

**VITAL and HEALTH STATISTICS**

DATA FROM THE NATIONAL VITAL STATISTICS SYSTEM

# Infant Mortality Trends

## United States and Each State, 1930-1964

Graphic presentation of infant mortality trends in the United States and each State for the period 1930-64. The trends for individual States are for the neonatal and postneonatal periods of life; for a selected group of States, the trends by color are also included.

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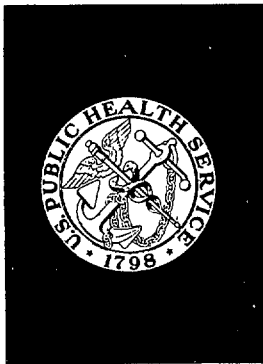
Washington, D.C.

November 1965

U.S. DEPARTMENT OF  
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Secretary

Public Health Service  
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*THIS REPORT brings up to date the status of the infant mortality problem in the United States and presents in graphic form the infant mortality trends for the individual States.*

*A study of the change in the infant mortality trend for 1933-57 was published in 1960. An additional 7 years of data reinforces the findings of the previous study. The infant mortality rate for the past 15 years has been declining at one-quarter of the rate of the 15 years before that. Although the infant mortality rate for 1964, the latest complete year, is the lowest ever recorded for the United States, there is no indication of any further change in trend.*

*The change in the rate of decline of the infant mortality rate has occurred in practically every segment of the infant population in the United States and in virtually all of the States. Until 1958, the infant mortality rate for at least a dozen States was declining or even showing a significant acceleration in the rate of decline. However, the more recent experience shows that there has been a decrease in the rate of decline of the infant mortality rate for every one of these States except Mississippi and New Mexico.*

# INFANT MORTALITY TRENDS

## UNITED STATES AND EACH STATE

In a study of the infant mortality trend published in 1960,<sup>1</sup> data for the period 1933-57 were examined and attention was called to the deceleration in the rate of decline of the infant mortality rate. Data for an additional 7 years are now available. It is the purpose of this report to bring the status of the infant mortality problem in the United States up to date and to present graphically infant mortality trends for the individual States.

The change in the infant mortality trend in the United States came after a long period of rapid decrease. If the trend prevailing during the period 1935-50 had continued, the infant mortality rate in the United States would now be about 15 per 1,000 live births. This is considerably lower than the rate of 24.8 per 1,000 live births for 1964, the lowest rate ever recorded for the United States. However, the rate for 1964 is not inconsistent with the trend for the period 1950-63. The infant mortality rate for the first 6 months of 1965 is about 3 percent higher than the rate for the corresponding period of 1964.

Because significant changes had taken place over the years in the United States in the distribution of live births by age of mother, birth order, birth weight, and other factors related to increased risk of infant death, it was possible for total mortality to be affected by the change in the proportion of births by these various characteristics even if the force of mortality remained unchanged. Adjustment of rates for the changing distribution of live births by birth order and age of mother did not indicate that these factors account

for the change in the infant mortality trend. Neither did the changing number of annual births explain the phenomenon.

Although there is no evidence to suggest this possibility, infant mortality rates could be affected by changes in registration practices. For example, it is known that deaths of some babies dying soon after birth are registered as fetal deaths rather than as infant deaths. In a significant number of cases the total infant mortality rate and, more particularly, the neonatal mortality rate could be affected by this practice. However, there is no indication from the examination of the perinatal mortality rates that such an artifact is involved. All in all, there is little to suggest that the recent change in the infant mortality trend is not real.

The slowing down of the decline in the infant mortality rate was evident in practically every segment of the infant population in the United States. The rates for both the white and nonwhite infants were affected, as were the rates for the various age subdivisions. There was a definite leveling off of the rate for urban residents. While the change in the rate for rural areas was not as great as that for the cities, it nevertheless appeared to be real. The infant mortality trends for individual States generally showed the same pattern as those for the country as a whole. However, several other patterns involving some 17 States and the District of Columbia were evident. In a small group of States there was an apparent reversal in trend, and the rates were rising. In another small group of States there was a significant acceleration in the rate of decline. In some 10 States there appeared to be no apparent change in the rate of decline of the infant mortality trend.

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<sup>1</sup>Moriyama, I. M.: Recent change in infant mortality trend. *Pub. Health Rep.* 75:391-405, May 1960.

The addition of more recent information removes any doubt, if any existed, of the change that has taken place in the infant mortality trend. Figure 1 shows that the infant mortality rate declined at a rapid pace for many years. During the period 1933-49 the total infant mortality rate decreased about 4.3 percent each year. Beginning about 1950, however, the rate of decrease in infant mortality dropped to 1.1 percent per annum. Although the national infant mortality rate is now at its lowest level, the prospects for a change in the rate of decline in the future do not appear to be as favorable now as they did in 1958.

