.12                   | 2.19                         | 3.20                |
| 45-49-----            | 1.61                             | 2.22                               | 1.74                         | 1.17                   | 1.88                         | 2.81                |
| 50-54-----            | 1.71                             | 2.29                               | 1.84                         | 1.20                   | 1.92                         | 2.95                |
| 55-59-----            | 1.76                             | 1.91                               | 1.85                         | 1.31                   | 1.67                         | 2.36                |
| 60-64-----            | 1.66                             | 1.62                               | 1.73                         | 1.21                   | 1.40                         | 2.00                |
| 65-69-----            | 1.58                             | 1.48                               | 1.61                         | 1.28                   | 1.33                         | 1.68                |
| 70-74-----            | 1.40                             | 1.13                               | 1.42                         | 1.23                   | 1.05                         | 1.21                |
| 75-79-----            | 1.29                             | 0.93                               | 1.29                         | 1.28                   | 0.92                         | 0.93                |
| 80-84-----            | 1.20                             | 0.76                               | 1.20                         | 1.30                   | 0.78                         | 0.73                |
| 85 and over-----      | 1.13                             | 0.70                               | 1.12                         | 1.20                   | 0.72                         | 0.68                |

<sup>1</sup>The age-specific death rate for the specified year for the male population divided by the corresponding age-specific death rate for the female population.

<sup>2</sup>The age-specific death rate for the specified year for the population of races other than white divided by the corresponding age-specific death rate for the white population.

<sup>3</sup>The age-color-specific death rate for the specified year for the male population divided by the corresponding age-color-specific death rate for the female population.

<sup>4</sup>The age-sex-specific death rate for the specified year for the population of races other than white divided by the corresponding age-sex-specific death rate for the white population.

## APPENDIX I

### TECHNICAL NOTES

#### Death Statistics

Tabulations of deaths used in this report are based on information obtained from microfilm copies of the original certificates (appendix II discusses the standard certificates). These copies were received from the registration offices of all States, certain cities, and the District of Columbia. The statistical information on these records was edited, classified, transferred to a tape for computer processing, and tabulated in the National Center for Health Statistics (NCHS).

The rates shown in this report are based on deaths tabulated by place of occurrence, that is, all deaths occurring in the death-registration States from 1900 to 1932, and all deaths occurring in the continental United States thereafter, with Alaska added beginning 1959 and Hawaii, 1960. Deaths among Armed Forces overseas and among U.S. nationals living abroad are excluded for all years.

#### Race

The category "white" includes, in addition to persons reported as "white," persons reported to be Mexican or Puerto Rican. The categories "races other than white" or "all other" consist of persons reported as Negro, American Indian, Chinese, and Japanese; other numerically small racial groups; and persons of mixed white and other races.

#### Population Bases

Rates were computed on the bases of population statistics made available by the U.S. Bureau of the Census. Rates for decennial years 1940, 1950, and 1960 are based on the popula-

tions enumerated in censuses of those years, which are taken as of April 1. Rates for all other years are based on midyear (July 1) estimates. Sources of the populations used, published by the Bureau of the Census are as follows:

*Vital Statistics Rates in the United States, 1900-1940, Washington, U.S. Government Printing Office, 1943.*

*Current Population Reports, Series P-25:*

- No. 98. "Estimates of the Population of the United States and of the Components of Change, by Age, Color, and Sex: 1940 to 1950," 1954.
- No. 265. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1950 to 1962," 1963. (Used only for data years 1961 and 1962.)
- No. 276. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1963," 1963.
- No. 310. "Estimates of the Population of the United States and Components of Change, by Age, Color, and Sex: 1950 to 1960," 1965.
- No. 321. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1960 to 1965," 1965. (Used only for data years 1964 and 1965.)
- No. 352. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1966," 1966.

No. 385. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1964 to 1967," 1968. (Used only for data year 1967.)

No. 416. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1968," 1969.

No. 441. "Estimates of the Population of the United States, by Age, Color, and Sex: July 1, 1969," 1970.

The population estimates by color used for 1962 and 1963 exclude New Jersey. The birth, death, and fetal death records of the State of New Jersey did not contain the race item in the beginning of 1962. The certificate revision without this item was used for most of 1962 as well as for 1963. Therefore the National Center for Health Statistics estimated a population base by color for these years which excluded New Jersey. The estimates for 1963 are shown in table 6-5, Part A, Volume II, *Vital Statistics of the United States, 1963*. Those for 1962 are shown in the comparable table of the report for that year.

## Rates

All rates are shown per 100,000 population. In many cases the rates are shown beyond the last significant figure, not because they can be interpreted with that degree of accuracy, but merely for convenience in computation and publication.

## Crude Death Rate

The "crude death rate" is so named to distinguish it from specific or adjusted rates that

have more definite or limited interpretations. As used in this report the crude death rate is computed by dividing the total deaths occurring in the United States during a given calendar year by the total resident population in that year, and multiplying the result by 100,000. Thus in this report each calendar year has but a single crude death rate.

