

VITAL and HEALTH STATISTICS
DATA FROM THE NATIONAL VITAL STATISTICS SYSTEM

Natality Statistics Analysis

United States, 1965 - 1967

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An analytical study of recent fertility trends in terms of period and cohort measures. Discusses variations in fertility of major population groups by color and place of residence, including Puerto Rico and the Virgin Islands (U.S.). Also discusses characteristics of live births, including sex ratio, month of birth, attendant at birth, birth weight, period of gestation, plurality, and illegitimacy.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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NATALITY RATES AND RATIOS, 1967

TOTAL NUMBER OF LIVE BIRTHS—3,520,959

<p>CRUDE BIRTH RATE-----17.8 (per 1,000 population)</p> <p>FERTILITY RATE-----87.6 (per 1,000 women 15-44 years)</p> <p>CUMULATIVE BIRTH RATE BY AGE OF WOMEN, JANUARY 1, 1968 (per 1,000 women)</p> <p>15-19 years-----78 20-24 years-----751 25-29 years-----1,923 30-34 years-----2,820 35-39 years-----3,086 40-44 years-----2,969 45-49 years-----2,773</p> <p>TOTAL FERTILITY RATE-----2,562 (per 1,000 women)</p> <p>ESTIMATED PERCENT COMPLETENESS OF BIRTH REGISTRATION-----99.0</p>	<p>SEX RATIO-----1,050 (males per 1,000 female live births)</p> <p>HOSPITAL DELIVERIES-----98.3 (per 100 live births)</p> <p>IMMATURE BIRTHS (2,500 grams or less)-----8.2 (per 100 live births)</p> <p>MEDIAN WEIGHT AT BIRTH-----3,280 (in grams)</p> <p>PREMATURE BIRTHS (gestation less than 37 weeks)-----6.7 (per 100 live births)</p> <p>LIVE BIRTHS IN MULTIPLE DELIVERIES-----19.7 (per 1,000 live births)</p> <p>ESTIMATED ILLEGITIMACY RATE-----23.9 (per 1,000 unmarried women 15-44 years)</p>
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SYMBOLS

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NOTES TO TABLES

1. *Alaska and Hawaii.*—All tables showing time series include data for Alaska beginning with 1959 and for Hawaii beginning with 1960.

2. *Sampling rates.*—Data for years prior to 1951 and for 1955 are based on the total file of birth records. Except as noted, data for 1951-54 and 1956-66 are derived from 50-percent samples of birth records; data for 1967 are based partly on 20-percent and partly on 50-percent samples. A discussion of sampling procedures and sampling errors for 1967 may be found in the Technical Appendix of Volume I, *Vital Statistics of the United States, 1967*.¹

3. *Not stated data.*—Beginning with 1964 births with age of mother and color not stated were allocated during data processing on the basis of characteristics of births that were similar to the not stated cases in other respects. Before 1964 color not stated was assigned as white. For other characteristics, not stated information was distributed in proportion to the known information unless otherwise noted in the particular table.

4. *Adjustment for underregistration of births.*—Adjustment for unregistered births was discontinued in 1960, when it was estimated that 98.9 percent of all births were registered. However, cohort rates in table 2 make allowances for both the underregistration of births and the underenumeration of the base population.

5. *Population bases.*—Except as noted birth rates shown in this report are based on populations present in the respective areas. Populations for the United States exclude the Armed Forces overseas and persons living abroad but include the Armed Forces stationed in each area. Rates for 1940, 1950, and 1960 are based on populations enumerated as of April 1; rates for all other years are based on populations estimated as of July 1.

IN THIS REPORT important features of statistics for births in the United States during 1965-67 are presented and interpreted. The statistics are based on information obtained from microfilm copies of the original certificates of live birth.

In 1965 the annual number of births fell below 4 million for the first time since 1953 and by 1967 it had dropped to 3,521,000. Continuing its decline from a peak of 25.3 in 1957, the birth rate fell to 17.8 in 1967.

The recent decline in fertility was due, in part, to changes in the age pattern of childbearing. Women who had relatively high birth rates at younger ages in the 1950's were having relatively low birth rates at older ages during the 1960's. Declines in fertility at the younger ages (under 25 years) may have been due to postponement of marriage and childbearing or to a reduction in the number of children couples want to have altogether. At present it is impossible to determine which of these explanations may be more important, but both factors have probably been operating to some extent.

The decline in the annual number of births may end in the near future. The number of women in the childbearing ages is growing rapidly and will increase by about 30 percent by 1980. Unless fertility rates fall well below their present levels, this increase in the number of women will raise the annual number of births.

When the fertility of white women is compared with that of all other women combined, the latter is higher. Both groups reached peak levels of fertility in 1957 and since then have shown declines in their birth rates.

The birth rate of most States and large metropolitan areas declined during the 1965-67 period.

More than 98 percent of all live births in 1967 were classified as having been delivered by physicians in hospitals. The differential in the rate of medically attended hospital deliveries by color has narrowed considerably in recent years. In 1967, 99 percent of white births and 93 percent of all other births were delivered by physicians in hospitals.

Slightly more than 8 percent of all babies born in 1967 were immature, that is, weighing 2,500 grams (5 pounds 8 ounces) or less. The proportion immature among white births was 7.1 percent, and among all other births, 13.6 percent.

The estimated illegitimacy rate in 1967 was 23.9 illegitimate births per 1,000 unmarried women aged 15-44. Although this rate has changed very little since 1957, the proportion of births classified as illegitimate has increased considerably, from an estimated 5 percent in 1957 to 9 percent in 1967.

NATALITY STATISTICS ANALYSIS, 1965-67

Robert L. Heuser, Stephanie J. Ventura, and Frank H. Godley, *Division of Vital Statistics*

INTRODUCTION

This report presents and interprets important features of the 1965-67 birth statistics for the United States. More detailed data are shown in Volume I of *Vital Statistics of the United States* for these years. This report also includes 1965 and 1966 data for Puerto Rico and the Virgin Islands. The National Center for Health Statistics did not tabulate 1967 data for Puerto Rico and the Virgin Islands, but they are published in the respective annual vital statistics reports of the Department of Health of the Commonwealth of Puerto Rico and the Department of Health of the Virgin Islands.

Birth statistics presented in this report are based on information obtained from the birth certificates of 54 reporting areas in the United States and of Puerto Rico and the Virgin Islands. Registrars in these areas send copies of all birth certificates to the National Center for Health Statistics, where a sample of the certificates is selected. The 1965 and 1966 data for the United States and Puerto Rico were based on a 50-percent sample of the records; the 1967 data for the United States were based on a 20- to 50-percent sample. The Virgin Islands data for all years were based on 100 percent of the birth certificates.

Most of the statistics presented here do not include an adjustment for births that have not been registered. This adjustment was discontinued in 1960, when it was estimated that 98.9 percent of all births were registered. However, the cohort fertility rates which are cited in the description of recent trends in fertility make allowances for both the underregistration of births and the underenumeration of the base population.

Additional details concerning technical aspects of birth statistics may be found in the Technical Appendix of Volume I of *Vital Statistics of the United States*, which is published each year.

RECENT TRENDS IN FERTILITY

The 1930's marked the end of a long-term decline in fertility in the United States. Beginning in the early 1940's there was an increase in births which grew to massive proportions after World War II and reached its peak in 1957. Since 1957 fertility has been declining (table 1).

From 1933 to 1939 the annual fertility rate varied between 76 and 79 births per 1,000 women 15-44 years of age, averaging 77. From this level it climbed to a peak of 123 in 1957. By 1967 it had declined to 88 but was still well above the low levels of the 1933-39 period.

The birth rate (births per 1,000 total population) also reached its most recent peak in 1957 and has since been declining. However, unlike the fertility rate, the birth rate is no longer above the average observed during 1933-39 (18.7). In 1967 the birth rate was only 17.8.

Recent birth rates are closer to the prewar level than fertility rates because the childbearing population (taken as women 15-44 years of age) now accounts for a smaller proportion of the total population than before the war. The childbearing population comprised 24 percent of the total population in 1936 as compared with 20 percent in 1967. As a result the higher fertility of women in recent years has only been sufficient to maintain the birth rate of the total population at a level that is somewhat lower than that of the 1930's.

Table 1. Live births, birth rates, and fertility rates: United States, 1909-68

[See notes to tables on page VII]

Year	Live births	Birth rate	Fertility rate
<u>Registered births</u>	Number	Rate per 1,000 population ¹	Rate per 1,000 women aged 15-44 years
1968 ²	3,470,000	17.4	84.8
1967	3,520,959	17.8	87.6
1966	3,606,274	18.4	91.3
1965	3,760,358	19.4	96.6
1964	4,027,490	21.0	105.0
1963	4,098,020	21.7	108.5
1962	4,167,362	22.4	112.2
1961	4,268,326	23.3	117.2
1960	4,257,850	23.7	118.0
1959	4,244,796	24.0	118.8
<u>Births adjusted for underregistration³</u>			
1959	4,295,000	24.3	120.2
1958	4,255,000	24.5	120.2
1957	4,308,000	25.3	122.9
1956	4,218,000	25.2	121.2
1955	4,104,000	25.0	118.5
1954	4,078,000	25.3	118.1
1953	3,965,000	25.1	115.2
1952	3,913,000	25.1	113.9
1951	3,823,000	24.9	111.5
1950	3,632,000	24.1	106.2
1949	3,649,000	24.5	107.1
1948	3,637,000	24.9	107.3
1947	3,817,000	26.6	113.3
1946	3,411,000	24.1	101.9
1945	2,858,000	20.4	85.9
1944	2,939,000	21.2	88.8
1943	3,104,000	22.7	94.3
1942	2,989,000	22.2	91.5
1941	2,703,000	20.3	83.4
1940	2,559,000	19.4	79.9
1939	2,466,000	18.8	77.6
1938	2,496,000	19.2	79.1
1937	2,413,000	18.7	77.1
1936	2,355,000	18.4	75.8
1935	2,377,000	18.7	77.2
1934	2,396,000	19.0	78.5
1933	2,307,000	18.4	76.3
1932	2,440,000	19.5	81.7
1931	2,506,000	20.2	84.6
1930	2,618,000	21.3	89.2
1929	2,582,000	21.2	89.3
1928	2,674,000	22.2	93.8
1927	2,802,000	23.5	99.8
1926	2,839,000	24.2	102.6
1925	2,909,000	25.1	106.6
1924	2,979,000	26.1	110.9
1923	2,910,000	26.0	110.5
1922	2,882,000	26.2	111.2
1921	3,055,000	28.1	119.8
1920	2,950,000	27.7	117.9
1919	2,740,000	26.1	111.2
1918	2,948,000	28.2	119.8
1917	2,944,000	28.5	121.0
1916	2,964,000	29.1	123.4
1915	2,965,000	29.5	125.0
1914	2,966,000	29.9	126.6
1913	2,869,000	29.5	124.7
1912	2,840,000	29.8	125.8
1911	2,809,000	29.9	126.3
1910	2,777,000	30.1	126.8
1909	2,718,000	30.0	126.8

¹For 1917-19 and 1941-46, based on population including Armed Forces abroad.²Provisional data.³For 1915-32, figures include adjustments for States not in the registration area; for years prior to 1915, figures are estimates based on the number of registered births in the 10 original registration States for the same period. Estimates for 1909-34 were prepared by P.K. Whelpton. See National Office of Vital Statistics, "Births and Birth Rates in the Entire United States, 1909 to 1948," Vital Statistics-Special Reports, Vol. 33, No. 8, 1950.

The reduction in the relative size of the childbearing population is due in part to the increase in the proportion of children in the population, which is due in turn to the higher fertility of the postwar period. In 1936 the proportion of persons under 15 years of age was 26.5 percent. In 1967 the comparable proportion was 30.3 percent.

In order to understand recent trends in fertility, it is necessary to review two other important factors affecting the annual numbers of births—completed family size and timing of births.

Completed Family Size

The increase in births during the 1940's and 1950's was due in part to a rise in average family size. This may be measured by the cumulative fertility rate at exact age 50 (completed fertility rate), which is the average number of births that a group of women has by the end of the childbearing period. The groups of women referred to are called "cohorts" and are identified by the year of their birth.

The top line in figure 1 shows completed fertility rates for cohorts of women born during each year from 1875 to 1918. A long-term decline from 3,818 births per 1,000 women in the 1875 cohort to 2,230 for the 1909 cohort was followed by an increase in the completed fertility of the cohorts of 1910-18. Although later cohorts have not yet reached age 50, it can be predicted that their completed fertility will surpass that of the 1918 cohort. The cohorts of 1919-38 have already borne more children by younger ages than the 1918 cohort had altogether. Projections based on the numbers of future births expected by a national sample of married women interviewed in 1960 suggest that the cohorts of 1931-35 may complete their families with as many as 3,500 births per 1,000 women.² Expectations of younger cohorts were lower, but they still indicate significantly higher completed fertility rates than that of the 1918 cohort.

It was the increase in completed fertility of the cohorts of 1910-35 (approximately) that was responsible in part for the rise in fertility during the 1940's and 1950's.

Timing of Births

A major portion (probably over half) of the upward and downward swings in fertility has been due to changes in timing, that is, to changes in the ages at which women have their children.

Two overlapping shifts in the age pattern of childbearing accounted for much of the rise in births during the late 1940's and the 1950's. The first of these shifts operated in the following way. During the 1930's and early 1940's many young couples postponed marriage and childbearing to later ages because of economic conditions and World War II. The compensation for this postponed fertility was greatest after the war, when millions of men were released from the armed services. In 1946 marriage rates rose to very high levels, and this was followed by an abrupt increase in birth rates in 1947. Many of these marriages and births would probably have occurred earlier if the war had not intervened. In effect large numbers of marriages and births were shifted from the late 1930's and early 1940's to the postwar period. This shift resulted in a rise in the birth rates for women at the older childbearing ages (fig. 2).

At the same time a second shift in the age pattern of childbearing was in progress. This was the trend toward earlier marriage and childbearing that proceeded at a rapid pace during the late 1940's and the 1950's. It had the effect of shifting millions of births that ordinarily would have occurred at somewhat later ages to the earlier ages of the reproductive period, thus raising birth rates for women at the younger childbearing ages. The culmination of this trend was reached in 1957.

Since 1957 the women who were having such high rates earlier in the 1950's (the cohorts of 1925-36, approximately) have been reaching the older ages of the childbearing period. Since most of them had all the children they wanted to have while they were younger, they have been having relatively low rates at the older childbearing ages. This is part of the reason for the recent decline in annual fertility rates.