The mortality experience of white infants follows the same pattern as that for all infants. For nonwhite infants the deceleration in the downward trend is even more marked. During the period 1933-49, the mortality rate for nonwhite infants decreased 4.6 percent per annum. Between 1950 and 1964 the rate of decline slowed down to 0.6 percent per year. The gap between the rate for white and nonwhite infants has widened during the past decade.

The trends of the neonatal (under 1 month of age) and the postneonatal (1 to 11 months of age) mortality rates by color are shown in figure 2.

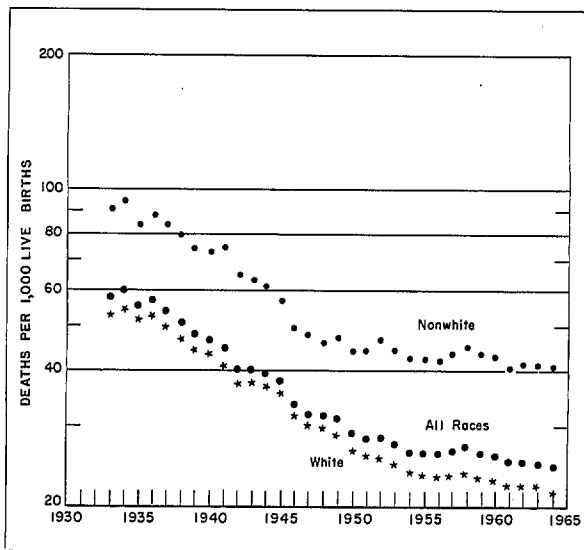


Figure 1. Infant mortality rates, by color: United States, 1933-64.

The neonatal mortality rates for white and nonwhite infants declined at about the same rate (3 percent per year) between 1935 and 1949. Since then the rate of decline dropped to 0.3 percent

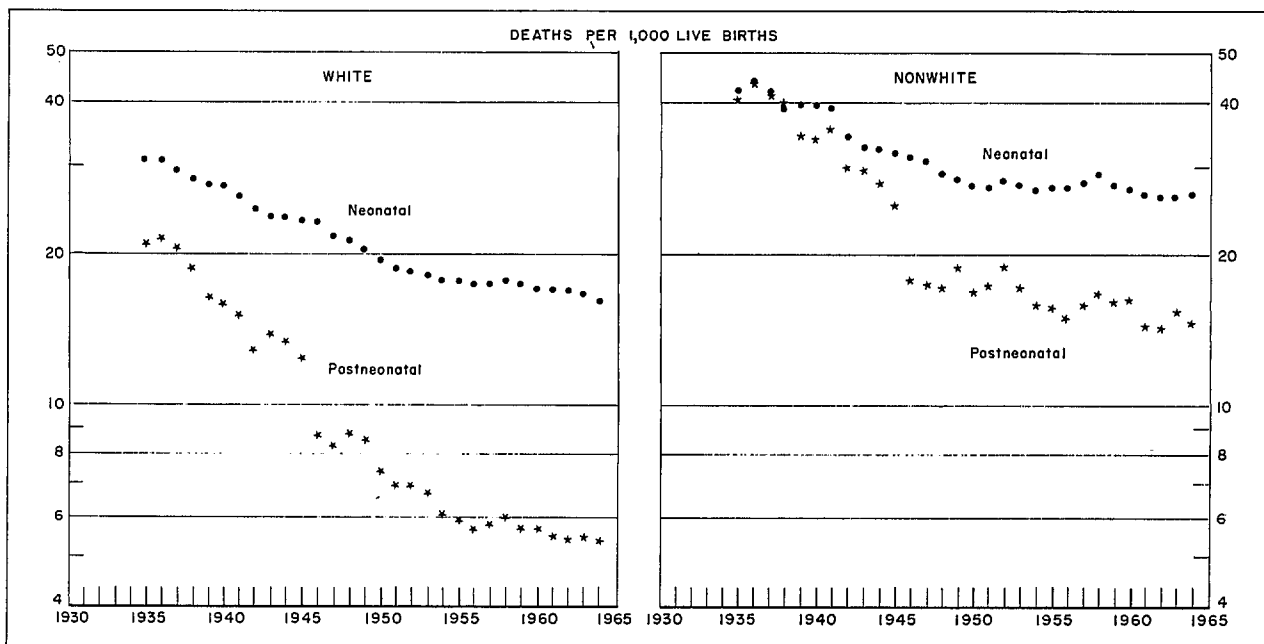


Figure 2. Neonatal and postneonatal mortality rates, by color: United States, 1933-64.

per year for nonwhite and to 1.0 percent per annum for white infants.

The leveling-off effect may also be seen in the trends for the postneonatal period. For the nonwhite the annual rate of decline prior to 1946 was about 5 percent. Since 1946 the rate of decrease dropped to 1.2 percent per year. For white infants the annual rate of decline prior to 1950 was 7.2 percent per annum as compared with 2.2 percent after 1950.