## 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 all causes to the standard population distributed by age. The total population as enumerated in 1940 was selected as the standard. The rates for the total population and for each color-sex group were adjusted separately, using the same standard population. Age-adjusted rates are shown with an asterisk where more than half of the age-specific death rates are based on fewer than 20 deaths. The standard population used, given in terms of a million, is shown below:

| Age in years          | Million   |
|-----------------------|-----------|
| All ages . . . . .    | 1,000,000 |
| Under 1 . . . . .     | 15,343    |
| 1-4 . . . . .         | 64,718    |
| 5-14 . . . . .        | 170,355   |
| 15-24 . . . . .       | 181,677   |
| 25-34 . . . . .       | 162,066   |
| 35-44 . . . . .       | 139,237   |
| 45-54 . . . . .       | 117,811   |
| 55-64 . . . . .       | 80,294    |
| 65-74 . . . . .       | 48,426    |
| 75-84 . . . . .       | 17,303    |
| 85 and over . . . . . | 2,770     |

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## **APPENDIX II**

### **THE UNITED STATES STANDARD CERTIFICATE OF DEATH AS REVISED 1968**

Standard certificates of death issued by the National Center for Health Statistics and its predecessor offices have served for many years as the principal means of attaining uniformity in the content of the documents used to collect information on these events. They have been modified in each State to the extent necessitated by the particular needs of the State or by special provisions of the State vital statistics law. The certificates of most States, however, conform closely in content and arrangement to the standard certificates.

The most recent revision of the standard certificate of death is shown on page 34. It was made in close collaboration with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in the fields of public health, social welfare, demography, and insurance. It was recommended to the States for adoption as of January 1, 1968.

TYPE, OR PRINT IN  
PERMANENT INK  
SEE HANDBOOK FOR  
INSTRUCTIONS

LOCAL FILE NUMBER

## CERTIFICATE OF DEATH

STATE FILE NUMBER

## DECEASED

USUAL RESIDENCE  
WHERE DECEASED  
LIVED - IF DEATH  
OCCURRED IN  
INSTITUTION, GIVE  
RESIDENCE BEFORE  
ADMISSION.

## PARENTS

## CAUSE

## CERTIFIER

## BURIAL

|                                                                                                                                                                                              |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------|--|----------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------|--|
| 1. DECEASED—NAME                                                                                                                                                                             |  | FIRST                                                                                      |  | MIDDLE                                                                            |  | LAST                                                                           |  | SEX                                                                  |  | DATE OF DEATH (MONTH, DAY, YEAR)                                                                           |  |
| 2. RACE WHITE, NEGRO, AMERICAN INDIAN, ETC. (SPECIFY)                                                                                                                                        |  | 3. AGE—LAST BIRTHDAY (YEARS)                                                               |  | 4. UNDER 1 YEAR                                                                   |  | 5. UNDER 1 DAY                                                                 |  | 6. DATE OF BIRTH (MONTH, DAY, YEAR)                                  |  | 7. COUNTY OF DEATH                                                                                         |  |
| 8. CITY, TOWN, OR LOCATION OF DEATH                                                                                                                                                          |  | 9. INSIDE CITY LIMITS (SPECIFY YES OR NO)                                                  |  | 10. HOSPITAL OR OTHER INSTITUTION—NAME (IF NOT IN EITHER, GIVE STREET AND NUMBER) |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 11. STATE OF BIRTH (IF NOT IN U.S.A., NAME COUNTRY)                                                                                                                                          |  | 12. CITIZEN OF WHAT COUNTRY                                                                |  | 13. MARRIED, NEVER MARRIED, WIDOWED, DIVORCED (SPECIFY)                           |  | 14. SURVIVING SPOUSE (IF WIFE, GIVE MAIDEN NAME)                               |  |                                                                      |  |                                                                                                            |  |
| 15. SOCIAL SECURITY NUMBER                                                                                                                                                                   |  | 16. USUAL OCCUPATION (GIVE KIND OF WORK DONE DURING MOST OF WORKING LIFE, EVEN IF RETIRED) |  | 17. KIND OF BUSINESS OR INDUSTRY                                                  |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 18. RESIDENCE—STATE                                                                                                                                                                          |  | 19. COUNTY                                                                                 |  | 20. CITY, TOWN, OR LOCATION                                                       |  | 21. INSIDE CITY LIMITS (SPECIFY YES OR NO)                                     |  | 22. STREET AND NUMBER                                                |  |                                                                                                            |  |
| 23. FATHER—NAME                                                                                                                                                                              |  | FIRST                                                                                      |  | MIDDLE                                                                            |  | LAST                                                                           |  | 24. MOTHER—MAIDEN NAME                                               |  | FIRST MIDDLE LAST                                                                                          |  |
| 25. INFORMANT—NAME                                                                                                                                                                           |  |                                                                                            |  |                                                                                   |  |                                                                                |  | 26. MAILING ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP) |  |                                                                                                            |  |
| 27. PART I DEATH WAS CAUSED BY:                                                                                                                                                              |  |                                                                                            |  |                                                                                   |  |                                                                                |  | 28. [ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c)]            |  | 29. APPROXIMATE INTERVAL BETWEEN ONSET AND DEATH                                                           |  |
| 30. IMMEDIATE CAUSE                                                                                                                                                                          |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 31. (a) DUE TO, OR AS A CONSEQUENCE OF                                                                                                                                                       |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 32. CONDITIONS, IF ANY, WHICH GAVE RISE TO IMMEDIATE CAUSE (a), STATING THE UNDERLYING CAUSE LAST                                                                                            |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 33. (b) DUE TO, OR AS A CONSEQUENCE OF                                                                                                                                                       |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 34. (c)                                                                                                                                                                                      |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 35. PART II OTHER SIGNIFICANT CONDITIONS—CONDITIONS CONTRIBUTING TO DEATH BUT NOT RELATED TO CAUSE GIVEN IN PART I (a)                                                                       |  |                                                                                            |  |                                                                                   |  |                                                                                |  | 36. AUTOPSY (YES OR NO)                                              |  | 37. IF YES WERE FINDINGS CONSIDERED IN DETERMINING CAUSE OF DEATH                                          |  |
| 38. ACCIDENT, SUICIDE, HOMICIDE, OR UNDETERMINED (SPECIFY)                                                                                                                                   |  | 39. DATE OF INJURY (MONTH, DAY, YEAR)                                                      |  | 40. HOUR                                                                          |  | 41. HOW INJURY OCCURRED (ENTER NATURE OF INJURY IN PART I OR PART II, ITEM 18) |  |                                                                      |  |                                                                                                            |  |
| 42. INJURY AT WORK (SPECIFY YES OR NO)                                                                                                                                                       |  | 43. PLACE OF INJURY AT HOME, FARM, STREET, FACTORY, OFFICE BLDG., ETC. (SPECIFY)           |  | 44. LOCATION (STREET OR R.F.D. NO., CITY OR TOWN, STATE)                          |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 45. CERTIFICATION—PHYSICIAN                                                                                                                                                                  |  | 46. MONTH DAY YEAR                                                                         |  | 47. MONTH DAY YEAR                                                                |  | 48. AND LAST SAW HIM/HER ALIVE ON MONTH DAY YEAR                               |  | 49. I DID/DID NOT VIEW THE BODY AFTER DEATH.                         |  | 50. DEATH OCCURRED AT THE PLACE, ON THE DATE, AND, TO THE BEST OF MY KNOWLEDGE, DUE TO THE CAUSE(S) STATED |  |
| 51. I ATTENDED THE DECEASED FROM                                                                                                                                                             |  | 52. TO                                                                                     |  | 53. HOUR OF DEATH                                                                 |  | 54. THE DECEASED WAS PRONOUNCED DEAD                                           |  | 55. MONTH DAY YEAR                                                   |  | 56. HOUR                                                                                                   |  |
| 57. CERTIFICATION—MEDICAL EXAMINER OR CORONER ON THE BASIS OF THE EXAMINATION OF THE BODY AND/OR THE INVESTIGATION, IN MY OPINION, DEATH OCCURRED ON THE DATE AND DUE TO THE CAUSE(S) STATED |  |                                                                                            |  |                                                                                   |  |                                                                                |  |                                                                      |  |                                                                                                            |  |
| 58. CERTIFIER—NAME (TYPE OR PRINT)                                                                                                                                                           |  | 59. SIGNATURE                                                                              |  | 60. DEGREE OR TITLE                                                               |  | 61. DATE SIGNED (MONTH, DAY, YEAR)                                             |  |                                                                      |  |                                                                                                            |  |
| 62. MAILING ADDRESS—CERTIFIER                                                                                                                                                                |  | 63. STREET OR R.F.D. NO.                                                                   |  | 64. CITY OR TOWN                                                                  |  | 65. STATE                                                                      |  | 66. ZIP                                                              |  |                                                                                                            |  |
| 67. BURIAL, CREMATION, REMOVAL (SPECIFY)                                                                                                                                                     |  | 68. CEMETERY OR CREMATORY—NAME                                                             |  | 69. LOCATION                                                                      |  | 70. CITY OR TOWN                                                               |  | 71. STATE                                                            |  |                                                                                                            |  |
| 72. DATE (MONTH, DAY, YEAR)                                                                                                                                                                  |  | 73. FUNERAL HOME—NAME AND ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)         |  | 74. FUNERAL DIRECTOR—SIGNATURE                                                    |  | 75. REGISTRAR—SIGNATURE                                                        |  | 76. DATE RECEIVED BY LOCAL REGISTRAR                                 |  |                                                                                                            |  |