The rest of the recent decline is due to lower fertility at the younger childbearing ages. This could reflect a trend toward marriage and child-

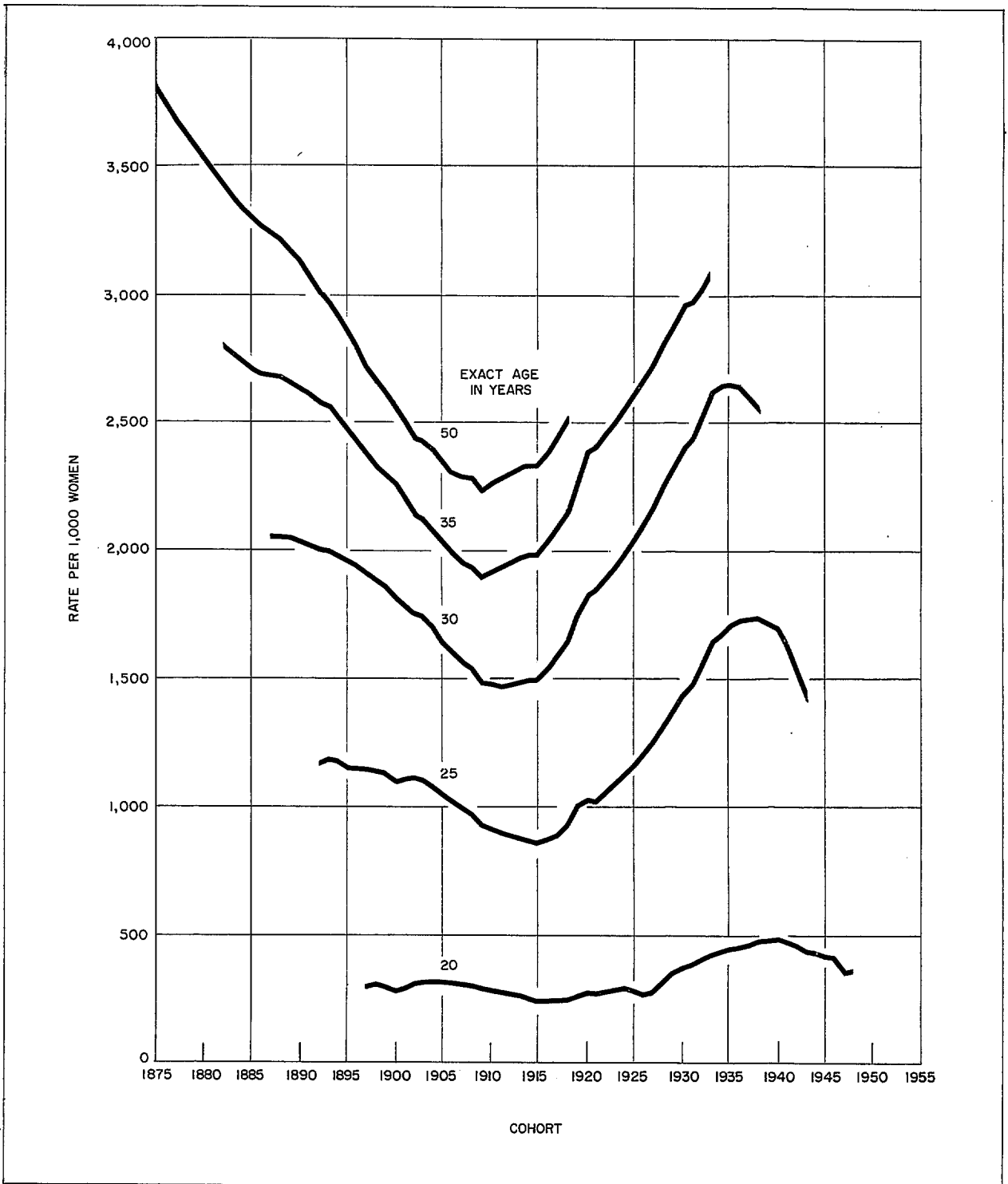


Figure 1. Cumulative birth rates by exact ages, cohorts of 1875-1948.

(Rates based on births adjusted for underregistration for all years, including 1960-68, and on population estimates adjusted for underenumeration)

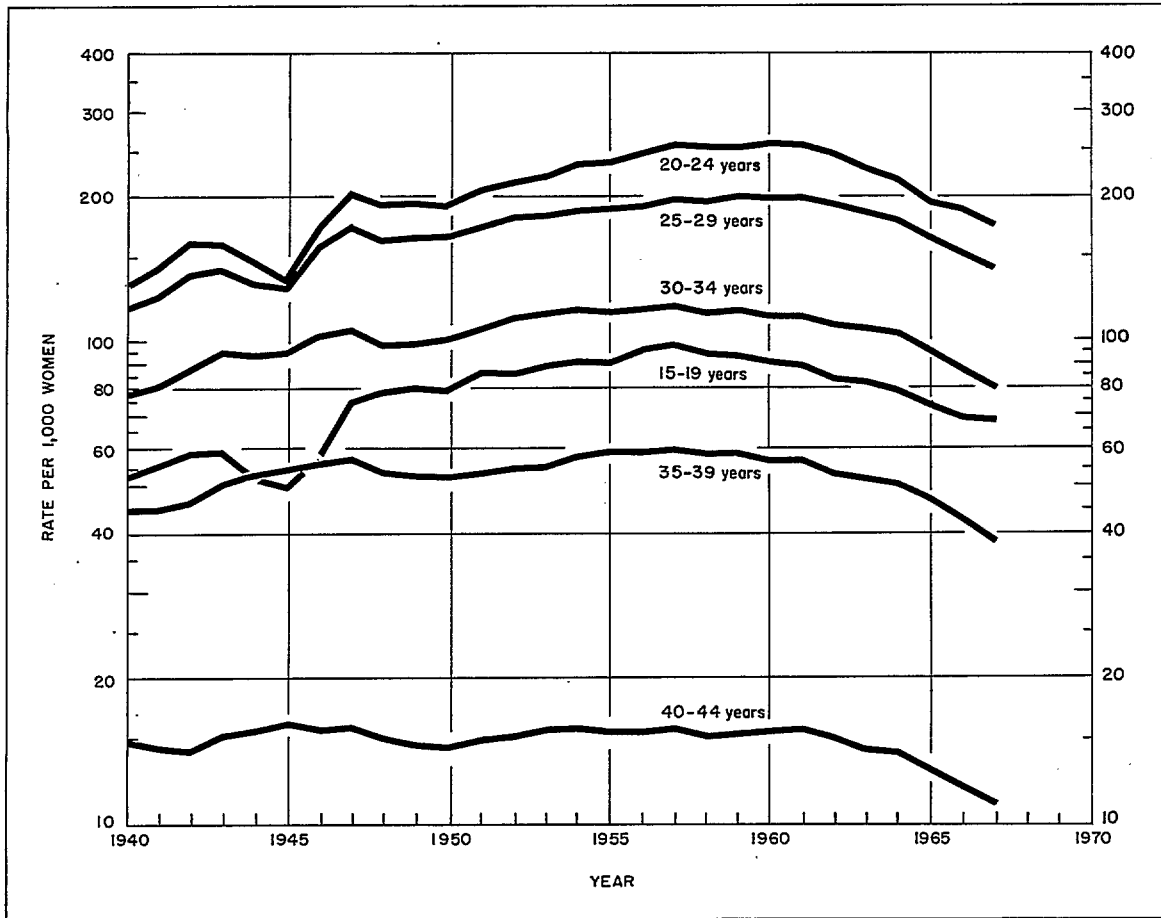


Figure 2. Birth rates by age of mother: 1940-67.

(Rates based on births adjusted for underregistration and on population estimates adjusted for underenumeration. ...Semi-logarithmic scale)

bearing at later ages or a reduction in the number of children that couples want to have altogether. At present there is no substantial basis for determining which of these explanations may be more important, but the available evidence suggests that both factors have been operating to some extent.

Total Fertility

In discussing secular trends in fertility, the total fertility rate is a useful measure because it can be compared with the eventual completed fertility of women by the end of the reproductive period.

The total fertility rate states the number of births 1,000 women would have *if* they experienced a given set of age-specific birth rates throughout their reproductive ages. It is the sum of the age-specific birth rates for single years of age observed in a given calendar year. It is an age-adjusted rate because it is based on the assumption that there are the same number of women at each single year of age.

The total fertility rate reached a postwar peak of 3,724 in 1957 (table 2). At the time this peak was reached, it seemed unlikely that such high fertility would be maintained indefinitely because it was well above the reproductive norms and expectations of American women. Interview

surveys conducted in 1955 and 1960 showed that no age group of women wanted or expected to have as many as 3,724 children per 1,000 women by the end of the reproductive period of life.^{2,3}

The solid line in figure 3 shows the major trends in the total fertility rates that have actually been observed in the United States since 1920. This line has been influenced both by changes in completed fertility and by changes

in the timing of births. The broken line, on the other hand, is designed to represent the hypothetical trend that would have been followed if no changes in age at childbearing had taken place. In other words, the only factor causing the broken line to rise and fall is the average number of children that women have by the end of the childbearing period. Both the decline in the broken line in the 1930's and its subsequent rise are

Table 2. Total fertility rates: United States, 1917-68

[See notes to tables on page VII]

Year	Rate per 1,000 women	Year	Rate per 1,000 women
1968	12,480	1942	2,532
1967	2,562	1941	2,314
1966	2,728	1940	2,214
1965	2,922	1939	2,154
1964	3,197	1938	2,200
1963	3,331	1937	2,147
1962	3,476	1936	2,119
1961	3,620	1935	2,163
1960	3,655	1934	2,205
1959	3,669	1933	2,149
1958	3,654	1932	2,288
1957	3,724	1931	2,376
1956	3,634	1930	2,509
1955	3,521	1929	2,524
1954	3,501	1928	2,656
1953	3,378	1927	2,826
1952	3,307	1926	2,910
1951	3,209	1925	3,027
1950	3,030	1924	3,144
1949	3,030	1923	3,116
1948	3,013	1922	3,125
1947	3,158	1921	3,349
1946	2,829	1920	3,273
1945	2,392	1919	3,078
1944	2,466	1918	3,313
1943	2,616	1917	3,332

¹Provisional estimate.

NOTE: The total fertility rate is the sum of age-specific birth rates for single years of age for women 14-49 years of age. The birth rates for single years of age used to compute total fertility rates are based on births adjusted for underregistration for all years (including 1960-68) and on population estimates adjusted for underenumeration. Hence they are not precisely comparable to birth rates and fertility rates shown in table 1. For method of adjusting the population bases, see the Methodological Appendix in National Office of Vital Statistics, "Fertility Tables for Birth Cohorts of American Women," by P.K. Whelpton and A.A. Campbell, Vital Statistics-Special Reports, Vol. 51, No. 1, 1960.

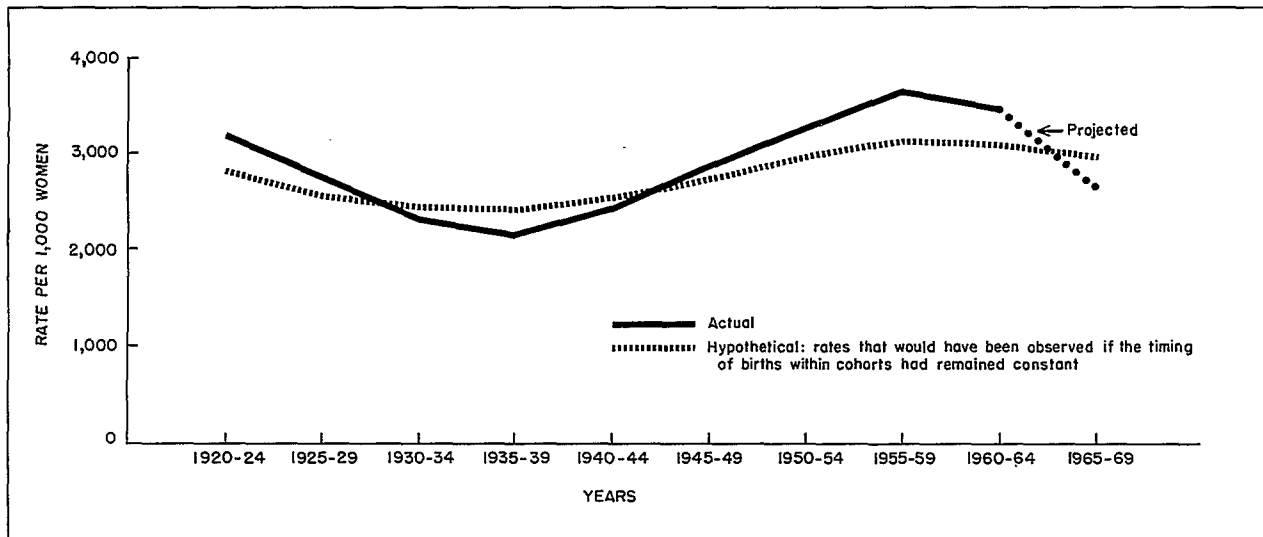


Figure 3. Actual and hypothetical secular trends in total fertility rates: 1920-69

considerably gentler than the corresponding changes in actual fertility.

The effects of changes in the timing of births are indicated by the contrast between the broken line and the solid line since the difference between the two lines is due solely to the influence of timing. This comparison suggests that more than half of the postwar rise in fertility resulted from shifts in timing, but it must be regarded as an approximation, for it was necessary to estimate the completed fertility of many of the women still in the reproductive ages in order to extend the broken line beyond the 1935-39 period.

It is important to note that trends in the average number of children per couple and in the timing of births have operated in such a way as to reinforce each other. This has made the upward and downward swings in fertility much wider than they would have been if only one of these factors had been changing.

Figure 4 shows total fertility rates by live-birth order from 1917 to 1967. These rates are the sums of the birth rates for each order by single years of age in a given year. Sums of the total fertility rates of all orders are the rates shown in table 2.

The trends in figure 4 show that the waves of births by order follow each other in succession. The early decline in the birth rates by order was ended first by the first-birth rate in 1933. This was followed by lows in the rates for second births

in 1935, third births in 1937, and fourth births in 1939. The declines in the higher birth orders were very long, not ending until the 1940's. The subsequent increases from these low rates also tended to be in succession by birth order. The first-birth rate reached a peak in 1947 which was followed by a high plateau from 1951 to 1957. This was followed by high levels in the rates for second births in 1957, third births in 1957-60, and fourth and higher order births in 1961. The recent declines in the third and higher order birth rates have been much more rapid than those during the 1920's and 1930's.