The difference between the neonatal and postneonatal mortality rates among white infants is considerable. For the nonwhite the rate differential for these two age groups is not very great, which suggests that the postneonatal environment of nonwhite infants has not changed greatly over the years. The gap between the neonatal and postneonatal mortality rates for white infants appears to be widening, but this is not so for nonwhite infants.

In figure 3 infant mortality rates by age subdivisions are shown in greater detail than the neonatal and postneonatal mortality rates. Of particular interest is the mortality rate during the first week of life. The infant mortality rate during the first day is now slowly but definitely in-

creasing. However, the rate for the age group 1 to 6 days appears to be declining without interruption. Most of the infants that die during the first week are those that are born and die in hospitals. The effect of nursery care should be most evident in the age group 1-6 days. The mortality rate for the age group under 1 day may be affected by the increased survival of fetuses into the first day of life. This factor may possibly explain the gradual increase in rate in recent years. It does not, however, serve to explain why there has been an upturn in the rate after the period of rapid decline between 1935 and 1950.

In the older ages in the first year of life the leveling off of the infant mortality rate is now much more marked than it was when the trends were examined in 1960. In fact, the decline in mortality of infants over 1 month of age appears to have ceased altogether. Mortality in the postneonatal period is still relatively high (about 30 percent of total infant deaths).

At the time that the trends for the period 1933-57 were examined, it was found that the rate of decline in the infant mortality rate for cities of every size had decreased. The rate for urban places as a whole had leveled off, as may

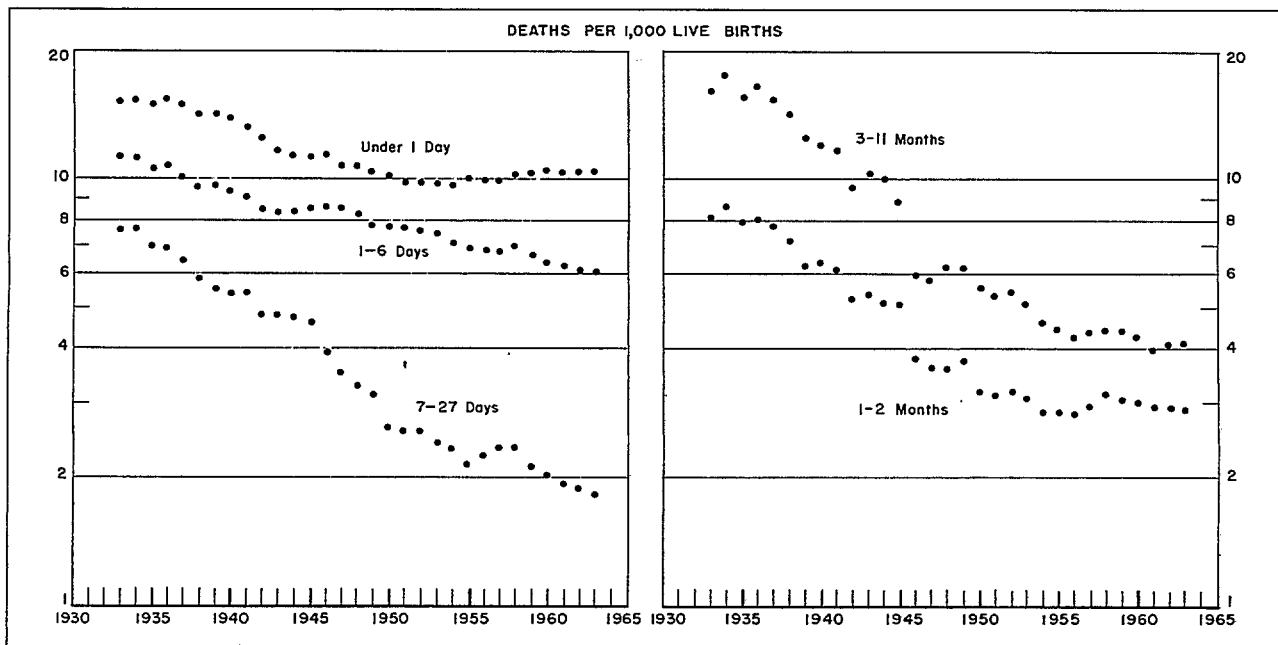


Figure 3. Infant mortality rates, by age: United States, 1933-64.



be seen in figure 4. The rates for some large cities had even increased. This led to the suggestion that the increase might be due to the movement from the city to the suburb of people in more favorable circumstances, thus resulting in a higher proportion of poorer people in the remaining city population. It has also been suggested that the infant mortality rates for cities were unfavorably affected by the large migration of rural residents to urban places seeking better economic opportunities. These suggestions may serve to explain the leveling off of the urban infant mortality rates, but if these factors were adversely affecting the urban mortality experience, they should concurrently influence favorably the rural mortality rates. The rate of decline of the mortality rate for rural infants began to decrease slightly starting about 1950. After 1956 the rural infant mortality rate appears to have leveled off completely.