O O O

### APPENDIX III

#### EFFECT OF THE REDUCTION IN LIVE BIRTHS DURING 1961-69 ON THE 1969 CRUDE DEATH RATE

Inasmuch as the reduction in live births had continued for about 9 years as of July 1, 1969, the number of persons under 10 years of age as of this date was lower than it would have been if the reduction had not occurred. To assess the effect on the crude death rate for 1969 of the exclusion from the population of these children under 10 years of age, the numbers of survivors at ages under 1 year, 1-4 years, and 5-9 years as of July 1, 1969, were estimated from the following two sets of live-birth data:

- (1) The actual number of live births during each 6-month period from July-December 1959 through January-June 1969; and
- (2) the hypothesized number of live births during these same 6-month periods based on the assumption that there had been no reduction in the number of live births.

The method for obtaining these estimates of survivors is described below.

##### *Infants born July-December during 1959-68.—*

First, the estimated numbers of survivors at ages under 1 year, 1-4 years, and 5-9 years, as of July 1, 1969, were computed from the 10 cohorts of infants born during July-December of each year of the period 1959-68. See table on page 36.

According to the multiplication rule of probability theory:<sup>8</sup>

$$P (AB) = P(A) P(B | A).$$

Thus the conditional probability that a person will reach the single year *B* relative to the

hypothesis that the person has reached the prior single year *A* may be represented as follows:

$$P (B | A) = \frac{P (AB)}{P(A)}$$

In this formula  $P(AB)$  is, of course, the probability that both *A* and *B* have occurred.

In the application of this formula the number of survivors in both the numerator  $P(AB)$  and the denominator  $P(A)$  was taken to be the number of survivors shown in the life table for the calendar year in which the person reached the year *A* rather than for the calendar year in which the person reached the year *B*. One of the reasons for the selection of the number of survivors for the earlier calendar year was that during the first 10 years of life the probability of dying declines with advance in age.