One of the most striking features of figure 4 is the fact that first-birth rates for 1946-49 and 1951-57 were above 1,000, indicating more than 1,000 first births per 1,000 women. This anomaly reflects the unusual overlapping of the two shifts in the age pattern of childbearing that has been described earlier. First-birth rates were very high for older women as well as for younger women during these periods. Such high rates for first births obviously could not be experienced by an actual cohort of women, and they had to fall after the temporary effects of the overlapping shifts in timing had diminished. The decline in the rates for first births began after 1957, but it now appears to have ended and that an upturn may be beginning. This would tend to confirm the hypothesis that the recent decline in birth rates for younger women has resulted, at least in part,

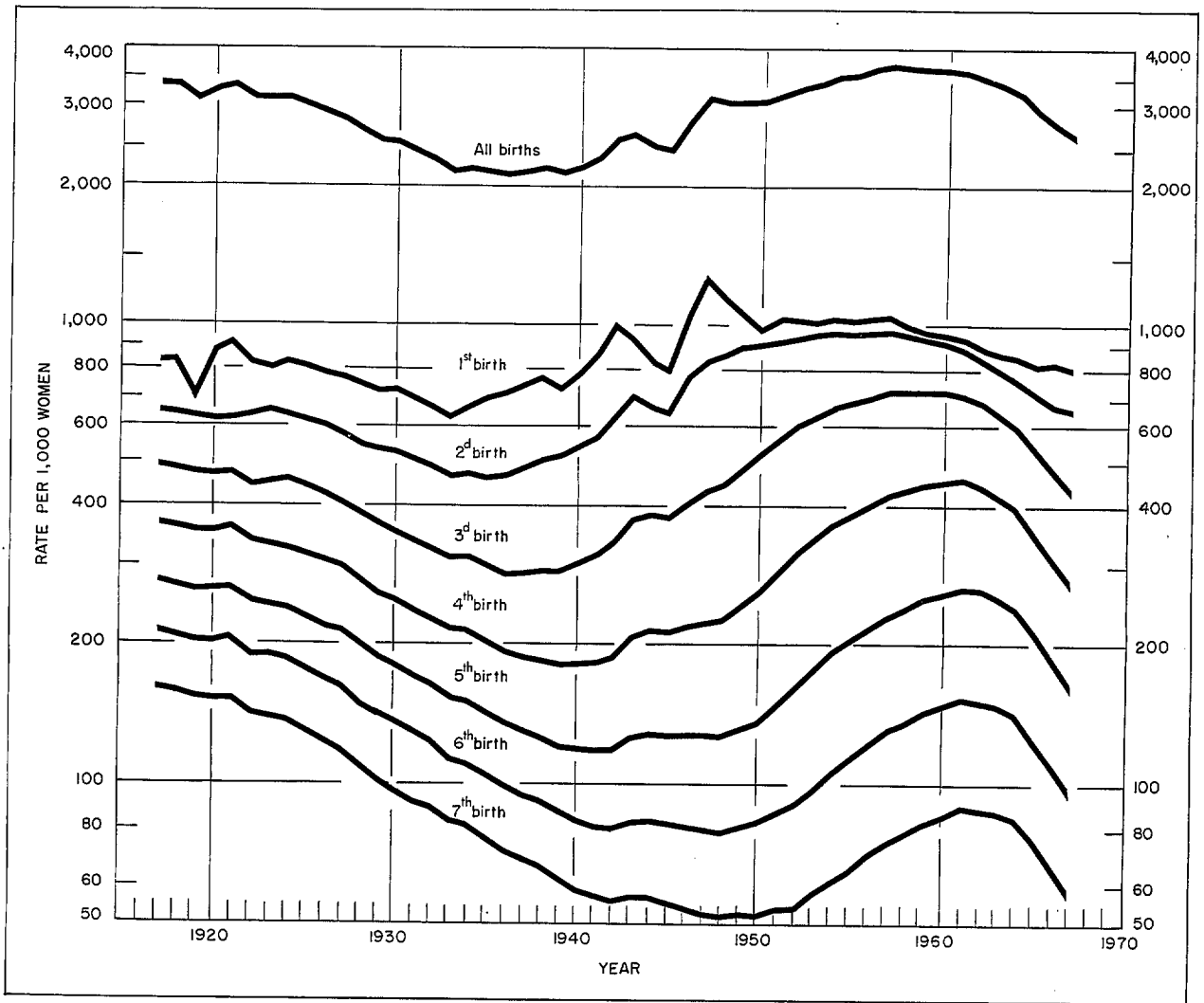


Figure 4. Total fertility rates by live-birth order: 1917-67.

(Rates based on births adjusted for underregistration and on population estimates adjusted for underenumeration for all years. Semilogarithmic scale)

from a tendency to delay childbearing until somewhat later ages.

Contraceptive Pills

There has been some speculation that the recent decline in fertility has been brought about by the increasing use of highly effective contraceptive pills. It is impossible to determine exactly what effect the pill has had, but there are

certain considerations that must be taken into account in arriving at an informed opinion concerning its impact on the birth rate.

The pill was not licensed for general use as a contraceptive until 1960 and probably did not come into wide use until a year or more later. This means that if it has had any major influence on the birth rate, it would not have been detectable until 1962 at the earliest, when children conceived in 1961 were born. The decline in fertility, how-

ever, started in 1958, so it is not possible for the pill to have initiated the downward trend or to have contributed to its early progress.

After 1960 the number of women using the pill rose to an estimated 3,815,000 in 1965.⁴ This was 13 percent of all women 15-44 years of age. In the same period the total fertility rate declined 733 births per 1,000 women 15-44 years of age, from 3,655 in 1960 to 2,922 in 1965. This was a decline of 20 percent.

Data from the 1965 National Fertility Survey permit comparison of year-by-year declines in total fertility with the rise in the percent of married women using oral contraceptives during the 1960-65 period. This comparison shows that the increase in the percent of women using the pill did not keep pace with the decline in fertility.⁵

Although the pill did not initiate the decline in fertility, it probably did have some effect upon the decline during the 1960's. The incidence of unintended pregnancies may be regarded as a function of three variables: the strength of couples' desire to prevent pregnancy, the effectiveness of the methods they use, and the convenience or acceptability of the methods. The pill is more effective than other methods in common use and is generally regarded as more convenient. Therefore substitution of the pill for other methods of family limitation would reduce the incidence of unintended conceptions without any necessary increase in the strength of the couple's motivation to prevent pregnancy.

Inasmuch as many unintended conceptions are simply conceptions that occur somewhat sooner than they are wanted, we may also speculate that one of the pill's major effects may be to help couples delay births for longer periods of time. If so, part of the recent shift toward childbearing at later ages may be aided by widespread use of the pill.

From the National Fertility Survey of 1965 Ryder and Westoff conclude

It is our hunch that what has been happening to fertility in the 1960's would have happened in direction if not in degree even if the oral contraceptive had not appeared on the scene, although the tempo of decline most recently

can probably be attributed in part to the availability of this highly efficient and apparently highly acceptable method of fertility regulation.⁶

Numbers of Births

Thus far discussion of the trends in fertility has been mainly in terms of rates. Now let us look at what has happened and what may happen to the numbers of births.

From 1930 until 1967 the numbers of births and the total fertility rates followed about the same pattern (fig. 5). Between 1933 and 1939 there were 2.3-2.5 million births annually. From this level the number climbed to a peak of 4.3 million in 1957 and then declined to about 3.5 million in 1967.

Between 1967 and 1980 the number of women in the childbearing ages will increase about 30 percent according to projections prepared by the U.S. Bureau of the Census.⁷ In the ages that commonly account for the largest numbers of births (20-29 years) the increase will be even greater (about 48 percent). Unless fertility rates fall well below their present levels, the increase in the number of women will soon tend to raise the annual numbers of births.

The first part of figure 5 shows that in order for the annual number of births to remain constant at the present level of about 3.5 million, the total fertility rate would have to fall from 2,562 in 1967 to less than 2,100 by 1975 and less than 1,800 by 1985. A decline of this magnitude would represent a marked departure from past experience, for such low fertility rates are well below the reproductive norms of any cohort of American women that has yet reached the end of the reproductive period.

The part of figure 5 on page 11 indicates that if the total fertility rate were to remain constant at the present level of about 2,500, the annual number of births would rise to almost 4.2 million by 1975 and more than 4.9 million by 1985. If the actual total fertility rates are higher, then the numbers of births will also be higher.

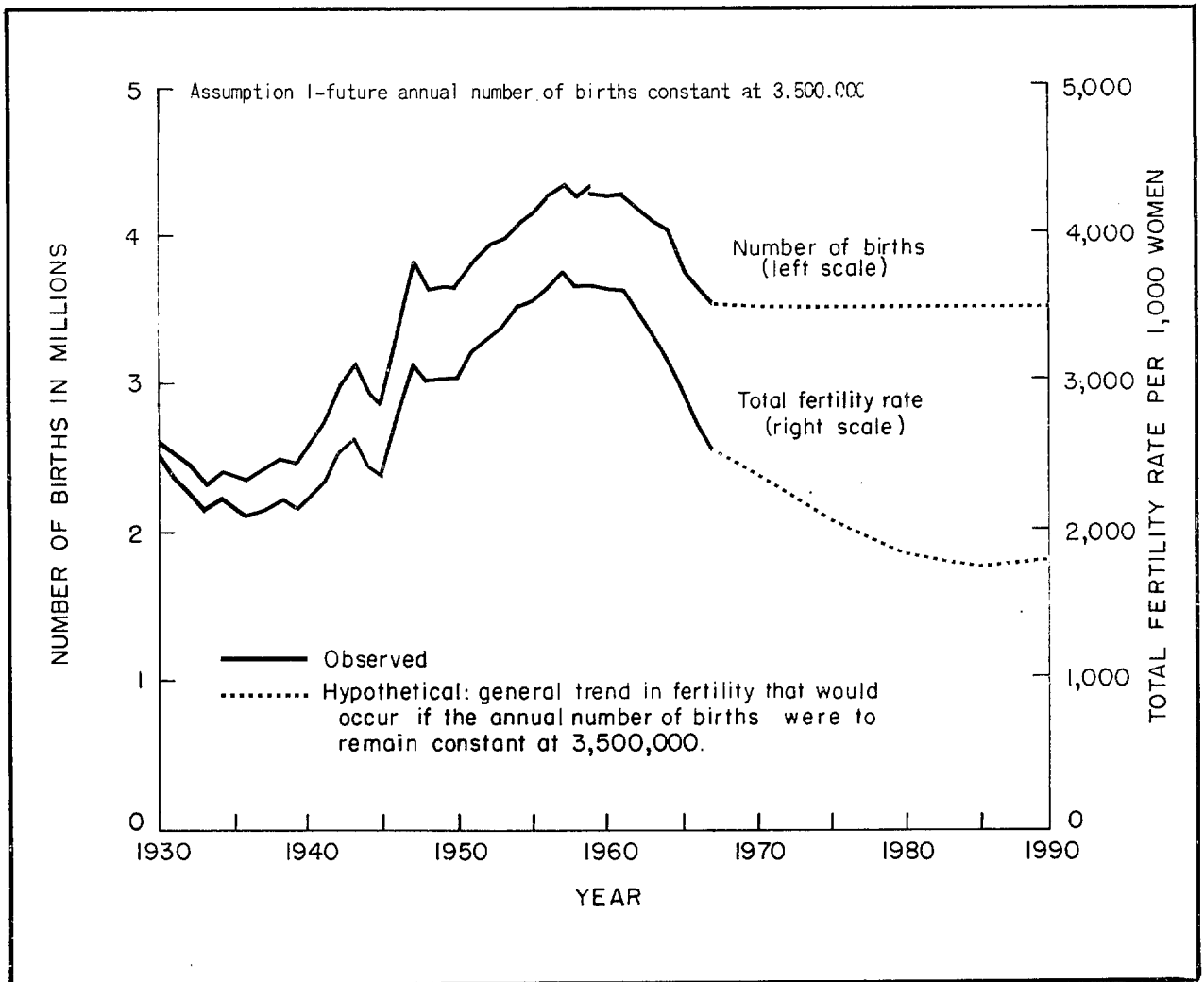


Figure 5. Observed and hypothetical numbers of births and total fertility rates: selected years 1930-90
Assumption I—future annual number of births constant at 3,500,000

FERTILITY OF MAJOR POPULATION GROUPS

The foregoing section deals with fertility trends in the United States as a whole. In this section attention will be directed toward the fertility of certain major population groups.

The kinds of groups available for comparative analysis are necessarily limited by the information collected on birth certificates. Consequently comparisons of the fertility of certain important groups in our society cannot be made. For example, it is impossible to discover from birth registration data whether fertility is declining

more rapidly among low-income families than among moderate- and high-income families. Nor is it possible to investigate trends in fertility among women classified by educational attainment. The latest revision of the U.S. Standard Certificate of Live Birth, effective on January 1, 1968, includes items on the education of the mother and father, but data from these items are not yet available.

At present the only major population groups whose fertility can be studied on the basis of information collected on birth certificates are those identified by race and residence. This section compares fertility in the white and nonwhite

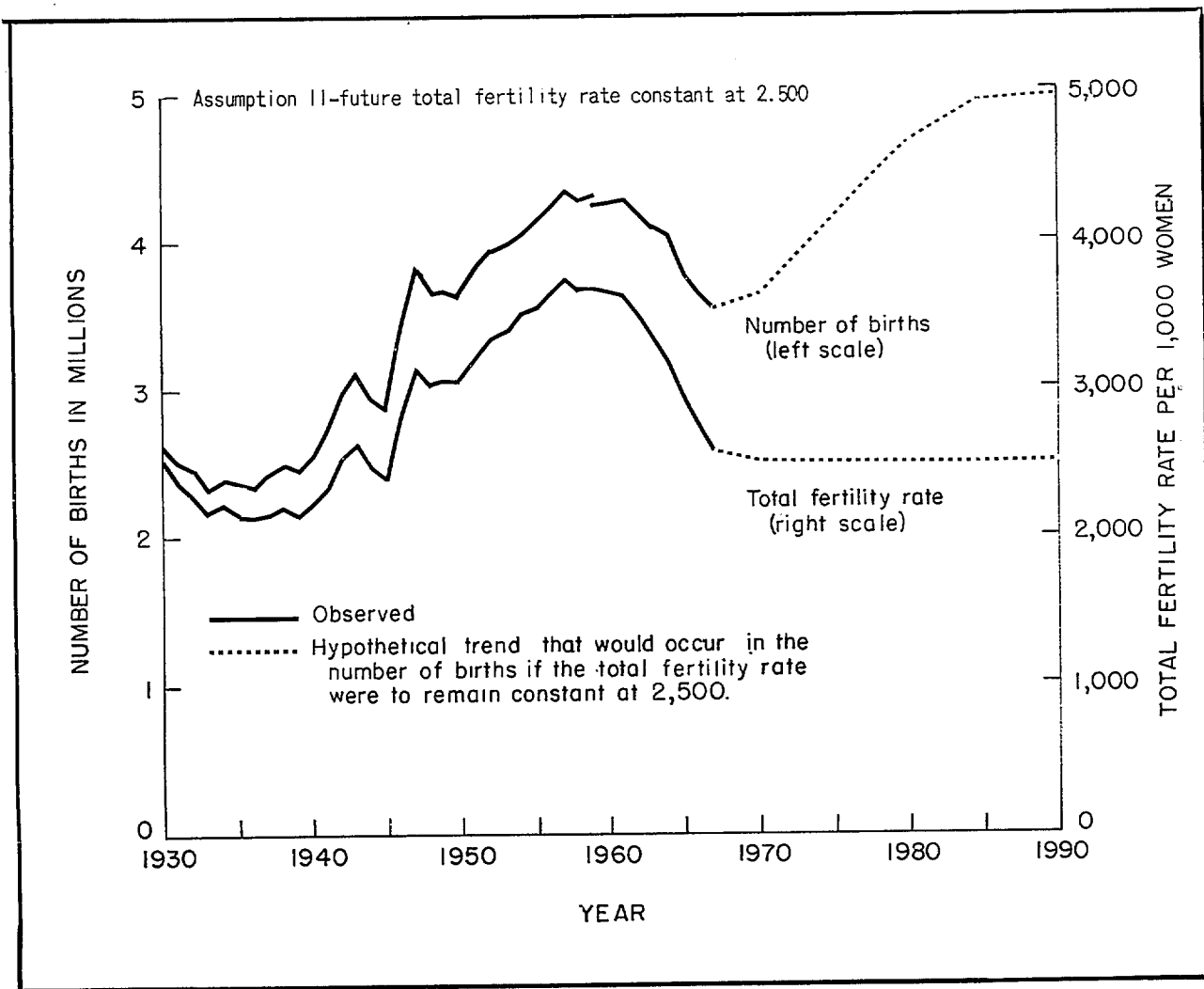


Figure 5. Observed and hypothetical numbers of births and total fertility rates: selected years 1930-90—Con.
Assumption II—future total fertility rate constant at 2,500

populations and presents data for States, geographic divisions, and the largest metropolitan areas.

Fertility by Color

Fertility of nonwhite women in the United States has followed about the same pattern as that of white women since 1950 but has been consistently higher (fig. 6).

Between 1960 and 1965 the white fertility rate declined more rapidly than the nonwhite rate, so the difference between the two rates increased; in 1960 the nonwhite rate was 36 percent higher than the white rate, and in 1965 it

was 46 percent higher. Since 1965, however, the nonwhite fertility rate has dropped somewhat more rapidly than the white rate. This reversal was due to a lower rate of decline in the white fertility rate and a higher rate of decline in the nonwhite rate during 1965-67 as compared with the 1960-65 period. As a result the difference between the white and nonwhite fertility rates decreased slightly to 44 percent in 1967.