The infant mortality rate in the United States is currently significantly higher than the rates for the various Scandinavian countries, the Netherlands, Switzerland, England and Wales, Australia, and New Zealand. The difference between the infant mortality rate in the United States and those of other countries cannot be readily accounted for on the basis of differences in definitions, methods of

data collection, and possible incompleteness of registration.<sup>2</sup>

Because of the change in the mortality trend in the United States, the present situation in this country is less favorable relative to other countries than was the case 25 to 30 years ago. Although there are indications of a change in trend in other countries such as Australia, England and Wales, New Zealand, Norway, and Sweden, these changes are not nearly as great as those experienced in the United States. On the other hand, the rates for other countries of low mortality continue to decline.

The fetal mortality rate for the United States is low and the neonatal mortality rate is high relative to the corresponding rates for other countries. Because of the leveling off of the rates in the United States, the perinatal mortality rate for the United States is now at the upper end of the range for countries of low mortality.

The postneonatal mortality rate in the United States now ranks close to the highest in the group of countries of low mortality. This is in sharp

<sup>2</sup>Shapiro, S. and Moriyama, I. M.: International trends in infant mortality and their implications for the United States. *Am. J. Pub. Health* 53:747-760, May 1963.

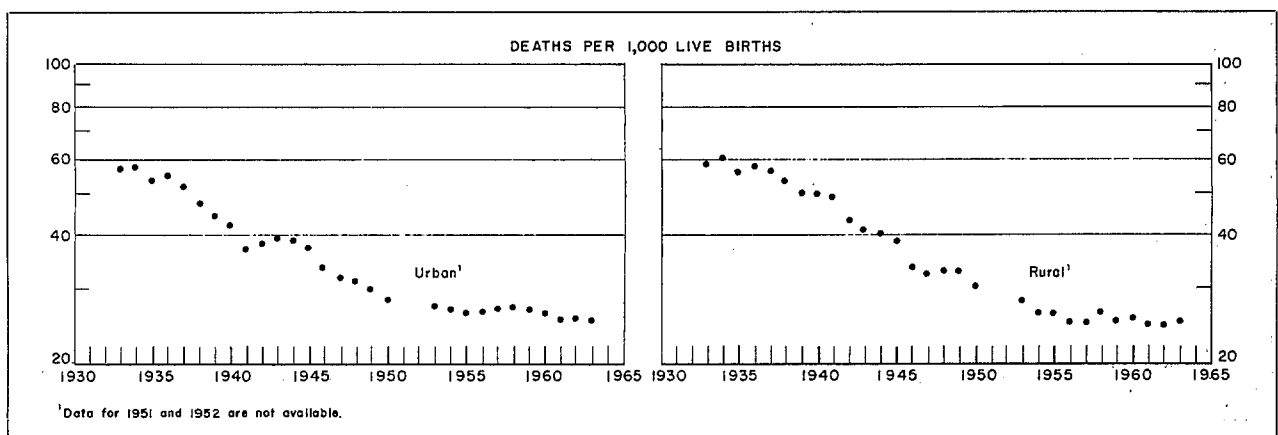


Figure 4. Infant mortality rates for urban and rural residents: United States, 1933-64.

contrast with the situation 10 years earlier when Canada, Denmark, England and Wales, Finland, Norway, and Switzerland recorded higher rates than the United States.