It should be noted that the estimate shown in the table below of the survivors of the cohort of infants born during July-December 1967 (1,811,151 infants), who were between ages 1 and 2 years as of July 1, 1969 (1,768,174), may be somewhat lower than the actual number of survivors at this age. By applying the probability 0.97761 of reaching age 1 year to the 1,811,151 infants born during July-December 1967, it is found that 1,770,599 reached age 1 year during July-December 1968. Thus they were at risk of dying at ages between 1 and 2 years from 6 months to 1 year before July 1, 1969. It follows, therefore, that the estimate (1,768,174) of those who reached their second year of life during July-December 1969 (1,770,599 multiplied

| Age in years                                         | Probabilities of surviving each single year of life under 10 years of age, given that the prior single year has been survived <sup>1</sup> |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                                      | Period of birth                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|                                                      | 1968<br>July-Dec.                                                                                                                          | 1967<br>July-Dec. | 1966<br>July-Dec. | 1965<br>July-Dec. | 1964<br>July-Dec. | 1963<br>July-Dec. | 1962<br>July-Dec. | 1961<br>July-Dec. | 1960<br>July-Dec. | 1959<br>July-Dec. |
| Numerators of probabilities: $P(1B) \times 100,000$  |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 1-----                                               | 97,823                                                                                                                                     | 97,761            | 97,639            | 97,550            | 97,526            | 97,481            | 97,475            | 97,469            | 97,394            | 97,357            |
| 2-----                                               |                                                                                                                                            | 97,689            | 97,629            | 97,492            | 97,407            | 97,374            | 97,324            | 97,325            | 97,311            | 97,224            |
| 3-----                                               |                                                                                                                                            |                   | 97,605            | 97,544            | 97,404            | 97,316            | 97,281            | 97,229            | 97,230            | 97,215            |
| 4-----                                               |                                                                                                                                            |                   |                   | 97,540            | 97,479            | 97,335            | 97,247            | 97,212            | 97,155            | 97,157            |
| 5-----                                               |                                                                                                                                            |                   |                   |                   | 97,486            | 97,424            | 97,276            | 97,188            | 97,152            | 97,094            |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   | 97,425            | 97,366            | 97,216            | 97,129            | 97,092            |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 97,375            | 97,318            | 97,166            | 97,080            |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,335            | 97,279            | 97,126            |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 97,303            | 97,247            |
| 10-----                                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 97,275            |
| Denominators of probabilities: $P(A) \times 100,000$ |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 1-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 2-----                                               |                                                                                                                                            | 97,823            | 97,761            | 97,639            | 97,550            | 97,526            | 97,481            | 97,475            | 97,469            | 97,394            |
| 3-----                                               |                                                                                                                                            |                   | 97,689            | 97,629            | 97,492            | 97,407            | 97,374            | 97,324            | 97,325            | 97,311            |
| 4-----                                               |                                                                                                                                            |                   |                   | 97,605            | 97,544            | 97,404            | 97,316            | 97,281            | 97,229            | 97,230            |
| 5-----                                               |                                                                                                                                            |                   |                   |                   | 97,540            | 97,479            | 97,335            | 97,247            | 97,212            | 97,155            |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   | 97,486            | 97,424            | 97,276            | 97,188            | 97,152            |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 97,425            | 97,366            | 97,216            | 97,129            |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,375            | 97,318            | 97,166            |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 97,335            | 97,279            |
| 10-----                                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 97,303            |
| Probabilities: $P(B A)$                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 1.00000                                                                                                                                    | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           |
| 1-----                                               | 0.97823                                                                                                                                    | 0.97761           | 0.97639           | 0.97550           | 0.97526           | 0.97481           | 0.97475           | 0.97469           | 0.97394           | 0.97357           |
| 2-----                                               |                                                                                                                                            | 0.99863           | 0.99865           | 0.99849           | 0.99853           | 0.99844           | 0.99839           | 0.99846           | 0.99838           | 0.99825           |
| 3-----                                               |                                                                                                                                            |                   | 0.99914           | 0.99913           | 0.99910           | 0.99907           | 0.99904           | 0.99902           | 0.99902           | 0.99901           |
| 4-----                                               |                                                                                                                                            |                   |                   | 0.99933           | 0.99933           | 0.99929           | 0.99929           | 0.99929           | 0.99924           | 0.99925           |
| 5-----                                               |                                                                                                                                            |                   |                   |                   | 0.99945           | 0.99944           | 0.99939           | 0.99939           | 0.99938           | 0.99937           |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   | 0.99937           | 0.99940           | 0.99938           | 0.99939           | 0.99938           |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 0.99949           | 0.99951           | 0.99949           | 0.99950           |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 0.99959           | 0.99960           | 0.99959           |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 0.99967           | 0.99967           |
| 10-----                                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 0.99971           |
| Number of live births-----                           | 1,826,462                                                                                                                                  | 1,811,151         | 1,862,838         | 1,933,838         | 2,071,368         | 2,118,336         | 2,163,242         | 2,207,702         | 2,239,864         | 2,202,992         |
| Survivors: July 1, 1969-----                         | 1,786,700                                                                                                                                  | 1,768,174         | 1,814,839         | 1,880,711         | 2,012,879         | 2,055,925         | 2,098,098         | 2,140,317         | 2,168,806         | 2,131,355         |
| Age in years-----                                    | Under 1                                                                                                                                    | 1                 | 2                 | 3                 | 4                 | 5                 | 6                 | 7                 | 8                 | 9                 |

<sup>1</sup>These probabilities are based on life tables for each year during 1959-69, published in Vital Statistics of the United States.

by 0.99863) is a better estimate of those who were between ages 1 and 2 years on July 1, 1969, than is the estimate, 1,770,599, of those who reached age 1 year during July-December 1968. In any event, if for the actual number of live births the estimate of the number of survivors at ages between 1 and 2 years is somewhat lower than it should be, this moderate error is offset for all practicable purposes by the fact, as will be shown below, that for the hypothesized number of live births the estimate of the number of survivors at ages between 1 and 2 years is arrived at in exactly the same manner.