Color differences in fertility vary by age of mother and live-birth order of the child, but in all cases the fertility of nonwhite women is higher (table 3). By age of mother, the differences are relatively larger for the younger and the older women. The rates are closest in the

age group 25-29 years, where in 1967 the non-white rate was only 11 percent higher than the white rate. The largest differences are at ages 15-19 (136 percent) and 40-44 (71 percent).

The lower rate of decline in the white fertility rate between 1965 and 1967 was due to the slower decline in the rates for women 15-24 years of age. On the other hand, there was a higher average annual percent decline in the

rates for all nonwhite women over 20 years of age during 1965-67 than in the 1960-65 period.

With the exception of first births the higher the live-birth order the greater the relative difference between the white and nonwhite birth rates. In 1967 the nonwhite second-birth rate was only 17 percent higher than that of white women, while for eighth and higher orders, the nonwhite rate was 5 times greater than the white rate.

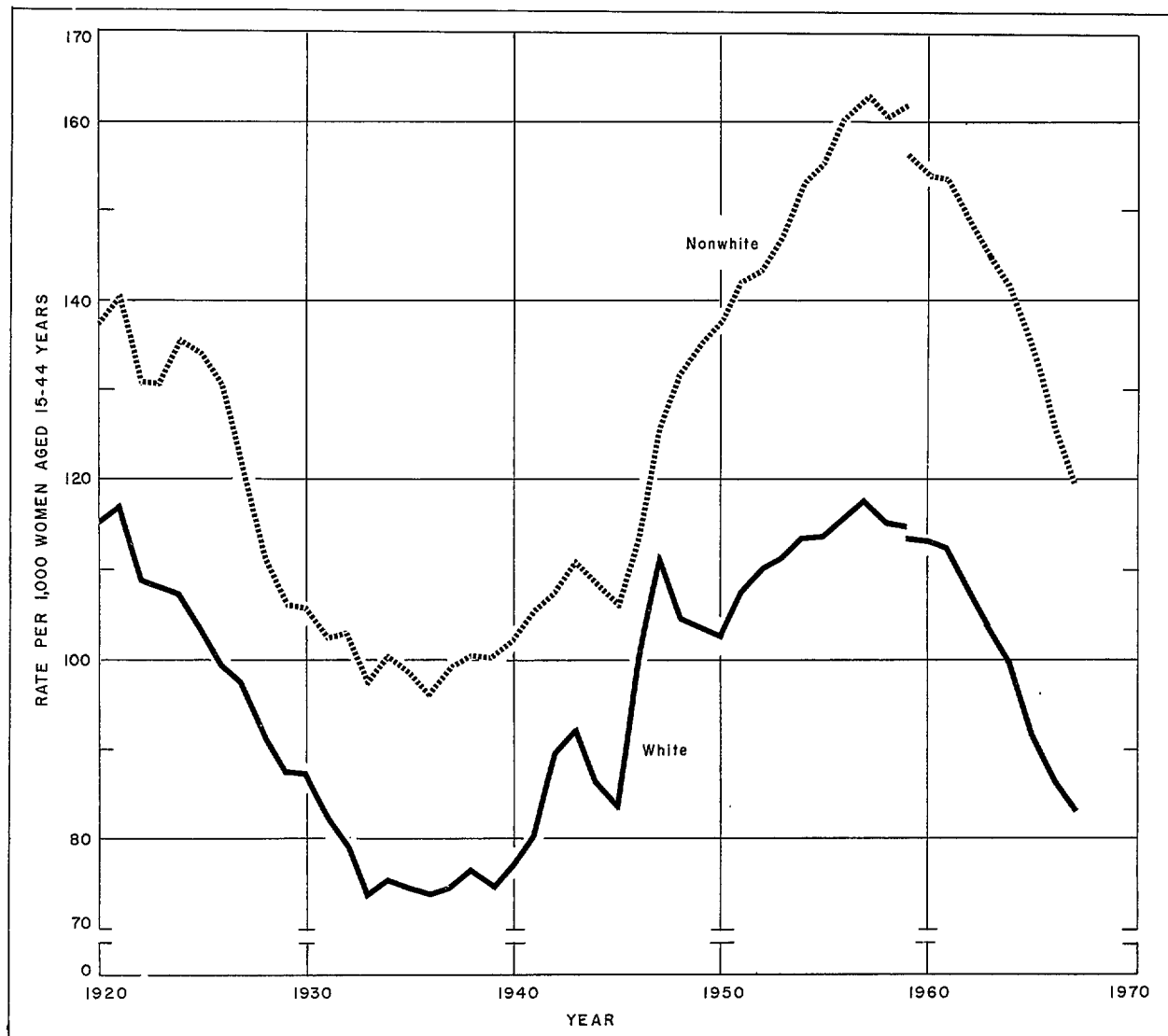


Figure 6. Fertility rates by color: 1920-67

(Beginning in 1959 trend lines are based on registered live births; trend lines for 1920-59 are based on live births adjusted for underregistration)

Table 3. Birth rates by age of mother, color, and live-birth order: United States, 1967

[See notes to tables on page VI]

Color and live-birth order	Age of mother								
	15-44 years ¹	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
<u>Total</u>	Rate per 1,000 women								
All birth orders--	87.6	0.9	67.9	174.0	142.6	79.3	38.5	10.6	0.7
First child-----	30.8	0.8	51.1	75.3	26.5	6.6	2.2	0.5	0.0
Second child-----	22.6	0.0	13.6	59.5	40.2	12.3	3.8	0.8	0.0
Third child-----	13.9	0.0	2.7	25.0	34.4	17.1	6.1	1.3	0.1
Fourth child-----	8.3	-	0.5	9.4	20.4	15.3	6.7	1.6	0.1
Fifth child-----	4.8	-	0.1	3.4	10.6	10.7	5.6	1.4	0.1
Sixth and seventh child-----	4.5	-	0.0	1.4	8.3	11.2	7.3	2.1	0.1
Eighth child and over-	2.7	-	0.0	0.1	2.1	6.2	6.8	2.9	0.3
<u>White</u>									
All birth orders--	83.1	0.3	57.3	168.8	140.7	76.5	36.6	9.8	0.6
First child-----	29.7	0.3	45.3	76.6	27.4	6.7	2.2	0.5	0.0
Second child-----	22.1	0.0	10.3	59.2	41.9	12.5	3.8	0.8	0.0
Third child-----	13.5	0.0	1.5	22.7	35.4	17.7	6.3	1.3	0.1
Fourth child-----	7.9	-	0.2	7.4	19.8	15.6	6.9	1.6	0.1
Fifth child-----	4.3	-	0.0	2.1	9.3	10.4	5.6	1.4	0.1
Sixth and seventh child-----	3.7	-	0.0	0.7	5.9	9.7	6.8	2.0	0.1
Eighth child and over-	1.8	-	0.0	0.1	1.0	3.9	4.9	2.2	0.2
<u>Nonwhite</u>									
All birth orders--	119.8	4.1	135.2	212.1	155.9	99.1	52.4	16.8	1.2
First child-----	38.4	4.0	88.2	65.6	20.2	6.0	2.0	0.5	0.0
Second child-----	25.9	0.2	34.1	61.7	28.1	10.7	3.7	0.8	0.1
Third child-----	16.8	0.0	10.1	41.2	27.8	12.8	4.9	1.3	0.1
Fourth child-----	11.5	-	2.3	23.9	24.8	13.2	5.4	1.2	0.1
Fifth child-----	8.1	-	0.4	12.1	20.1	12.6	5.5	1.3	0.1
Sixth and seventh child-----	10.1	-	0.0	7.0	25.2	21.4	10.7	3.1	0.1
Eighth child and over-	9.0	-	0.0	0.7	9.7	22.3	20.0	8.7	0.7

¹Rates computed by relating total births regardless of age of mother to women aged 15-44 years.

Between 1960 and 1965 the greatest average declines in the white birth rates were for the third and fourth birth orders, but between 1965 and 1967 the greatest average declines were for fifth and higher orders. The white first-birth rate declined during the 1960-65 period but rose during the 1965-67 period. The shift in the pattern of decline in birth rates by order was not as great for the nonwhite population. The largest average declines during the earlier period were in the fourth through seventh order births. During the later period the largest average declines were in the fifth and higher orders. During both the 1960-65 and the 1965-67 periods the nonwhite first-birth rate increased.

Comparisons of certain characteristics of white and nonwhite births such as sex ratio, attendant at birth, birth weight, and illegitimacy are presented in later sections of this report.

State and Geographic Division

Between 1960 and 1967 there was a year-to-year decline in the birth rates of most States. With this drop there was also a slight convergence of rates for the States. This means that declines were, in general, greatest for States with the highest rates. The decline in the coefficient of variation—the ratio of the standard deviation of an array of rates to the arithmetic mean of that array, expressed as a percent—shows this convergence. In 1960 the coefficient of variation was 10.2 percent and in 1967 it was 8.6 percent as shown below:

Year	U.S. birth rate	Coefficient of variation among States
1960-----	23.7	10.2
1965-----	19.4	9.1
1966-----	18.4	8.4
1967-----	17.8	8.6

Between 1965 and 1967 the birth rate for the United States declined 8.2 percent (table 4). Four of the nine geographic divisions had greater decreases than the United States. They were the West North Central (10.2 percent), East South

Central (9.5 percent), South Atlantic (9.0 percent), and Middle Atlantic (8.8 percent).

By State, the highest birth rates in 1967 were in Alaska (23.1), Utah (22.4), New Mexico (21.3), and Louisiana (20.6). The lowest rates were in Kansas (15.4), Oregon (15.8), Oklahoma (16.1), Missouri (16.2), and Pennsylvania (16.2). By division, the Mountain Division had the highest birth rate, 19.4, and the Middle Atlantic Division had the lowest, 16.6.

The birth rate per 1,000 population shows the impact of the number of births on population growth but has limitations as a measure of the level of fertility, or the number of births per woman. Differences in birth rates by State and geographic division may be due to differences in the age-sex composition of the populations as well as to differences in the level of fertility.

The ratio of the number of children under 5 years of age per 1,000 women 15-49 years of age is probably a better measure of fertility than the birth rate per 1,000 total population as it is affected much less by differences in age-sex structure. Such ratios for 1967 are, however, available only for the four geographic regions.⁸ They show a somewhat different picture than the birth rates. The North Central Region had the highest ratio (419) and the Northeast had the lowest (372). Although the South had the highest birth rates in the 1965-67 period, its ratio of children under 5 to women 15-49 ranked third (385) in 1967. This can be explained primarily by the fact that the South's population included a larger proportion of young adults in the childbearing ages and was thus more favorable for high birth rates than that of the North Central Region.

Metropolitan Residence

In 1965 there were 30 standard metropolitan statistical areas (SMSA's) with a population of 1 million or more. For the years 1965-67 this group of SMSA's had a slightly higher birth rate per 1,000 population than the United States as a whole.

Birth rates for each of the SMSA's with a population of 1 million or more are shown by geographic region in table 5. In the North Central and South Regions the birth rates for these SMSA's are higher than in the balance of the region. However, in the Northeast and West

Table 4. Birth rates and percent change: United States, each division and State, 1965-67

[See notes to tables on page VII. By place of residence]

Division and State	1967	1966	1965	Percent change 1965-67
	Rate per 1,000 population			
United States-----	17.8	18.4	19.4	-8.2
<u>Geographic division</u>				
New England-----	17.6	18.3	19.1	-7.9
Middle Atlantic-----	16.6	17.4	18.2	-8.8
East North Central-----	18.3	19.1	19.7	-7.1
West North Central-----	16.8	17.6	18.7	-10.2
South Atlantic-----	18.2	18.8	20.0	-9.0
East South Central-----	18.2	18.7	20.1	-9.5
West South Central-----	18.8	19.2	20.2	-6.9
Mountain-----	19.4	19.6	20.8	-6.7
Pacific-----	17.6	17.9	19.1	-7.9
<u>New England</u>				
Maine-----	18.6	18.9	20.0	-7.0
New Hampshire-----	18.3	18.4	19.4	-5.7
Vermont-----	18.5	19.5	20.1	-8.0
Massachusetts-----	17.5	18.1	18.8	-6.9
Rhode Island-----	17.6	18.2	19.4	-9.3
Connecticut-----	17.1	18.2	19.2	-10.9
<u>Middle Atlantic</u>				
New York-----	16.8	17.6	18.5	-9.2
New Jersey-----	16.6	17.5	18.5	-10.3
Pennsylvania-----	16.2	17.0	17.7	-8.5
<u>East North Central</u>				
Ohio-----	17.7	18.5	19.1	-7.3
Indiana-----	18.8	19.5	20.0	-6.0
Illinois-----	18.0	18.8	19.6	-8.2
Michigan-----	19.1	19.9	20.1	-5.0
Wisconsin-----	18.1	19.3	20.0	-9.5
<u>West North Central</u>				
Minnesota-----	18.1	18.7	19.9	-9.0
Iowa-----	17.2	17.8	18.5	-7.0
Missouri-----	16.2	17.3	18.1	-10.5
North Dakota-----	17.0	18.7	20.2	-15.8
South Dakota-----	17.0	18.4	20.2	-15.8
Nebraska-----	16.9	17.6	19.0	-11.1
Kansas-----	15.4	16.1	17.5	-12.0

Table 4. Birth rates and percent change: United States, each division and State, 1965-67—Con.

[See notes to tables on page VII. By place of residence]

Division and State	1967	1966	1965	Percent change 1965-67
	Rate per 1,000 population			
<u>South Atlantic</u>				
Delaware-----	19.3	20.1	21.2	-9.0
Maryland-----	18.8	19.9	20.9	-10.0
District of Columbia-----	19.7	20.4	22.5	-12.4
Virginia-----	18.2	18.8	20.1	-9.5
West Virginia-----	16.4	16.8	17.7	-7.3
North Carolina-----	18.4	18.6	19.8	-7.1
South Carolina-----	19.2	19.6	20.8	-7.7
Georgia-----	19.2	20.1	21.5	-10.7
Florida-----	16.7	17.3	18.4	-9.2
<u>East South Central</u>				
Kentucky-----	17.7	18.2	19.4	-8.8
Tennessee-----	17.5	17.8	19.0	-7.9
Alabama-----	18.3	18.9	20.3	-9.9
Mississippi-----	19.8	20.6	22.7	-12.8
<u>West South Central</u>				
Arkansas-----	17.0	17.7	18.9	-10.1
Louisiana-----	20.6	21.5	22.4	-8.0
Oklahoma-----	16.1	16.3	17.5	-8.0
Texas-----	19.1	19.4	20.4	-6.4
<u>Mountain</u>				
Montana-----	17.2	18.0	19.4	-11.3
Idaho-----	18.3	18.7	19.3	-5.2
Wyoming-----	17.8	18.0	19.9	-10.6
Colorado-----	17.8	17.7	18.9	-5.8
New Mexico-----	21.3	21.8	24.0	-11.2
Arizona-----	19.8	20.1	21.5	-7.9
Utah-----	22.4	22.5	22.4	-
Nevada-----	19.3	19.9	21.8	-11.5
<u>Pacific</u>				
Washington-----	17.8	17.4	17.8	-
Oregon-----	15.8	16.6	17.0	-7.1
California-----	17.6	17.9	19.3	-8.8
Alaska-----	23.1	24.1	26.5	-12.8
Hawaii-----	20.0	20.9	23.0	-13.0

Table 5. Birth rates for standard metropolitan statistical areas with populations of 1,000,000 or more in 1965 and percent change: United States and each region, 1965-67

[See notes to tables on page VII. By place of residence. SMSA's are as currently defined by the Bureau of the Budget and used by the Bureau of the Census]