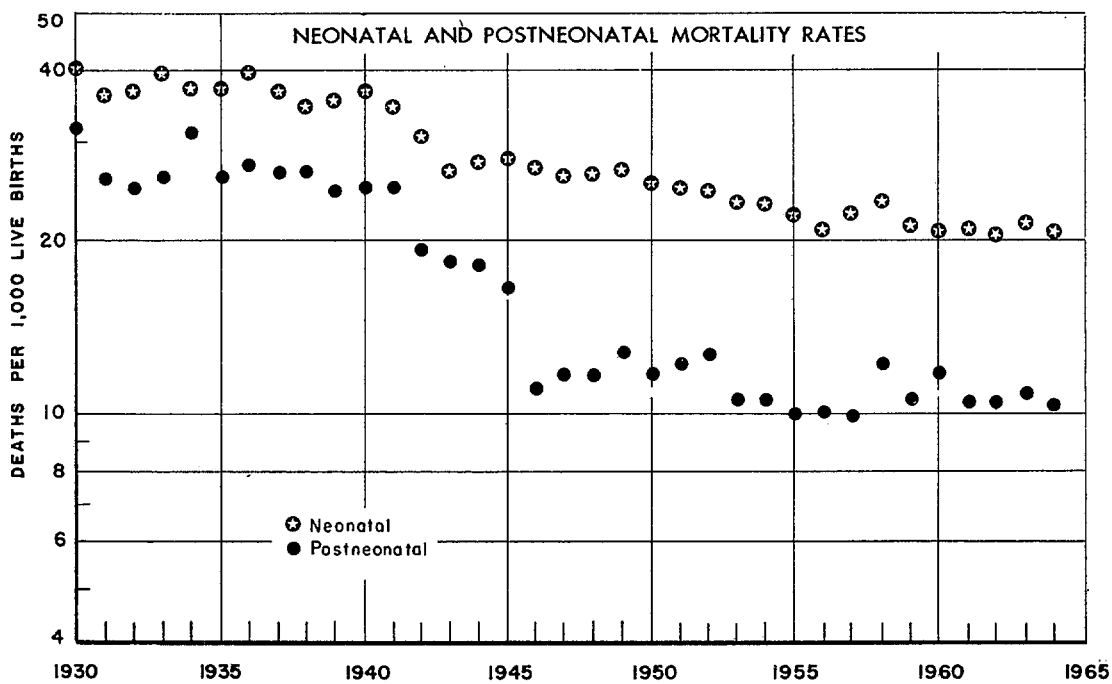
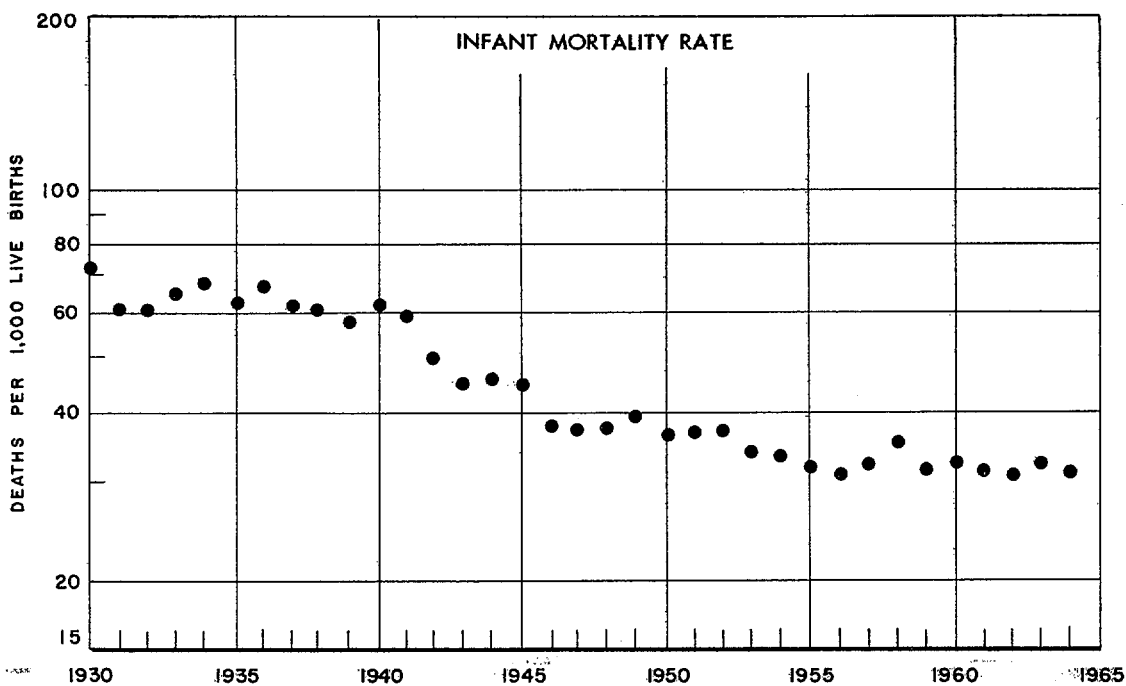
The change in mortality trend has not been limited to any particular section of the country, and the degree of leveling off of the rates has not been uniform. Until 1958 the infant mortality rate for at least a dozen States was decreasing steadily or even showing a significant acceleration in the rate of decline. More recent experience shows that there has been a decrease in the rate of decline of the infant mortality rate for every one of these States with the possible exceptions of Mississippi and New Mexico. Although the decline in the infant mortality rate for white infants in Mis-

issippi has slowed down somewhat since 1957, the downward movement is still relatively rapid. However, the trend for the State as a whole is rising because of the upward course of mortality for nonwhite infants. There have been some changes in the rate for white infants in New Mexico. Although the rate of decrease is still fairly high, there is no longer an acceleration in the rate of decline. The mortality trend for nonwhite infants in New Mexico continues downward without appreciable change.