The cohort of infants cited above, born during July-December 1967, was selected for illustration. But the same procedures were followed for each of the 10 cohorts of infants born

during July-December of each year of the period 1959-68 to obtain the better estimate of those surviving to a given age as of July 1, 1969.

*Infants born January-June during 1960-69.*—The next step was to estimate the numbers of survivors at ages under 1 year, 1-4 years, and 5-9 years, as of July 1, 1969, from the 10 cohorts of infants born during January-June of each year of the period 1960-69. See table on page 37.

Essentially the same procedure was followed as that used to estimate the survivors of the infants born during July-December of each year of the period 1959-68.

The infants born during January-June 1967, however, reached age 1 year during January-June 1968, and reached age 2 years during January-June 1969. The best estimate, there-

| Age in years                                         | Probabilities of surviving each single year of life under 10 years of age, given that the prior single year has been survived <sup>1</sup> |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                                      | Period of birth                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|                                                      | 1969<br>Jan.-June                                                                                                                          | 1968<br>Jan.-June | 1967<br>Jan.-June | 1966<br>Jan.-June | 1965<br>Jan.-June | 1964<br>Jan.-June | 1963<br>Jan.-June | 1962<br>Jan.-June | 1961<br>Jan.-June | 1960<br>Jan.-June |
| Numerators of probabilities: $P(AB) \times 100,000$  |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 1-----                                               | 97,892                                                                                                                                     | 97,823            | 97,761            | 97,639            | 97,550            | 97,526            | 97,481            | 97,475            | 97,469            | 97,394            |
| 2-----                                               |                                                                                                                                            |                   | 97,689            | 97,629            | 97,492            | 97,407            | 97,374            | 97,324            | 97,325            | 97,311            |
| 3-----                                               |                                                                                                                                            |                   |                   | 97,605            | 97,544            | 97,404            | 97,316            | 97,281            | 97,229            | 97,230            |
| 4-----                                               |                                                                                                                                            |                   |                   |                   | 97,540            | 97,479            | 97,335            | 97,247            | 97,212            | 97,155            |
| 5-----                                               |                                                                                                                                            |                   |                   |                   |                   | 97,486            | 97,424            | 97,276            | 97,188            | 97,152            |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 97,425            | 97,276            | 97,216            | 97,129            |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,366            | 97,318            | 97,166            |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,375            | 97,335            | 97,279            |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 97,303            |
| Denominators of probabilities: $P(A) \times 100,000$ |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 1-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 2-----                                               |                                                                                                                                            |                   | 97,823            | 97,761            | 97,639            | 97,550            | 97,526            | 97,481            | 97,475            | 97,469            |
| 3-----                                               |                                                                                                                                            |                   |                   | 97,689            | 97,629            | 97,492            | 97,407            | 97,374            | 97,324            | 97,325            |
| 4-----                                               |                                                                                                                                            |                   |                   |                   | 97,605            | 97,544            | 97,404            | 97,316            | 97,281            | 97,229            |
| 5-----                                               |                                                                                                                                            |                   |                   |                   |                   | 97,540            | 97,479            | 97,335            | 97,247            | 97,212            |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 97,486            | 97,424            | 97,276            | 97,188            |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,425            | 97,366            | 97,216            |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 97,375            | 97,318            |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 97,335            |
| Probabilities: $P(B A)$                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 1.00000                                                                                                                                    | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           |
| 1-----                                               | 0.97892                                                                                                                                    | 0.97823           | 0.97761           | 0.97639           | 0.97550           | 0.97526           | 0.97481           | 0.97475           | 0.97469           | 0.97394           |
| 2-----                                               |                                                                                                                                            |                   | 0.99863           | 0.99865           | 0.99849           | 0.99853           | 0.99844           | 0.99839           | 0.99846           | 0.99838           |
| 3-----                                               |                                                                                                                                            |                   |                   | 0.99914           | 0.99913           | 0.99910           | 0.99907           | 0.99904           | 0.99902           | 0.99902           |
| 4-----                                               |                                                                                                                                            |                   |                   |                   | 0.99933           | 0.99933           | 0.99929           | 0.99929           | 0.99929           | 0.99924           |
| 5-----                                               |                                                                                                                                            |                   |                   |                   |                   | 0.99945           | 0.99944           | 0.99939           | 0.99939           | 0.99938           |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 0.99937           | 0.99939           | 0.99938           | 0.99939           |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 0.99940           | 0.99938           | 0.99939           |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 0.99949           | 0.99951           | 0.99949           |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 0.99959           | 0.99960           |
| Number of live births-----                           | 1,724,648                                                                                                                                  | 1,675,102         | 1,709,808         | 1,743,436         | 1,826,520         | 1,956,122         | 1,979,684         | 2,004,120         | 2,060,624         | 2,017,986         |
| Survivors: July 1, 1969-----                         | 1,688,292                                                                                                                                  | 1,638,635         | 1,669,235         | 1,698,513         | 1,776,341         | 1,900,888         | 1,921,358         | 1,943,768         | 1,997,728         | 1,953,967         |
| Age in years                                         | Under 1                                                                                                                                    | 1                 | 2                 | 3                 | 4                 | 5                 | 6                 | 7                 | 8                 | 9                 |