Area	1967	1966	1965	Percent change 1965-67
	Rate per 1,000 population			
United States-----	17.8	18.4	19.4	-8.2
30 SMSA's-----	17.9	18.6	19.5	-8.2
Balance of country-----	17.7	18.3	19.4	-8.8
Northeast Region-----	16.9	17.6	18.5	-8.6
7 SMSA's-----	16.7	17.6	18.5	-9.7
Boston-Lowell-Lawrence, Mass ¹ -----	17.7	18.3	19.0	-6.8
Buffalo, N.Y.-----	17.4	18.3	19.1	-8.9
New York, N.Y.-----	16.8	17.7	18.6	-9.7
Newark, N.J.-----	16.4	17.6	18.3	-10.4
Patterson-Clifton-Passaic, N.J.-----	15.3	16.3	17.1	-10.5
Philadelphia, Pa-----	17.0	17.8	18.9	-10.1
Pittsburgh, Pa-----	15.1	16.2	16.9	-10.7
Balance of region-----	17.1	17.7	18.6	-8.1
North Central Region-----	17.8	18.5	19.4	-8.2
9 SMSA's-----	18.7	19.6	20.3	-7.9
Chicago, Ill-----	19.0	19.7	20.4	-6.9
Cincinnati, Ohio-Ky.-Ind-----	18.5	19.3	20.3	-8.9
Cleveland, Ohio-----	17.4	18.3	18.9	-7.9
Detroit, Mich-----	18.8	19.7	20.0	-6.0
Indianapolis, Ind-----	19.8	20.4	21.2	-6.6
Kansas City, Mo.-Kans-----	17.5	18.6	20.0	-12.5
Milwaukee, Wis-----	18.9	20.4	20.7	-8.7
Minneapolis-St. Paul, Minn-----	20.3	20.6	21.7	-6.5
St. Louis, Mo.-Ill-----	18.0	19.1	20.2	-10.9
Balance of region-----	17.2	17.9	18.8	-8.5
South Region-----	18.3	18.9	20.1	-9.0
7 SMSA's-----	19.2	20.0	20.8	-7.7
Atlanta, Ga-----	19.9	20.7	21.6	-7.9
Baltimore, Md-----	18.2	19.4	20.0	-9.0
Dallas, Tex-----	19.8	19.9	20.5	-3.4
Houston, Tex-----	19.9	20.3	20.7	-3.9
Miami, Fla-----	15.2	16.4	16.5	-7.9
New Orleans, La-----	20.4	21.5	22.5	-9.3
Washington, D.C.-Md.-Va-----	20.2	21.0	22.5	-10.2
Balance of region-----	18.1	18.7	19.9	-9.0
West Region-----	18.0	18.4	19.5	-7.7
7 SMSA's-----	18.0	17.9	19.1	-5.8
Anaheim-Santa Ana-Garden Grove, Calif-----	18.8	19.4	21.1	-10.9
Denver, Colo-----	18.4	18.4	19.2	-4.2
Los Angeles-Long Beach, Calif-----	17.9	18.0	19.3	-7.3
San Bernadino-Riverside-Ontario, Calif-----	17.4	18.3	19.8	-12.1
San Diego, Calif-----	18.1	17.8	19.4	-6.7
San Francisco-Oakland, Calif-----	17.7	16.8	18.3	-3.3
Seattle, Wash-----	18.5	17.7	17.6	5.1
Balance of region-----	18.1	18.8	19.8	-8.6

¹ Massachusetts State Economic Area C.

Regions rates for the SMSA's as a group are lower than for the remainder of the region.

Exceptions to the general decline in fertility over the 1965-67 period may be seen in the West Region. One SMSA (Seattle, Washington) showed an increase in its birth rate between 1965 and 1966, and three SMSA's showed increases from 1966 to 1967.

Differences in the age-sex composition of the populations must also be considered when comparing the birth rates of metropolitan areas. Areas with a large proportion of young married couples tend to have high birth rates. From table 5 it appears that the SMSA's have slightly higher fertility than the rest of the country. Ratios of children under 5 to women 15-49, however, indicate that the metropolitan areas of the United States have somewhat lower fertility than the non-metropolitan areas. The respective ratios were 384 and 412 per 1,000 in 1967.

CHARACTERISTICS OF BIRTHS

The following sections deal with certain characteristics of births for which all or most registration areas provide information. The characteristics discussed include sex ratio, month of birth, attendant at birth, birth weight, gestation, plurality, and illegitimacy.

Sex Ratio

The sex ratio for live births in 1967 was 1,050 males per 1,000 females. Since 1940 this ratio has changed very little, ranging between 1,047 and 1,058. The ratios for the two major color groups also have varied little in this period—between 1,052 and 1,063 for white births, and between 1,011 and 1,033 for nonwhite births.

During 1965-67 the sex ratio for white births averaged 1,055 males per 1,000 females; the ratio for Negro births was considerably lower, averaging 1,022. For the smaller racial groups the ratios varied widely, between 1,066 for the Chinese and 1,036 for the American Indians (table 6).

A comparison of the sex ratios for single and plural births during 1965-67 indicates that there was a significantly higher proportion of males in single than in plural deliveries (table 7).

Table 6. Sex ratio at birth, by specified race: United States, average for 1965-67

[See notes to tables on page VII]

Race	Males per 1,000 females
Total-----	1,050
White-----	1,055
Negro-----	1,022
Indian-----	1,036
Chinese-----	1,066
Japanese-----	1,049
Other-----	1,062

This was true also for white and nonwhite births considered separately. However, regardless of plurality, the sex ratio for white births was higher than the ratio for nonwhite births.

Sex ratios calculated for births in 1967 classified by live-birth order and age of mother are shown in table 8. In general the ratios decrease with age of mother and with each successively higher birth-order group. However, there is no consistent pattern in the ratios for any single birth order cross-classified with any age-of-mother group.

Month of Birth

The occurrence of births is not uniform throughout the year. In recent years, as in previous years, the distribution tends to be bimodal with the major peak in September and the minor peak in February. The months with the smallest proportions of births are generally April and May. Table 9 shows the monthly indexes of live births for the United States since 1960. These indexes are the ratios of the actual number of births in a month to the average monthly number for the calendar year multiplied by 100 and adjusted for the varying number of days per month.

The seasonal patterns of white and nonwhite births are about the same. However, the degree of seasonality, as measured by the standard devia-

Table 7. Sex ratio at birth, by color and plurality: United States, 1965-67

[See notes to tables on page VII]

Color and plurality	1967	1966	1965
	Males per 1,000 females		
<u>Total</u>			
All live births-----	1,050	1,049	1,051
Single live births-----	1,051	1,049	1,052
Plural live births-----	999	1,019	1,023
<u>White</u>			
All live births-----	1,056	1,053	1,056
Single live births-----	1,057	1,054	1,056
Plural live births-----	1,007	1,023	1,033
<u>Nonwhite</u>			
All live births-----	1,020	1,025	1,028
Single live births-----	1,021	1,026	1,029
Plural live births-----	969	1,005	986

Table 8. Sex ratio at birth, by live-birth order and age of mother: United States, 1967

[See notes to tables on page VII]

Age of mother	Live-birth order						
	Total births	1	2	3	4	5	6 and over
	Males per 1,000 females						
All ages-----	1,050	1,060	1,049	1,048	1,046	1,035	1,026
15-19 years-----	1,053	1,052	1,058	1,044	1,091	¹ 1,141	¹ 1,476
20-24 years-----	1,053	1,061	1,046	1,046	1,058	1,032	1,012
25-29 years-----	1,050	1,072	1,057	1,058	1,027	1,021	1,019
30-34 years-----	1,048	1,102	1,027	1,051	1,073	1,045	1,017
35-39 years-----	1,043	1,042	1,068	1,019	1,032	1,053	1,048
40-44 years-----	1,007	1,106	969	970	967	1,025	1,021

¹Ratio based on fewer than 1,000 births.

Table 9. Monthly indexes of live births: United States, 1960-67

[See notes to tables on page VII]

Month of occurrence	1967	1966	1965	1964	1963	1962	1961	1960
	Monthly index							
Total-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
January-----	98.0	95.9	97.9	97.4	97.5	97.2	97.5	95.8
February-----	99.5	99.0	99.9	99.8	98.9	99.5	100.0	97.7
March-----	99.3	99.1	99.4	97.4	97.8	99.1	99.4	97.0
April-----	93.5	96.8	94.9	94.9	95.9	95.7	95.5	93.8
May-----	97.2	95.6	96.0	95.9	96.0	94.7	94.5	92.4
June-----	100.2	98.7	99.7	100.7	98.6	95.8	97.5	95.3
July-----	103.5	101.4	104.2	105.0	103.6	102.6	103.0	103.8
August-----	104.8	104.9	105.4	104.0	105.5	107.1	106.3	108.8
September-----	106.6	107.7	107.9	107.7	108.4	107.7	107.6	111.0
October-----	101.4	102.2	100.4	102.1	102.5	102.7	102.1	102.7
November-----	98.2	100.0	97.7	98.0	97.6	98.9	98.8	100.2
December-----	97.7	98.7	96.5	97.0	97.7	98.8	97.8	101.4

NOTE: Index is ratio of number of births in month to average monthly number for the year multiplied by 100. Adjustment has been made for varying number of days per month.

tion of the monthly indexes, is greater for the nonwhite than for the white births. Table 10 shows the monthly indexes and standard deviations by color for 1965-67.

By removing the seasonal component from the monthly series of birth and fertility rates, the underlying trend can be seen more easily. Seasonally adjusted birth and fertility rates for 1965-67 are shown in table 11. The decline during 1965 was fairly well distributed throughout the year. During 1966 and 1967, however, there was a greater decline in the first half of the year than in the latter half.

A more complete discussion of seasonal variation may be found in *Seasonal Variation of Births, United States, 1933-63*.⁹

Attendant at Birth

In 1967, 98.3 percent of all live births were classified as having been delivered by physicians in hospitals. The corresponding percentages for white and nonwhite births were 99.4 and 92.9,

respectively. According to this classification deliveries by "physicians in hospitals" include all births in hospitals or institutions and those births attended by physicians in clinics.

For the white population the most rapid increase in the proportion of medically attended hospital deliveries occurred during the early 1940's. The percentage of white births delivered by physicians in hospitals rose from 59.9 in 1940 to 84.3 in 1945. Since 1948 this proportion has been over 90 percent.

In contrast, substantial gains continue in the proportion of hospital deliveries for nonwhite births. In 1940 only 27 percent of nonwhite births were delivered by physicians in hospitals. By 1950 this proportion had more than doubled, increasing to 57.9 percent. By 1967 the percentage had reached 92.9.

The proportion of births delivered by physicians in places other than hospitals or clinics has declined steadily from 7.1 percent in 1950 to only 0.4 percent in 1967. The corresponding proportions for white and nonwhite births have

Table 10. Monthly indexes of live births and standard deviations, by color: United States, 1965-67

[See notes to tables on page VII]

Month of occurrence	1967		1966		1965	
	White	Non-white	White	Non-white	White	Non-white
	Monthly index					
Total-----	100.0	100.0	100.0	100.0	100.0	100.0
January-----	97.3	101.6	94.6	102.4	97.1	101.9
February-----	99.2	100.9	98.2	103.2	99.8	100.4
March-----	99.8	96.7	99.3	97.8	100.2	95.1
April-----	94.6	88.4	97.5	93.1	95.8	90.2
May-----	98.5	90.7	96.4	91.9	96.8	92.3
June-----	100.7	97.9	99.5	94.7	100.4	96.6
July-----	102.7	107.7	101.0	103.3	103.7	106.6
August-----	104.0	108.3	104.3	107.8	104.9	108.2
September-----	106.3	108.1	107.7	107.7	107.7	109.0
October-----	101.5	101.3	102.6	100.0	100.2	101.4
November-----	98.0	99.2	100.2	99.3	97.3	99.4
December-----	97.5	99.0	98.7	99.0	96.1	98.7
	Standard deviation					
Total-----	3.2	6.3	3.6	5.2	3.8	6.0

NOTE: Index is ratio of number of births in month to average monthly number for the year multiplied by 100. Adjustment has been made for varying number of days per month.

Table 11. Seasonally adjusted birth and fertility rates, by month of occurrence: United States, 1965-67

[See notes to tables on page VII]

Month of occurrence	Birth rates			Fertility rates		
	1967	1966	1965	1967	1966	1965
	Rate per 1,000 population			Rate per 1,000 women 15-44 years of age		
January-----	18.4	18.6	20.0	90.9	92.4	99.7
February-----	18.2	18.7	19.9	89.8	92.8	99.0
March-----	18.1	18.7	19.8	89.5	93.0	98.8
April-----	17.7	19.0	19.6	87.7	94.3	97.4
May-----	18.1	18.5	19.6	89.6	91.7	97.5
June-----	18.0	18.3	19.6	88.5	90.9	97.6
July-----	17.7	17.9	19.4	87.0	88.7	96.6
August-----	17.6	18.2	19.3	86.6	90.3	95.9
September-----	17.5	18.2	19.2	85.9	90.3	95.5
October-----	17.5	18.3	18.9	86.2	90.3	93.8
November-----	17.4	18.4	18.9	85.5	90.8	93.9
December-----	17.4	18.2	18.8	85.7	90.2	93.4

also declined to very low levels: 0.3 and 1.1 percent, respectively, in 1967 (table 12).

The proportion of births attended by midwives in 1967 was 1.1 percent, or less than one-fourth of the proportion in 1950. Births attended by midwives have declined considerably for both the white and nonwhite populations. Within the nonwhite group, for example, the proportion of such births declined from 26.1 to 5.4 percent between 1950 and 1967.

Table 12 shows that type of residence is an important factor in the distribution of nonwhite births by attendant. In fact, much of the white-nonwhite differential in medically attended hospital deliveries would disappear if births occur-

ring only in urban places were considered. In 1967, 99.4 percent of white births and 97.6 percent of nonwhite births in urban places with populations of 10,000 or more were delivered by physicians in hospitals. In contrast, 99.4 percent of white births and 82.6 percent of nonwhite births in places with populations of less than 10,000 were delivered by physicians in hospitals.

The differential by type of residence in the rate of hospital utilization within the nonwhite group has declined considerably since 1950. In that year the rate was 82.4 percent in urban places with populations of 10,000 or more and 32.1 percent in the other areas (table 12). Proportions of nonwhite births delivered by midwives

Table 12. Percent distribution of live births by attendant, according to color and type of residence: United States, 1950, 1960, and 1967

[See notes to tables on page VII]

Color and attendant	Year and type of residence								
	1967			1960			1950		
	United States	Urban places ¹	Other areas	United States	Urban places ¹	Other areas	United States	Urban places ¹	Other areas
<u>Total</u>	Percent distribution								
All births-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physician in hospital ² -----	98.3	99.0	97.4	96.6	98.3	94.7	88.0	95.7	80.0
Physician not in hospital-----	0.4	0.3	0.5	1.2	0.8	1.6	7.1	2.6	11.7
Midwife-----	1.1	0.5	1.9	2.0	0.8	3.5	4.5	1.5	7.7
Other and not specified-----	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.6
<u>White</u>									
All births-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physician in hospital ² -----	99.4	99.4	99.4	98.8	99.1	98.3	92.8	97.9	87.5
Physician not in hospital-----	0.3	0.2	0.3	0.7	0.5	1.0	5.9	1.5	10.4
Midwife-----	0.3	0.3	0.2	0.4	0.3	0.5	1.1	0.5	1.7
Other and not specified-----	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.4
<u>Nonwhite</u>									
All births-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physician in hospital ² -----	92.9	97.6	82.6	85.0	94.5	68.0	57.9	82.4	32.1
Physician not in hospital-----	1.1	0.7	1.9	3.5	2.3	5.4	14.3	9.3	19.7
Midwife-----	5.4	1.2	14.6	11.0	2.8	25.7	26.1	7.2	46.0
Other and not specified-----	0.6	0.5	0.9	0.5	0.3	0.8	1.7	1.2	2.2

¹Places of 10,000 or more residents.