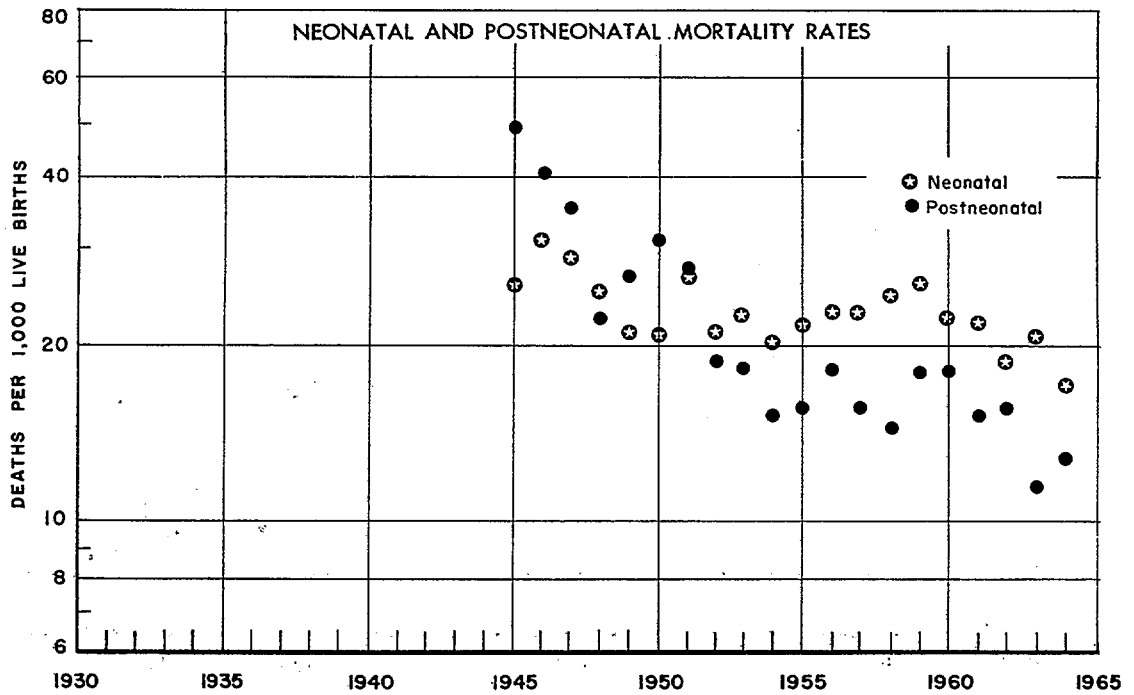
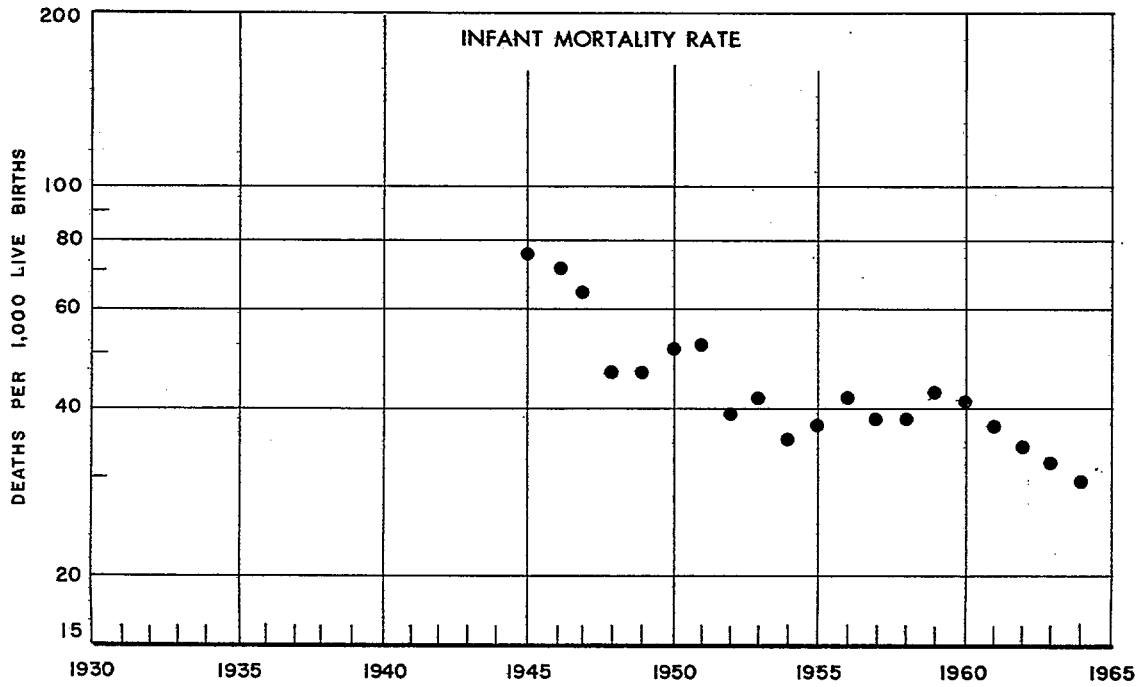
The following charts show the pattern of the infant mortality trends for the individual States, which indicates the nature and extent of the problem in the various States.