<sup>1</sup> These probabilities are based on life tables for each year during 1959-69, published in *Vital Statistics of the United States*.

fore, of the survivors of this cohort who were between ages 2 and 3 years as of July 1, 1969, was taken to be: (1,709,808) (0.97761) (0.99863) = 1,669,235. For these infants born January-June 1967 this estimate of 1,669,235 survivors at ages between 2 and 3 years may be somewhat higher than it should be: for some deaths may have occurred among them between the date during January-June 1969 when they reached their second year of age, and July 1, 1969. But again, in any event, if for the actual number of live births the estimate of the number of survivors between ages 2 and 3 years as of July 1, 1969, is somewhat higher than it should be, this moderate error is offset by the fact that for the hypothesized number of live births the estimate of the number of survivors at ages be-

tween 2 and 3 years is arrived at in exactly the same manner.

Again, the cohort of infants cited above, born during January-June 1967, was selected for illustration. The same procedures were followed for each of the 10 cohorts of infants born during January-June of each year of the period 1960-69.

*Hypothesized number of infants born July-December during 1959-68.*—The third step was to estimate the numbers of survivors at ages under 1 year, 1-4 years, and 5-9 years, as of July 1, 1969, from the 10 cohorts of infants who would have been born during July-December of each year of the period 1959-69 if there had been no reduction in the number of live births. More specifically, inasmuch as the largest num-

ber of live births (2,239,864) among these 10 cohorts occurred for July-December 1960, it was hypothesized that this same number occurred during each of the eight subsequent 6-month periods from July-December 1961 through July-December 1968. See table below.

The same procedure was followed as that used to estimate the survivors of the actual number of infants, as shown above, born during July-December of each year of the period 1959-68.

*Hypothesized number of infants born January-June during 1960-69.*—Finally the numbers of survivors at ages under 1 year, 1-4 years, and 5-9 years, as of July 1, 1969, were estimated from the 10 hypothetical cohorts of infants

born during January-June of each year of the period 1960-69. See table on page 39.

Inasmuch as the largest number of live births (2,060,624) among these 10 cohorts occurred for January-June 1961, it was hypothesized that this same number occurred during each of the eight subsequent 6-month periods from January-June 1962 through January-June 1969.

The same procedure was followed as that used to estimate the survivors of the actual number of infants, as shown above, born during January-June of each year of the period 1960-69.

*Adjusted crude death rate for 1969.*—The difference between the hypothesized number of

| Age in years                                         | Probabilities of surviving each single year of life under 10 years of age, given that the prior single year has been survived <sup>1</sup> |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                                      | Period of birth                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|                                                      | 1968<br>July-Dec.                                                                                                                          | 1967<br>July-Dec. | 1966<br>July-Dec. | 1965<br>July-Dec. | 1964<br>July-Dec. | 1963<br>July-Dec. | 1962<br>July-Dec. | 1961<br>July-Dec. | 1960<br>July-Dec. | 1959<br>July-Dec. |
| Numerators of probabilities: $P(A B) \times 100,000$ |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 1-----                                               | 97,823                                                                                                                                     | 97,761            | 97,639            | 97,550            | 97,526            | 97,481            | 97,475            | 97,469            | 97,394            | 97,357            |
| 2-----                                               |                                                                                                                                            | 97,689            | 97,629            | 97,492            | 97,407            | 97,374            | 97,324            | 97,325            | 97,311            | 97,224            |
| 3-----                                               |                                                                                                                                            |                   | 97,605            | 97,544            | 97,404            | 97,316            | 97,281            | 97,229            | 97,230            | 97,215            |
| 4-----                                               |                                                                                                                                            |                   |                   | 97,540            | 97,479            | 97,335            | 97,247            | 97,212            | 97,155            | 97,157            |
| 5-----                                               |                                                                                                                                            |                   |                   |                   | 97,486            | 97,424            | 97,276            | 97,188            | 97,152            | 97,094            |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   | 97,425            | 97,366            | 97,216            | 97,129            | 97,092            |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 97,375            | 97,318            | 97,166            | 97,080            |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,335            | 97,279            | 97,126            |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 97,303            | 97,247            |
| 10-----                                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 97,275            |
| Denominators of probabilities: $P(A) \times 100,000$ |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 1-----                                               | 100,000                                                                                                                                    | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           | 100,000           |
| 2-----                                               |                                                                                                                                            | 97,823            | 97,761            | 97,639            | 97,550            | 97,526            | 97,481            | 97,475            | 97,469            | 97,394            |
| 3-----                                               |                                                                                                                                            |                   | 97,689            | 97,629            | 97,492            | 97,407            | 97,374            | 97,324            | 97,325            | 97,311            |
| 4-----                                               |                                                                                                                                            |                   |                   | 97,605            | 97,544            | 97,404            | 97,316            | 97,281            | 97,229            | 97,230            |
| 5-----                                               |                                                                                                                                            |                   |                   |                   | 97,540            | 97,479            | 97,335            | 97,247            | 97,212            | 97,155            |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   | 97,486            | 97,424            | 97,276            | 97,188            | 97,152            |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 97,425            | 97,366            | 97,216            | 97,129            |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 97,375            | 97,318            | 97,166            |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 97,335            | 97,279            |
| 10-----                                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 97,303            |
| Probabilities: $P(B A)$                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 0-----                                               | 1.00000                                                                                                                                    | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           | 1.00000           |
| 1-----                                               | 0.97823                                                                                                                                    | 0.97761           | 0.97639           | 0.97550           | 0.97526           | 0.97481           | 0.97475           | 0.97469           | 0.97394           | 0.97357           |
| 2-----                                               |                                                                                                                                            | 0.99863           | 0.99865           | 0.99849           | 0.99853           | 0.99844           | 0.99839           | 0.99846           | 0.99838           | 0.99825           |
| 3-----                                               |                                                                                                                                            |                   | 0.99914           | 0.99913           | 0.99910           | 0.99907           | 0.99904           | 0.99902           | 0.99902           | 0.99901           |
| 4-----                                               |                                                                                                                                            |                   |                   | 0.99933           | 0.99933           | 0.99929           | 0.99929           | 0.99929           | 0.99924           | 0.99925           |
| 5-----                                               |                                                                                                                                            |                   |                   |                   | 0.99945           | 0.99944           | 0.99939           | 0.99939           | 0.99938           | 0.99937           |
| 6-----                                               |                                                                                                                                            |                   |                   |                   |                   | 0.99937           | 0.99940           | 0.99938           | 0.99939           | 0.99938           |
| 7-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   | 0.99949           | 0.99951           | 0.99949           | 0.99950           |
| 8-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   | 0.99959           | 0.99960           | 0.99959           |
| 9-----                                               |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   | 0.99967           | 0.99967           |
| 10-----                                              |                                                                                                                                            |                   |                   |                   |                   |                   |                   |                   |                   | 0.99971           |
| Hypothesized live<br>births-----                     | 2,239,864                                                                                                                                  | 2,239,864         | 2,239,864         | 2,239,864         | 2,239,864         | 2,239,864         | 2,239,864         | 2,239,864         | 2,239,864         | 2,202,992         |
| Survivors: July<br>1, 1969-----                      | 2,191,102                                                                                                                                  | 2,186,714         | 2,182,150         | 2,178,329         | 2,176,618         | 2,173,873         | 2,172,413         | 2,171,497         | 2,168,806         | 2,131,355         |
| Age in years-----                                    | Under 1                                                                                                                                    | 1                 | 2                 | 3                 | 4                 | 5                 | 6                 | 7                 | 8                 | 9                 |