²Includes all births in hospitals or institutions and births attended by physicians in clinics. A very large proportion of births in hospitals are attended by physicians.

also differ greatly by type of residence. However, regardless of type of residence, the proportion of births attended by midwives has declined substantially since 1950. In that year 7.2 percent of nonwhite births in urban places with populations of 10,000 or more and 46.0 percent of nonwhite births in other areas were delivered by midwives. By 1967 these proportions had declined to 1.2 and 14.6 percent, respectively.

Table 13 shows that in six of the nine geographic divisions of the United States at least 99 percent of all births were delivered by physicians in hospitals in 1967. In the three divisions of the South Region, however, rates of hospital utilization ranged only from 92 to 97 percent. Geographic differences in the proportions of births occurring in hospitals are considerably wider for the nonwhite population than for the white

Table 13. Percent distribution of live births by attendant, according to color: United States and each division, 1967

[See notes to tables on page VII]

Color and attendant	United States	Geographic division								
		New Eng-land	Middle At-lantic	East North Cen-tral	West North Cen-tral	South At-lantic	East South Cen-tral	West South Cen-tral	Moun-tain	Pa-cific
<u>Total</u>		<u>Percent distribution</u>								
All births-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physician in hospital ¹ -	98.3	99.9	99.6	99.4	99.6	96.7	92.4	96.2	99.0	99.4
Physician not in hospital-----	0.4	0.1	0.3	0.3	0.2	0.6	0.9	0.4	0.4	0.4
Midwife-----	1.1	-	0.0	0.0	0.1	2.5	6.5	3.0	0.2	0.0
Other and not specified-----	0.2	0.0	0.1	0.2	0.1	0.2	0.3	0.4	0.4	0.2
<u>White</u>										
All births-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physician in hospital ¹ -	99.4	99.9	99.7	99.6	99.7	99.6	99.1	97.3	99.2	99.4
Physician not in hospital-----	0.3	0.1	0.2	0.3	0.2	0.2	0.4	0.3	0.4	0.4
Midwife-----	0.3	-	0.0	0.0	0.0	0.2	0.4	2.2	0.2	0.0
Other and not specified-----	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1
<u>Nonwhite</u>										
All births-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physician in hospital ¹ -	92.9	99.8	99.2	98.3	98.2	89.6	75.2	92.2	97.7	99.1
Physician not in hospital-----	1.1	0.2	0.7	0.7	0.7	1.6	2.3	0.8	0.5	0.4
Midwife-----	5.4	-	0.0	0.0	0.9	8.3	21.8	6.0	0.3	0.2
Other and not specified-----	0.6	-	0.2	1.0	0.2	0.5	0.7	1.0	1.6	0.3

¹Includes all births in hospitals or institutions and births attended by physicians in clinics. A very large proportion of births in hospitals are attended by physicians.

population. Within the white group the rate of hospital utilization falls below 99 percent only for the West South Central Division (97.3 percent). In contrast, within the nonwhite group the proportion of births occurring in hospitals varies substantially, from only 75.2 percent in the East South Central Division to 99.8 percent in the New England Division. Large numbers of births are attended by midwives within those divisions with low proportions of medically attended hospital deliveries. For example, slightly more than one-fifth of all nonwhite births in the East South Central Division were delivered by midwives in 1967.

Numbers of births classified by attendant for States and certain local areas are shown in Volume I of the annual report *Vital Statistics of the United States*.

Birth Weight

Almost 92 percent of the babies born in 1967 were mature in terms of birth weight, weighing more than 2,500 grams (5 pounds 8 ounces). The remaining 8.2 percent were immature (2,500 grams or less) according to the birth weight criterion. The proportion of babies that are immature is a good index of future health because of the high level of morbidity and mortality in this low-birth-weight group.

This report emphasizes differentials in birth weight and gestation by color, sex, age of mother, and live-birth order, with some discussion of changes between 1960 and 1967. A thorough discussion of the data on birth weight and period of gestation describing trends since 1950, the

Table 14. Median birth weight and immature live births as percent of total births, by color and sex: United States, 1960, 1965, 1966, and 1967

[See notes to tables on page VII]

Color and sex	Median birth weight ¹				Percent of live births immature			
	1967	1966	1965	1960	1967	1966	1965	1960
<u>Total</u>	Weight in grams				Percent 2,500 grams or less			
Both sexes-----	3,280	3,280	3,290	3,310	8.2	8.3	8.3	7.7
Male-----	3,340	3,340	3,350	3,370	7.5	7.6	7.6	7.1
Female-----	3,220	3,220	3,230	3,250	8.9	9.1	9.0	8.4
<u>White</u>								
Both sexes-----	3,310	3,310	3,320	3,340	7.1	7.2	7.2	6.8
Male-----	3,380	3,370	3,380	3,400	6.6	6.7	6.6	6.3
Female-----	3,250	3,250	3,260	3,280	7.7	7.8	7.8	7.4
<u>Nonwhite</u>								
Both sexes-----	3,120	3,120	3,130	3,150	13.6	13.9	13.8	12.8
Male-----	3,170	3,180	3,180	3,210	12.4	12.5	12.4	11.6
Female-----	3,070	3,060	3,070	3,100	14.8	15.2	15.1	14.1

¹Computed to nearest 10 grams on basis of exact conversion of interval limits from pounds and ounces.

NOTE: An immature birth is one weighing 2,500 grams (5 lb. 8 oz.) or less.

first year for which these data were collected, may be found in *Natality Statistics Analysis, United States, 1962*.

The differentials in birth weight between white and nonwhite infants are significant. In 1967 the median weight for nonwhite babies (3,120 grams) was 190 grams less than that for white babies (3,310 grams), reflecting a considerably higher incidence of immaturity among nonwhite infants (13.6 percent) than among white infants (7.1 percent).

Birth weight varies by sex of the child. Male babies weigh more, on the average, than female babies regardless of color, as can be seen in table 14. However, the median weight of white female infants is greater than that for nonwhite babies of either sex.

Between 1960 and 1967 the median birth weight for all babies declined from 3,310 grams to 3,280 grams. There was also an increase in

the proportion of immature births, from 7.7 percent in 1960 to 8.2 percent in 1967. The trends in median birth weight and immaturity for male and female babies within each color group followed quite similar patterns.

The proportion of infants weighing 2,500 grams or less is higher among babies born to mothers residing in metropolitan than in nonmetropolitan counties, regardless of color, as shown in table 15. Between 1960 and 1967 the incidence of immaturity increased in both metropolitan and nonmetropolitan counties, but the relative increase was somewhat greater within the nonmetropolitan counties.

The proportion of immature infants varies considerably with age of mother. In 1967 the greatest incidence of immaturity was among births to young mothers less than 20 years of age and to a lesser extent to older mothers 35-44 years of age (table 16). Variation within each color group

Table 15. Immature births as percent of total live births, by color, type of residence, and metropolitan and nonmetropolitan counties: United States, 1960, 1965, 1966, and 1967

[See notes to tables on page VII]

Type of county and year	Color and type of residence								
	Total			White			Nonwhite		
	All areas	Urban places ¹	Other areas	All areas	Urban places ¹	Other areas	All areas	Urban places ¹	Other areas
<u>United States</u>									
Percent immature									
1967-----	8.2	8.9	7.4	7.1	7.4	6.8	13.6	14.3	12.0
1966-----	8.3	9.0	7.5	7.2	7.5	6.9	13.9	14.7	12.0
1965-----	8.3	8.9	7.5	7.2	7.4	6.9	13.8	14.6	12.1
1960-----	7.7	8.3	7.0	6.8	7.1	6.5	12.8	13.9	11.0
<u>Metropolitan counties</u>									
1967-----	8.4	9.0	7.1	7.2	7.4	6.7	14.2	14.4	12.4
1966-----	8.6	9.2	7.3	7.3	7.5	6.8	14.6	14.8	13.0
1965-----	8.5	9.1	7.3	7.3	7.5	6.8	14.5	14.8	12.9
1960-----	8.0	8.4	6.8	6.9	7.1	6.4	13.7	14.0	12.1
<u>Nonmetropolitan counties</u>									
1967-----	7.8	8.1	7.6	7.0	7.2	6.9	12.2	13.5	11.8
1966-----	7.9	8.4	7.7	7.1	7.4	6.9	12.3	14.2	11.7
1965-----	7.8	8.3	7.7	7.0	7.4	6.9	12.2	13.4	11.8
1960-----	7.3	7.7	7.2	6.7	7.0	6.6	11.1	13.1	10.6

¹Places of 10,000 or more residents.

NOTE: An immature birth is one weighing 2,500 grams (5 lb. 8 oz.) or less.

was similar to the variation for all births except that for the nonwhite group the rise in the rate of immaturity at ages over 34 was less pronounced. Within each age-of-mother group the incidence of immaturity was higher among nonwhite births than among white.

Variations in the proportion of immature births by age of mother are related to the differences in birth-order distributions within each age group. The highest percents of immature births are among high-order births to young mothers and low-order births to older mothers. Birth weights appear to be most favorable when the age of mother and live-birth order are highly correlated, that is, for lower-order births to younger women and higher-order births to older women. This can be illustrated by a comparison of the white and nonwhite data for 1967. For example, the percent of immature births to nonwhite mothers 35 years and over was comparatively low—13.0 percent—about 0.6 of a percentage point less than the proportion immature for all nonwhite births. On the other hand, the proportion of immature births to white mothers of this age was relatively high—8.4 percent as compared with 7.1 percent for all white births. These differing patterns in relative levels of immaturity may be explained at least in large part by differences in birth-order composition. That is, 71.5 percent of the births to nonwhite mothers 35 years and over were fifth and higher order compared with only 49.3 percent for white mothers of comparable age; but the proportion of first and second order births to the nonwhite mothers was just 10.1 percent compared with 15.4 percent for the white mothers. These findings suggest that both timing of births and size of family are important in determining the proportion of immature births in both major color groups.

Gestation Period

The length of the gestation period is an important factor in determining the weight of an infant at birth. The most reliable method developed so far to determine the length of pregnancy is to measure it from the first day of the mother's last normal menstrual period (LMP). In 1966 five of the 54 registration areas required the re-

Table 16. Immature live births as percent of total live births in each group, by color and age of mother: United States, 1967

[See notes to tables on page VII]

Age of mother	Total	White	Non-white
	Percent immature		
All ages-----	8.2	7.1	13.6
Under 15 years-----	17.2	12.5	19.5
15-19 years-----	10.5	8.5	15.7
20-24 years-----	7.7	6.7	13.2
25-29 years-----	7.2	6.5	11.8
30-34 years-----	7.9	7.0	12.6
35-39 years-----	9.1	8.3	13.3
40-44 years-----	9.6	9.1	12.2
45 years and over--	8.6	8.1	10.7

NOTE: An immature birth is one weighing 2,500 grams (5 lb. 8 oz.) or less.

porting of this date on their birth certificates: Baltimore, California, the District of Columbia, New York City, and Rhode Island.

Data on gestation for the other registration areas are based on the physician's estimate of the length of pregnancy. Consequently the data for the entire United States are not as accurate as the data from the five LMP reporting areas. The following tabulation compares the distribution of births in 1966 by gestation period for the areas reporting the date of LMP with that for the United States as a whole:

Gestation period	United States	Areas reporting LMP
Total-----	100.0	100.0
Under 20 weeks-----	0.0	0.0
20-27 weeks-----	0.6	0.7
28-31 weeks-----	0.8	1.2
32-35 weeks-----	2.5	5.0
36 weeks-----	2.9	3.4
37-39 weeks-----	17.3	38.9
40 weeks-----	66.4	22.6
41-42 weeks-----	8.1	21.8
43 weeks and over----	1.5	6.3

The most important limitation of the data for the United States as a whole is the very heavy concentration of births at 40 weeks of gestation (66.4 percent in 1966). It is likely that most normal babies weighing 6 to 9 pounds are considered full term and the period of gestation is therefore often reported as 40 weeks. However, it is not likely that such a large proportion of infants actually arrive exactly "on time." The margin of error is probably about 2 weeks in either direction.

The more reliable data from the five LMP reporting areas support this contention. According to these data only 22.6 percent of all babies were born at gestations of exactly 40 weeks. In addition 38.9 percent were born at 37-39 weeks, and 21.8 percent at 41-42 weeks.

Table 17. Median birth weight by color and period of gestation: Baltimore, California, District of Columbia, New York City, and Rhode Island combined, 1966

[See notes to tables on page VII]

Period of gestation ¹	Total	White	Non-white
	Median birth weight in grams ²		
All periods-----	3,256	3,291	3,103
20-27 weeks-----	904	878	939
28-31 weeks-----	1,784	1,733	1,881
32-35 weeks-----	2,639	2,634	2,643
36 weeks-----	2,865	2,880	2,822
37-39 weeks-----	3,184	3,210	3,077
40 weeks-----	3,353	3,373	3,246
41-42 weeks-----	3,439	3,465	3,297
43 weeks and over--	3,419	3,455	3,266

¹The period of gestation is measured from the first day of the last normal menstrual period. "All periods" includes not stated period of gestation, which is not distributed.

²Computed to nearest gram on basis of exact conversion of interval limits from pounds and ounces.

Beginning with the 1968 data year 37 registration areas are requesting information on the date of the mother's last normal menstrual period on their birth certificates. This will make it possible to analyze more precisely the relationships between length of gestation and other characteristics of births for a substantial part of the United States.

The length of gestation is also used to define prematurity. Babies born before 37 weeks of gestation are considered premature. For the LMP reporting areas 10.3 percent of the infants born in 1966 were premature. The comparable proportion for the United States as a whole was 6.8 percent.

In general the period of gestation and the infant's birth weight are closely associated. Table 17 shows the median weight at each gestation interval for births in 1966 in the five LMP reporting areas. The median birth weight increased at each gestation interval through 41-42 weeks. For babies born after a period of gestation of 43 weeks or more there tended to be a slight decline in median weight.

It has been shown that nonwhite babies weigh less at birth on the average than white babies. For babies born in the LMP reporting areas in 1966, this was true only for infants born after 35 weeks of gestation. Nonwhite infants born before the 32d week of gestation weighed somewhat more than white babies. This finding has been corroborated by other investigators, some of whom have hypothesized that at these early gestation intervals the nonwhite fetus matures more rapidly.^{10,11}

Multiple Births

The rate of occurrence of multiple births may be measured by the ratio of the number of live births in multiple deliveries per 1,000 total live births. In 1967 this ratio was 19.7. There has been only a slight decline in this ratio since the late 1950's (see table 18).