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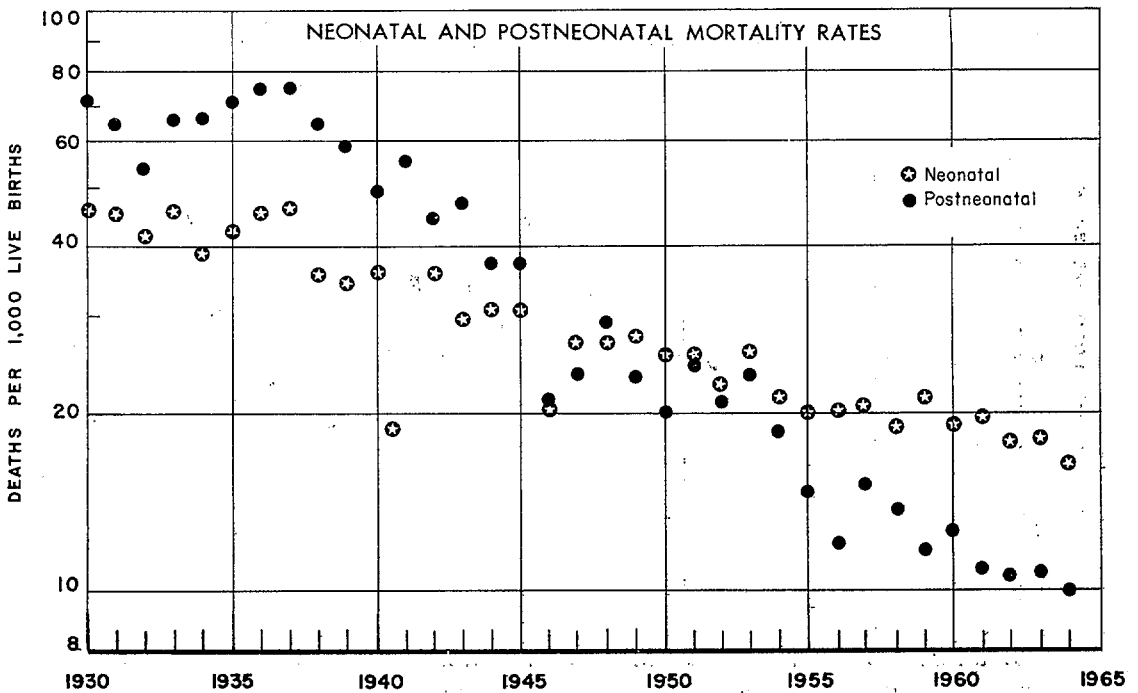
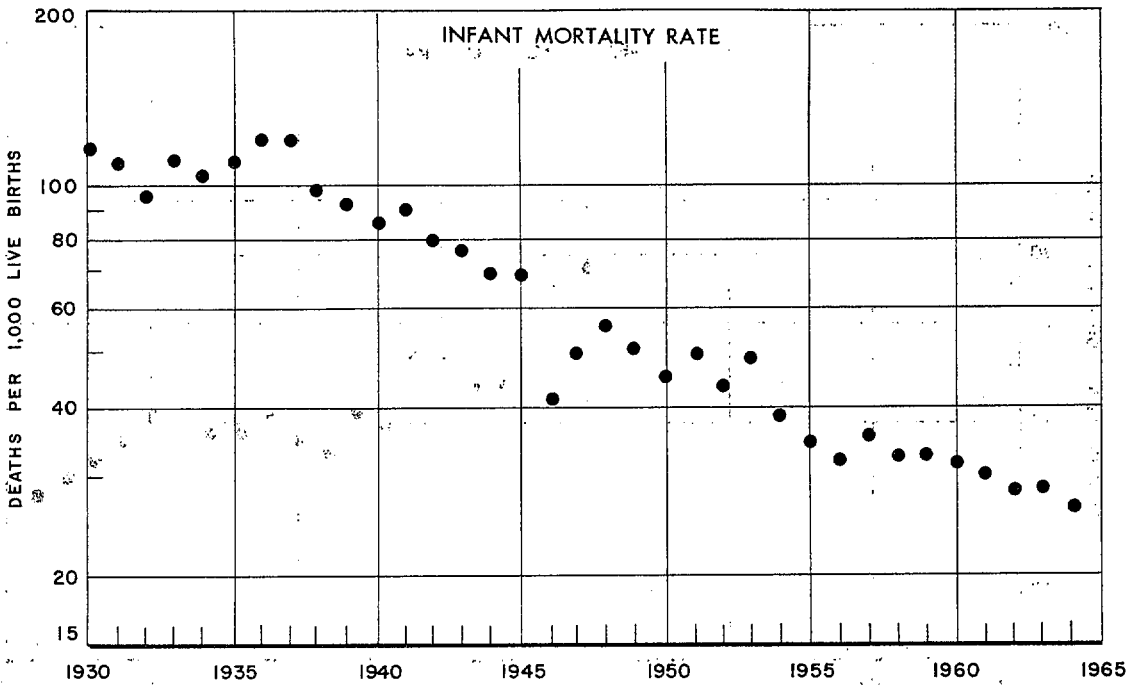