<sup>1</sup>These probabilities are based on life tables for each year during 1959-69, published in *Vital Statistics of the United States*.

| Age in years                                         | Probabilities of surviving each single year of life under 10 years of age, given that the prior single year has been survived <sup>1</sup> |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                                                      | Period of birth                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|                                                      | 1969<br>Jan. -June                                                                                                                         | 1968<br>Jan. -June | 1967<br>Jan. -June | 1966<br>Jan. -June | 1965<br>Jan. -June | 1964<br>Jan. -June | 1963<br>Jan. -June | 1962<br>Jan. -June | 1961<br>Jan. -June | 1960<br>Jan. -June |
| Numerators of probabilities: $P(AB) \times 100,000$  |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| 0-----                                               | 100,000                                                                                                                                    | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            |
| 1-----                                               | 97,892                                                                                                                                     | 97,823             | 97,761             | 97,639             | 97,550             | 97,526             | 97,481             | 97,475             | 97,469             | 97,394             |
| 2-----                                               |                                                                                                                                            |                    | 97,689             | 97,629             | 97,492             | 97,407             | 97,374             | 97,324             | 97,325             | 97,311             |
| 3-----                                               |                                                                                                                                            |                    |                    | 97,605             | 97,544             | 97,404             | 97,316             | 97,281             | 97,229             | 97,230             |
| 4-----                                               |                                                                                                                                            |                    |                    |                    | 97,540             | 97,479             | 97,335             | 97,247             | 97,212             | 97,155             |
| 5-----                                               |                                                                                                                                            |                    |                    |                    |                    | 97,486             | 97,424             | 97,276             | 97,188             | 97,152             |
| 6-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    | 97,425             | 97,366             | 97,216             | 97,129             |
| 7-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    | 97,375             | 97,318             | 97,166             |
| 8-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    | 97,335             | 97,279             |
| 9-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    | 97,303             |
| Denominators of probabilities: $P(A) \times 100,000$ |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| 0-----                                               | 100,000                                                                                                                                    | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            |
| 1-----                                               | 100,000                                                                                                                                    | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            | 100,000            |
| 2-----                                               |                                                                                                                                            |                    | 97,823             | 97,761             | 97,639             | 97,550             | 97,526             | 97,481             | 97,475             | 97,469             |
| 3-----                                               |                                                                                                                                            |                    |                    | 97,689             | 97,629             | 97,492             | 97,407             | 97,374             | 97,324             | 97,325             |
| 4-----                                               |                                                                                                                                            |                    |                    |                    | 97,605             | 97,544             | 97,404             | 97,316             | 97,281             | 97,229             |
| 5-----                                               |                                                                                                                                            |                    |                    |                    |                    | 97,540             | 97,479             | 97,335             | 97,247             | 97,212             |
| 6-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    | 97,486             | 97,424             | 97,276             | 97,188             |
| 7-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    | 97,425             | 97,366             | 97,216             |
| 8-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    | 97,375             | 97,318             |
| 9-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    | 97,335             |
| Probabilities: $P(B A)$                              |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| 0-----                                               | 1.00000                                                                                                                                    | 1.00000            | 1.00000            | 1.00000            | 1.00000            | 1.00000            | 1.00000            | 1.00000            | 1.00000            | 1.00000            |
| 1-----                                               | 0.97892                                                                                                                                    | 0.97823            | 0.97761            | 0.97639            | 0.97550            | 0.97526            | 0.97481            | 0.97475            | 0.97469            | 0.97394            |
| 2-----                                               |                                                                                                                                            |                    | 0.99863            | 0.99865            | 0.99849            | 0.99853            | 0.99844            | 0.99839            | 0.99846            | 0.99838            |
| 3-----                                               |                                                                                                                                            |                    |                    | 0.99914            | 0.99913            | 0.99910            | 0.99907            | 0.99904            | 0.99902            | 0.99902            |
| 4-----                                               |                                                                                                                                            |                    |                    |                    | 0.99933            | 0.99933            | 0.99929            | 0.99929            | 0.99929            | 0.99924            |
| 5-----                                               |                                                                                                                                            |                    |                    |                    |                    | 0.99945            | 0.99944            | 0.99939            | 0.99939            | 0.99938            |
| 6-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    | 0.99937            | 0.99940            | 0.99938            | 0.99939            |
| 7-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    | 0.99949            | 0.99951            | 0.99949            |
| 8-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    | 0.99959            | 0.99960            |
| 9-----                                               |                                                                                                                                            |                    |                    |                    |                    |                    |                    |                    |                    | 0.99967            |
| Hypothesized live births-----                        | 2,060,624                                                                                                                                  | 2,060,624          | 2,060,624          | 2,060,624          | 2,060,624          | 2,060,624          | 2,060,624          | 2,060,624          | 2,060,624          | 2,017,986          |
| Survivors: July 1, 1969-----                         | 2,017,186                                                                                                                                  | 2,015,764          | 2,011,727          | 2,007,529          | 2,004,014          | 2,002,439          | 1,999,913          | 1,998,570          | 1,997,728          | 1,953,967          |
| Age in years-----                                    | Under 1                                                                                                                                    | 1                  | 2                  | 3                  | 4                  | 5                  | 6                  | 7                  | 8                  | 9                  |