The proportion of live births that were part of a multiple delivery has been greater for the nonwhite population than for the white. Among the nonwhite births in 1966 the multiple birth ratio was 24.6, while for white births it was 18.8. The multiple birth ratio rises with age of mother to

Table 18. Number of live births in plural deliveries and ratio of plural live births to total live births: United States, 1956-67

[See notes to tables on page VII]

Year	Number of live births in plural deliveries	Ratio per 1,000 live births
1967-----	69,365	19.7
1966-----	71,312	19.8
1965-----	75,606	20.1
1964-----	80,156	19.9
1963-----	81,158	19.8
1962-----	81,306	19.5
1961-----	86,100	20.2
1960-----	86,684	20.4
1959-----	87,654	20.6
1958-----	86,610	20.6
1957-----	87,158	20.5
1956-----	88,816	21.3

Table 19. Ratio of plural live births to total live births, by color and age of mother: United States, 1966

[See notes to tables on page VII]

Age of mother	Total	White	Non-white
	Ratio per 1,000 total live births		
All ages-----	19.8	18.8	24.6
15-19 years-----	12.4	11.6	14.8
20-24 years-----	17.5	16.6	22.8
25-29 years-----	22.0	20.6	30.1
30-34 years-----	26.5	24.9	35.2
35-39 years-----	29.1	27.4	37.7
40-44 years-----	22.0	21.8	22.8

Table 20. Median birth weight and percent distribution of live births by birth weight, according to plurality: United States, 1966

[See notes to tables on page VII]

Birth weight	Plurality		
	Single	Twin	Other plural
	Median birth weight in grams		
Total-----	3,290	2,420	1,710
	Percent distribution		
Total-----	100.0	100.0	100.0
2,500 grams or less-----	7.4	55.4	90.0
2,501-3,000 grams-----	19.6	29.2	7.7
3,001-3,500 grams-----	38.9	12.9	1.7
3,501-4,000 grams-----	25.8	2.3	0.2
4,001-4,500 grams-----	6.8	0.2	0.2
4,501-5,000 grams-----	1.2	0.0	
5,001 grams or more-----	0.2	0.0	0.2

the 35-39 age group and then declines slightly. At ages 35-39 the chances of plural births were nearly 2½ times as great as at ages 15-19 in 1966. This relationship holds for both white and non-white births (table 19).

A more detailed analysis of the occurrence of multiple births by age of mother, live-birth order, and color may be found in a recent report.¹²

Live births occurring in twin and higher multiple deliveries have lower birth weights and larger proportions with periods of gestation of less than 37 weeks. In 1966 over half of the twins and over three-fourths of the triplets and infants in other multiple deliveries weighed 2,500 grams or less at birth (table 20). A similar relationship with plurality is seen for the proportion of births with gestation periods of less than 37 weeks. The percentages in 1966 were 6.3 for single live births, 31.7 for twins, and 64.4 for other plural live births.

Illegitimacy

The number of illegitimate births in the United States in 1967 was estimated at 318,100, accounting for about 9 percent of the 3,520,959 live births recorded in that year.

National estimates of the number of illegitimate births have been prepared annually since 1938. These estimates are based on information entered on the birth certificates of the States which require the reporting of legitimacy status. In 1967, 34 States and the District of Columbia required this information. In making estimates for the United States as a whole, the States are grouped into nine geographic divisions. The ratio of illegitimate births to total live births for the residents of States reporting legitimacy status in each division is then applied to all live births occurring to residents of that division. This yields an estimate of illegitimate births for the geographic division. This estimating procedure is done separately for white and nonwhite births, which are subsequently added. The sum of these estimates for the nine geographic divisions makes up the estimate for the United States.

The number of illegitimate births estimated for the entire United States has risen annually

since 1940 with only one exception. During the period 1940-67 the estimated total increased by 3½ times, from 89,500 in 1940 to 318,100 in 1967 (table 21).

Trends in the number of illegitimate births are influenced by (1) changes in the "risk" that an unmarried woman will bear an illegitimate child (as measured by the illegitimacy rate) and (2) changes in the number of unmarried women in the reproductive ages.

Table 21. Estimated number of illegitimate live births, by color: United States, 1940-67

[See notes to tables on page VII]

Year	Total	White	Nonwhite
Estimated number			
1967-----	318,100	142,200	175,800
1966-----	302,400	132,900	169,500
1965-----	291,200	123,700	167,500
1964-----	275,700	114,300	161,300
1963-----	259,400	104,600	154,900
1962-----	245,100	94,700	150,400
1961-----	240,200	91,100	149,100
1960-----	224,300	82,500	141,800
1959-----	220,600	79,600	141,100
1958-----	208,700	74,600	134,100
1957-----	201,700	70,800	130,900
1956-----	193,500	67,500	126,000
1955-----	183,300	64,200	119,200
1954-----	176,600	62,700	113,900
1953-----	160,800	56,600	104,200
1952-----	150,300	54,100	96,200
1951-----	146,500	52,600	93,900
1950-----	141,600	53,500	88,100
1949-----	133,200	53,500	79,700
1948-----	129,700	54,800	74,900
1947-----	131,900	60,500	71,500
1946-----	125,200	61,400	63,800
1945-----	117,400	56,400	60,900
1944-----	105,200	49,600	55,600
1943-----	98,100	42,800	55,400
1942-----	96,500	42,000	54,500
1941-----	95,700	41,900	53,800
1940-----	89,500	40,300	49,200

NOTE: Due to rounding estimates to the nearest hundred, figures by color may not add to totals.

Table 22 presents trends in the illegitimacy rate (illegitimate births per 1,000 unmarried women 15-44 years of age) by age of mother. The estimated illegitimacy rate for women 15-44 years old increased from 7.1 in 1940 to 23.9 in 1967. The most sustained increase in the rate occurred between 1940 and 1957; this increase accounted for most of the rise in the *number* of illegitimate births during those years. Since 1957, however, the illegitimacy *rate* has changed relatively little from year to year. In other words, the rising number of illegitimate births since 1957 can be attributed principally to the increasing numbers of unmarried women rather than an increased risk.

The risk of bearing an illegitimate child varies with age. The illegitimacy rate for teenagers 15-19 years old was 18.6 in 1967. Women 20-24 and 25-29 years of age had rates more than twice as high as the rates for the teenagers. Rates for women 25-29 have been the highest since 1958. Until 1964 rates for these women were also rising more sharply than the rates for other women. Between 1964 and 1967, however, for the first time in many years, the rate for these women declined considerably, from 50.2 to 41.4.

Estimated illegitimacy rates by color and age of mother are graphically presented in figure 7 for selected years from 1940 to 1967. The illegitimacy rate for nonwhite women was 35.6 in 1940, or about 10 times greater than the rate for white women. During the 1940's the color differential increased until by 1950 the nonwhite rate was nearly 12 times higher than the white rate. Since 1950 the differential has been decreasing; in 1967 the white illegitimacy rate was 12.5 and the rate for nonwhite women was 89.5, about 7 times higher. The declining differential was due both to the more rapid increase in the rate for white women during the 1950's and to the decline in the rate for nonwhite women after 1960. From 1960 to 1967 the illegitimacy rate for nonwhite women declined 9 percent, while the rate for white women increased 36 percent.

Recent trends in illegitimacy rates by color and age are shown in table 23. The figures indicate that during the period 1960-67 there were reductions in the illegitimacy rates for nonwhite women in every age group except for girls 15-19

years. In contrast, the rates for white women of all ages increased over this period.

Table 23 shows that the decline in the illegitimacy rates for all women except for girls 15-19 years in the more recent period 1965-67 was due principally to the considerable reduction in the rates for nonwhite women. The rate for nonwhite women 25-29 years old, for example, declined from 164.7 in 1965 to 118.4 in 1967. In addition rates for white women 25 years and over declined slightly.

The declines noted above in the *rates* for nonwhite women between 1965 and 1967 have been large enough to have resulted in reductions in the *number* of nonwhite illegitimate births for all ages over 24, in spite of the continued increase in the number of unmarried women (table 24). This has tended to slow down the increase in the total number of illegitimate births.

The illegitimacy ratio, that is, the number of illegitimate births per 1,000 live births, is the appropriate measure to use for discussing the proportion of births classified as illegitimate. This measure is often used for other purposes because it is easier to compute than the illegitimacy rate (the necessary population figures for unmarried women are difficult to obtain). However, it has numerous shortcomings when used as an analytic tool. The numerator and denominator of the illegitimacy ratio are affected by two independent sets of factors. The numerator, the number of illegitimate births, is determined by the rate of illegitimacy and the number of unmarried women. The denominator, the total number of births, is influenced primarily by factors which affect the level of marital fertility, such as changes in timing and completed family size. If these factors change, the ratio will change even if the numerator remains the same.

During the period 1960-67, for example, the illegitimacy ratio increased substantially, by 71.3 percent. Although the illegitimacy rate remained fairly stable during this period, the number of unmarried women increased and therefore the number of illegitimate births increased. Simultaneously there was a general decline in total fertility associated with the reduction of births to married women. In other words, the increase in the illegitimacy ratio in this period was related princi-

Table 22. Estimated illegitimacy rates by age of mother: United States, 1940-67

[See notes to tables on page VII]

Year	Age of mother						
	Total, 15-44 years ¹	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 ² years
	Rate per 1,000 unmarried women						
1967-----	23.9	18.6	38.3	41.4	29.2	15.4	4.0
1966-----	23.4	17.5	39.1	45.6	33.0	16.4	4.1
1965-----	23.5	16.7	39.9	49.3	37.5	17.4	4.5
1964-----	23.0	15.8	39.9	50.2	37.2	16.3	4.4
1963-----	22.5	15.2	40.3	49.0	33.2	16.1	4.3
1962-----	21.9	14.8	40.9	46.7	29.7	15.6	4.0
1961-----	22.7	15.9	41.7	46.5	28.3	15.4	3.9
1960-----	21.6	15.3	39.7	45.1	27.8	14.1	3.6
1959-----	21.9	15.5	40.2	44.1	28.1	14.1	3.3
1958-----	21.2	15.3	38.2	40.5	27.5	13.3	3.2
1957-----	21.0	15.8	37.3	36.8	26.8	12.1	3.1
1956-----	20.4	15.6	36.4	35.6	24.6	11.1	2.8
1955-----	19.3	15.1	33.5	33.5	22.0	10.5	2.7
1954-----	18.7	14.9	31.4	31.0	20.4	10.3	2.5
1953-----	16.9	13.9	28.0	27.6	17.3	9.0	2.4
1952-----	15.8	13.5	25.4	24.8	15.7	8.2	1.9
1951-----	15.1	13.2	23.2	22.8	14.6	7.6	2.2
1950-----	14.1	12.6	21.3	19.9	13.3	7.2	2.0
1949-----	13.3	12.0	21.0	18.0	11.4	6.8	1.9
1948-----	12.5	11.4	19.8	16.4	10.0	5.8	1.6
1947-----	12.1	11.0	18.9	15.7	9.2	5.6	1.8
1946-----	10.9	9.5	17.3	15.6	7.3	4.4	1.8
1945-----	10.1	9.5	15.3	12.1	7.1	4.1	1.6
1944-----	9.0	8.8	13.1	10.1	7.0	4.0	1.3
1943-----	8.3	8.4	11.4	8.8	6.7	3.8	1.3
1942-----	8.0	8.2	11.0	8.4	6.3	3.8	1.2
1941-----	7.8	8.0	10.5	7.8	6.0	3.7	1.4
1940-----	7.1	7.4	9.5	7.2	5.1	3.4	1.2

¹Rates computed by relating total illegitimate births regardless of age of mother to unmarried women 15-44 years.

²Rates computed by relating illegitimate births to mothers aged 40 and over to unmarried women aged 40-44 years.

NOTE: The illegitimacy rates shown in this table for the years 1951-67 differ from those published in various issues of Vital Statistics of the United States. The rates shown here are based on a smoothed series of population estimates for unmarried women, by color and age, which were not available when the previously published rates were computed.

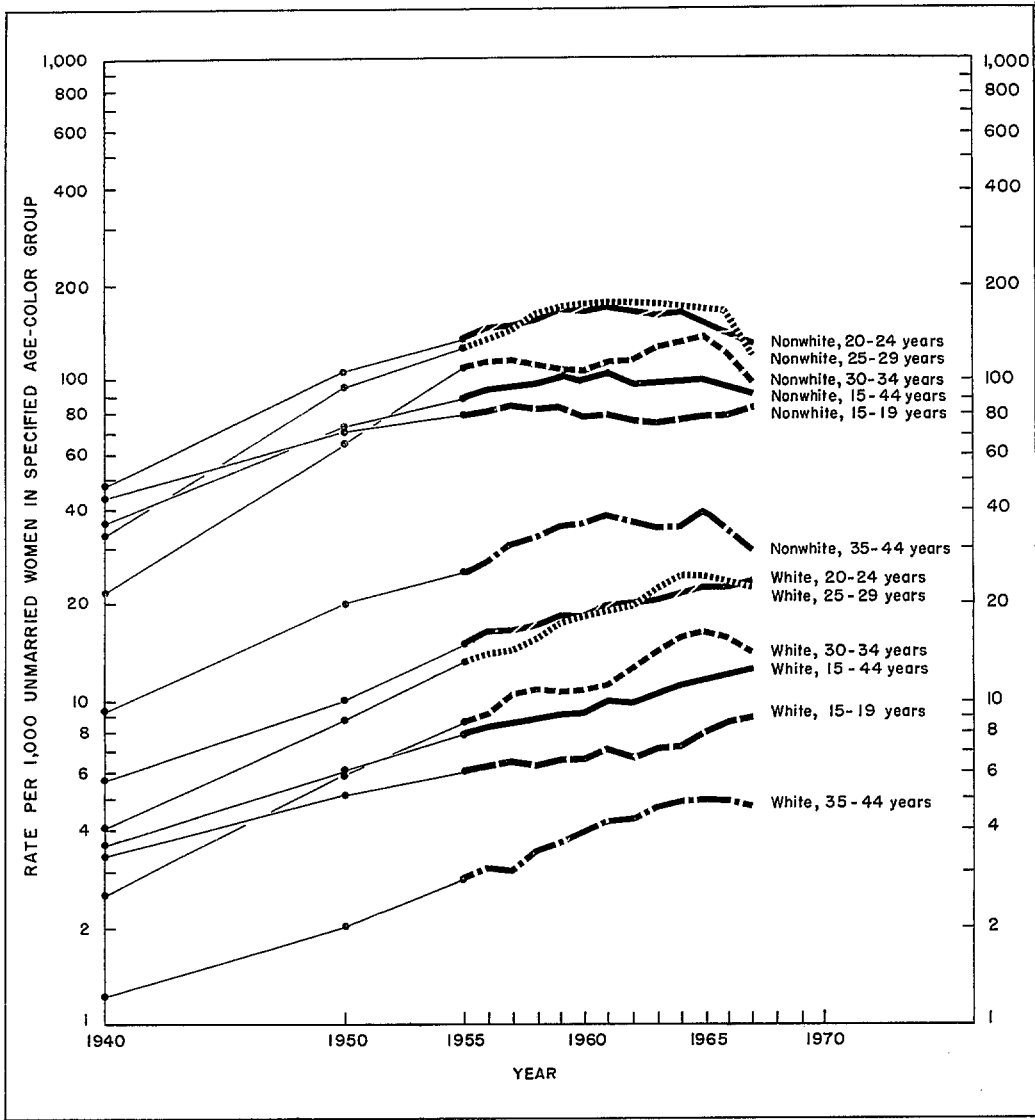


Figure 7. Estimated illegitimacy rates by age of mother and color: 1940, 1950, and 1955-67.

(Semilogarithmic scale)

Table 23. Estimated illegitimacy rates, by color and age of mother: United States, 1960, 1965, 1966, and 1967, and percent change 1960-67

[See notes to tables on page VII]

Color and age of mother	1967	1966	1965	1960	Percent change 1960-67
<u>White</u>					
Rate per 1,000 unmarried women					
All ages, 15-44 years -----	12.5	12.0	11.6	9.2	+35.9
15-19 years-----	9.0	8.5	7.9	6.6	+36.4
20-24 years-----	23.1	22.5	22.1	18.2	+26.9
25-29 years-----	22.7	23.5	24.3	18.2	+24.7
30-34 years-----	14.0	15.7	16.6	10.8	+29.6
35-44 years ² -----	4.7	4.9	4.9	3.9	+20.5
<u>Nonwhite</u>					
All ages, 15-44 years -----	89.5	92.8	97.6	98.3	-9.0
15-19 years-----	80.2	76.9	75.8	76.5	+4.8
20-24 years-----	128.2	139.4	152.6	166.5	-23.0
25-29 years-----	118.4	143.8	164.7	171.8	-31.1
30-34 years-----	97.2	119.4	137.8	104.0	-6.5
35-44 years ² -----	28.9	33.8	39.0	35.6	-18.8

¹Rates computed by relating total illegitimate births regardless of age of mother to unmarried women aged 15-44 years.

²Rates computed by relating illegitimate births to mothers aged 35 and over to unmarried women aged 35-44.

Table 24. Estimated number of illegitimate live births, by color and age of mother: United States, 1965-67

[See notes to tables on page VII]

Age of mother	1967			1966			1965		
	Total	White	Non-white	Total	White	Non-white	Total	White	Non-white
All ages-----	318,100	142,200	175,800	302,400	132,900	169,500	291,200	123,700	167,500
Under 15 years-----	6,900	1,700	5,200	6,200	1,400	4,800	6,100	1,400	4,600
15-19 years-----	144,400	60,300	84,000	135,800	57,500	78,300	123,100	50,700	72,400
15-17 years-----	70,900	24,800	46,100	65,900	23,400	42,500	61,700	21,500	40,200
18-19 years-----	73,500	35,600	37,900	69,900	34,000	35,800	61,400	29,200	32,200
20-24 years-----	101,600	52,500	49,100	92,500	45,800	46,700	90,700	43,400	47,300
25-29 years-----	34,500	15,200	19,300	35,500	14,900	20,700	36,800	14,900	21,900
30-34 years-----	17,300	6,800	10,500	18,400	7,300	11,100	19,600	7,200	12,400
35-39 years-----	10,100	4,200	5,900	10,500	4,500	6,100	11,400	4,500	6,900
40 years and over--	3,300	1,500	1,700	3,400	1,500	1,900	3,700	1,600	2,000

NOTE: Due to rounding estimates to the nearest hundred, figures by color may not add to totals.

pally to factors which do not themselves directly determine the incidence of illegitimacy, that is, to the rising numbers of unmarried women (affecting the numerator) and to the decline in total, mainly marital, fertility (affecting the denominator).

In 1967 the illegitimacy ratio was 90.3 illegitimate births per 1,000 live births. The ratios for white and nonwhite births were 48.7 and 293.8, respectively. In recent years the differential by color in the ratio has been declining just as it has in the illegitimacy rate, as a result of the more rapid increase in the ratio for the white population.

Differentials by age of mother in 1967 follow essentially the same pattern as in previous years. The highest illegitimacy ratios are found for births to mothers under 20 (table 25). There is a decrease in the ratios for each successively higher age group through 30-34 and then a slight increase among women 35 and over. The high ratios for the youngest mothers can be attributed primarily to the small proportion of teenagers married and thus in a position to have legitimate children. In contrast, a large proportion of women 20 years of age and over are married and having legitimate children. Although the older unmarried women

Table 25. Estimated illegitimacy ratios, by color and age of mother: United States, 1967

[See notes to tables on page VII]

Age of mother	Total	White	Non-white
	Ratio per 1,000 total live births		
All ages-----	90.3	48.7	293.8
Under 15 years-----	803.0	615.7	891.6
15-19 years-----	242.1	138.5	521.1
15-17 years-----	376.7	210.1	656.7
18-19 years-----	180.1	112.2	416.5
20-24 years-----	77.5	47.0	253.2
25-29 years-----	39.8	20.3	164.4
30-34 years-----	39.4	18.4	151.5
35-39 years-----	44.4	22.2	155.3
40 years and over--	46.3	25.7	133.0

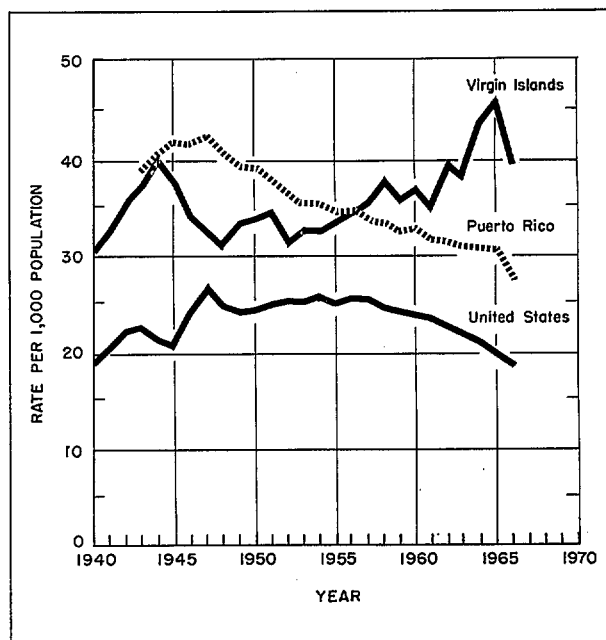


Figure 8. Birth rates: Puerto Rico, Virgin Islands, and United States, 1940-66.

have a higher risk of bearing illegitimate children than do teenagers, they account for only a small proportion of all births to women 20 and over. The illegitimacy ratios for the two color groups show variations by age of mother similar to those for all women.

A more detailed analysis of trends and differentials in illegitimacy is presented in the recent report *Trends in Illegitimacy*.¹⁸

PUERTO RICO AND VIRGIN ISLANDS (U.S.)

Birth Rates and Numbers of Births

The birth rate in Puerto Rico declined from 42.2 per 1,000 population in 1947 to 30.2 in 1965 and then fell sharply to 27.6 in 1966^a (fig. 8 and table 26). A similar decline in the total fertility rates shown in figure 9 indicates that the downward trend in the birth rate was not mainly an

^a 1966 is the latest year for which the National Center for Health Statistics has tabulated data for Puerto Rico and the Virgin Islands.

artifact of shifts in the age composition of the Puerto Rican population. The total fertility rate is not affected by changes in age structure (see Total Fertility in second section of this report).

In recent years the level of fertility in Puerto Rico has been quite similar to that of the nonwhite population in the United States. By 1957 the total fertility rate of Puerto Rico had dropped enough to reach the lower level of that of the

Table 26. Live births and birth rates: Puerto Rico and Virgin Islands, 1940-66

[See notes to tables on page VII. Rates per 1,000 total population in each area except as noted]

Year	Puerto Rico		Virgin Islands ¹	
	Number	Rate	Number	Rate
1966-----	73,630	27.6	1,956	39.5
1965-----	79,608	30.2	1,998	46.0
1964-----	78,956	30.6	1,762	43.4
1963-----	77,440	30.7	1,513	38.1
1962-----	76,596	31.1	1,375	39.4
1961-----	75,418	31.3	1,193	34.8
1960-----	76,314	32.5	1,180	36.8
1959-----	75,104	32.3	1,107	35.7
1958-----	76,298	33.2	1,129	37.6
1957-----	76,058	33.7	1,038	35.3
1956-----	78,284	34.8	977	34.4
1955-----	77,830	34.6	913	33.1
1954-----	77,832	35.2	879	32.3
1953-----	77,754	35.3	871	32.4
1952-----	80,438	36.1	862	30.9
1951-----	84,076	37.6	953	34.4
1950-----	86,038	38.9	894	33.5
1949-----	85,625	39.0	886	33.2
1948-----	87,809	40.2	826	30.7
1947-----	91,305	42.2	876	32.2
1946 ³ -----	88,421	41.6	917	34.0
1945 ² -----	86,680	41.9	984	37.4
1944 ² -----	82,534	40.6	1,059	40.4
1943 ³ -----	77,304	38.7	931	37.4
1942 ² -----	---	---	889	35.8
1941 ² -----	---	---	829	32.6
1940-----	---	---	756	30.4

¹Data are based on 100 percent of the birth records.

²Rates are based on civilian population in each area.

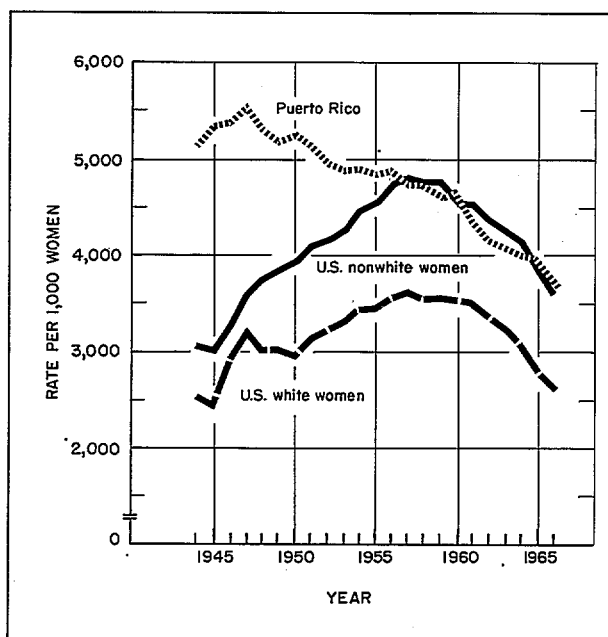


Figure 9. Total fertility rates for Puerto Rico, and for the United States by color: 1944-66.

U.S. nonwhite population, and the two rates have since declined at about the same pace. The drop in the total fertility rate in Puerto Rico was sizable, from about 5,500 per 1,000 women in 1947 to 3,700 in 1966. This long-term decline suggests a shift from a norm of large families to one of moderate-sized families, assuming that it reflects more than changes in the timing of births. Nevertheless Puerto Rico's total fertility rate is still well above the level of 2,600 of the U.S. white population in 1966.

Although Puerto Rico's fertility rates have been falling almost continuously since 1947, the trend in the annual number of births has been irregular. There was a general tendency toward an annual decline in the number of births from 1948 to 1960 but a steady increase from 1961 to 1965. Between 1965 and 1966, however, the number of births declined by 7.5 percent.

The birth rate in the Virgin Islands has been among the world's highest and set a new record of 46.0 per 1,000 population in 1965. The rate declined by 14 percent the next year, however, falling to 39.5 (fig. 8 and table 26).

The total fertility rate in the Virgin Islands is also high. In 1966 it was about 5,500 per 1,000 women, near the level observed in Puerto Rico about 20 years ago. At a level of 5,500 the total fertility rate of the Virgin Islands was approximately twice as high as that of the United States in 1966. This implies that large families of five or six children are still the norm in the Virgin Islands, assuming a stable rate and timing pattern of births by age over the past 20 to 30 years.

In 1966 there were 2 percent fewer births in the Virgin Islands than in 1965; this modest decrease was about half the percent decrease in births that occurred in the United States during the same period.

Birth Rates by Age of Mother

Recent age-specific birth rates are not available for the Virgin Islands. Those of Puerto Rico in 1966 are compared with those of U.S. white and nonwhite women in figure 10. The age-specific rates of Puerto Rico, like the total fertility rates, are quite close to those of nonwhite women in the United States. Both rates peak at about the same level at ages 20-24. The Puerto Rican rates are somewhat lower than the U.S. nonwhite rates at the younger ages but are higher at ages 35 and over. The higher rates for Puerto Rican women as compared with U.S. nonwhite women at the older childbearing ages are reflected in higher birth rates at birth orders eight and over. The rate of eighth and higher order births was 14.5 per 1,000 women aged 15-44 in Puerto Rico as compared with 10.7 for nonwhite women in the United States in 1966.

It has been suggested that in a society in which birth control is in the process of becoming widely adopted, it will first be used by couples who have already had what they consider a sufficient number of children.¹⁴ Thus older couples are more motivated by the reality of family size than younger couples to adopt birth control and use it effectively. The trend in age-specific birth rates indicates that this explanation may apply to Puerto Rico. During the 1944-66 period the Puerto Rican rates at ages 15-19 increased somewhat, while rates at all other ages decreased, especially at ages 30 and over. The result has

been a greater concentration of annual total fertility at the younger childbearing ages. In 1966 women under age 30 accounted for 67 percent of the total fertility rate as compared with 58 percent in 1944.

Births by Education of Mother

It is possible to obtain some measure of socioeconomic differentials in fertility in Puerto Rico because the educational attainment of the mother has been reported on the Puerto Rican birth certificates since 1962. As in the United States, 1 through 8 years of schooling represent an elementary school level, 9 through 12 represent a secondary level, and 13 or more a college level. Educational attainment of the mother is highly correlated with the father's occupational status and income and hence with the overall socioeconomic standing of the family. In Puerto Rico,

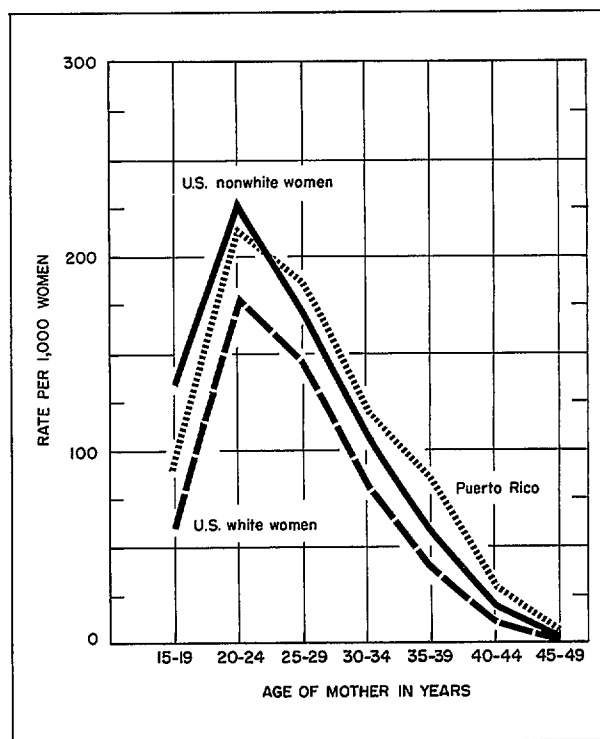


Figure 10. Birth rates by age of mother for Puerto Rico, and for the United States by color: 1966.

as in the United States, there is an inverse relationship between fertility and the educational attainment of the mother. Birth rates by age and educational attainment of the mother are, however, available only for 1962 and have been analyzed in more detail in an earlier report.¹⁵

Between 1962 and 1966 there was an increase in the proportion of births occurring to the better educated women. As shown in table 27, women with some college education accounted for 7.9 percent of all births in 1966 as compared with 6.0 percent in 1962. There were similar increases in the percentages for women with an education at the secondary level; but declines occurred in the percentages for women with less than 9 years of schooling. This change can probably be attributed primarily to a general rise in the level of education in Puerto Rico rather than to an increase in the fertility of the better educated women. Census data show that between 1950 and 1960 the proportion of women who had completed at least 9 years of school rose from 10 to 20 percent.¹⁶

With rising levels of education in Puerto Rico annual fertility rates and the average size of family can be expected to continue to fall. Calculations from the 1960 census show an

average of 2.6 children ever born per ever-married woman (including consensually married) at ages 35-44 who had completed at least 9 years of school. The corresponding average for those who had completed less than 9 years of school was 5.9.¹⁷

Table 27. Percent distribution of live births by educational attainment of mother: Puerto Rico, 1962 and 1966

[See notes to tables on page VII]

Years of school completed by mother	1966	1962
	Percent distribution	
Total-----	100.0	100.0
None-----	6.9	9.3
1-4 years-----	17.8	24.6
5-8 years-----	32.3	32.5
9-11 years-----	18.7	15.6
12 years-----	16.4	12.1
13 years and over-----	7.9	6.0

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