<sup>1</sup>These probabilities are based on life tables for each year during 1959-69, published in Vital Statistics of the United States.

survivors and the actual number of survivors was then computed for the age groups under 1 year, 1-4 years, and 5-9 years. See table on page 40.

The 1969 age-specific death rates were then applied to this additional population that would have existed if there had been no reduction in the number of live births during the 1960's. The additional deaths thus estimated were added to the numerator of the actual crude death rate for 1969, and the additional population was added to the denominator to obtain the adjusted crude death rate for 1969, as follows:

$$\begin{aligned}
 &\text{Adjusted crude death rate} \\
 &= \frac{1,921,990 + 18,075}{201,921,000 + 3,695,165} (100,000) \\
 &= 943.6 \text{ deaths per } 100,000 \text{ population.}
 \end{aligned}$$

**Conclusion.**—The actual crude rate for 1969 was 951.9 deaths per 100,000 population. It follows, therefore, that the effect of the reduction of live births during the 1960's on the crude death rate raised it about 8.3 deaths per 100,000 above what it would have been if this reduction had not occurred. In other words, if there had been no reduction in live births during the 1960's the crude death rate would have been about 0.9 percent lower than it actually was. If instead of assuming that there was no reduction in the number of live births, as was done above, it had been assumed that there was no reduction in the live birth rate during the 1960's, the resulting hypothetical crude rate would have fallen slightly more than 0.9 percent below the actual crude death rate for 1969.

| Age in years        | Number of survivors<br>July 1, 1969<br><br>(1) | Number of survivors<br>from hypoth-<br>esized<br>number of<br>live births:<br>July 1, 1969<br><br>(2) | Estimated<br>number of<br>additional<br>persons:<br>column 2<br>minus column<br>1<br><br>(3) | 1969 death<br>rate per<br>100,000<br>population<br><br>(4) | Estimated<br>number of<br>additional<br>deaths:<br>column 4 x<br>column 3 ÷<br>100,000<br><br>(5) |
|---------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Total under 10----- | 38,046,529                                     | 41,741,694                                                                                            | 3,695,165                                                                                    | ...                                                        | 18,075                                                                                            |
| Under 1-----        | 3,474,992                                      | 4,208,288                                                                                             | 733,296                                                                                      | 2,148.0                                                    | 15,751                                                                                            |
| 1-4-----            | 14,259,327                                     | 16,762,845                                                                                            | 2,503,518                                                                                    | 85.0                                                       | 2,128                                                                                             |
| 5-9-----            | 20,312,210                                     | 20,770,561                                                                                            | 458,351                                                                                      | 42.7                                                       | 196                                                                                               |

Similar computations for each of the years in the period 1961-68 as those presented above for 1969 show that for each of the first years (1961-66) of the reduction in the number of live births, the cumulative effect on the crude death rate was to lower it slightly below what it would have been had the reduction not occurred. For these years the value of the actual crude rate minus the hypothetical rate was negative and grew smaller for each succeeding year. Then for subsequent years in the 1960's (1967-69) the value of the actual crude rate minus the hypothetical rate became positive and grew larger for each succeeding year.

This difference will continue to grow larger at least through the first half of the 1970's. For beginning about 1970 the cumulative effect of the reduction in live births will be to lower the number of survivors not only at ages under 1 year (high-risk group) and at ages 1-4 years and 5-9 years (relatively much lower risk groups), but also the number of survivors at ages 10-14 years (a group with an even lower risk of death than the risks for the age groups 1-4 and 5-9 years).

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