ALASKA<sup>1</sup>

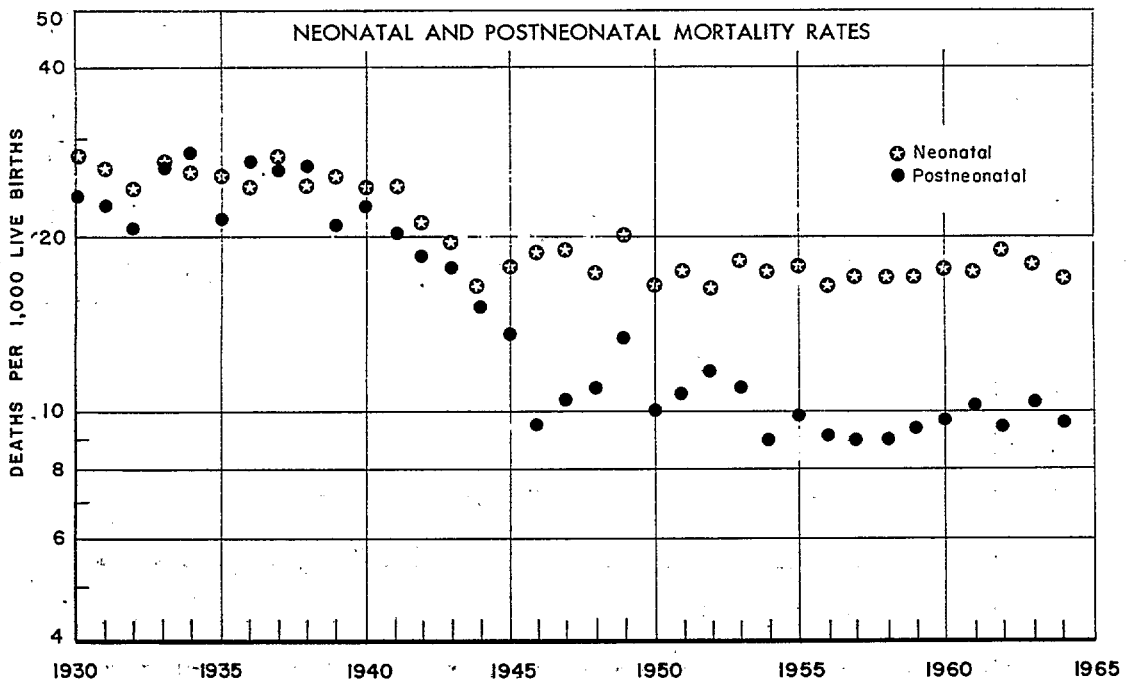
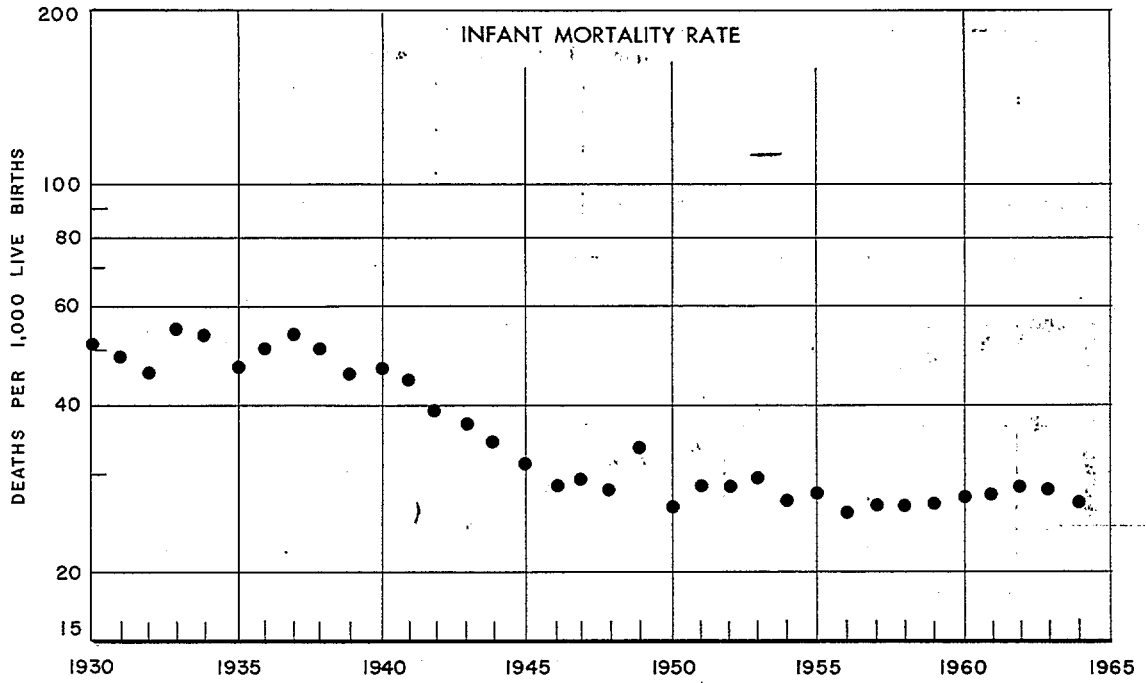


<sup>1</sup>Data not available prior to 1945.

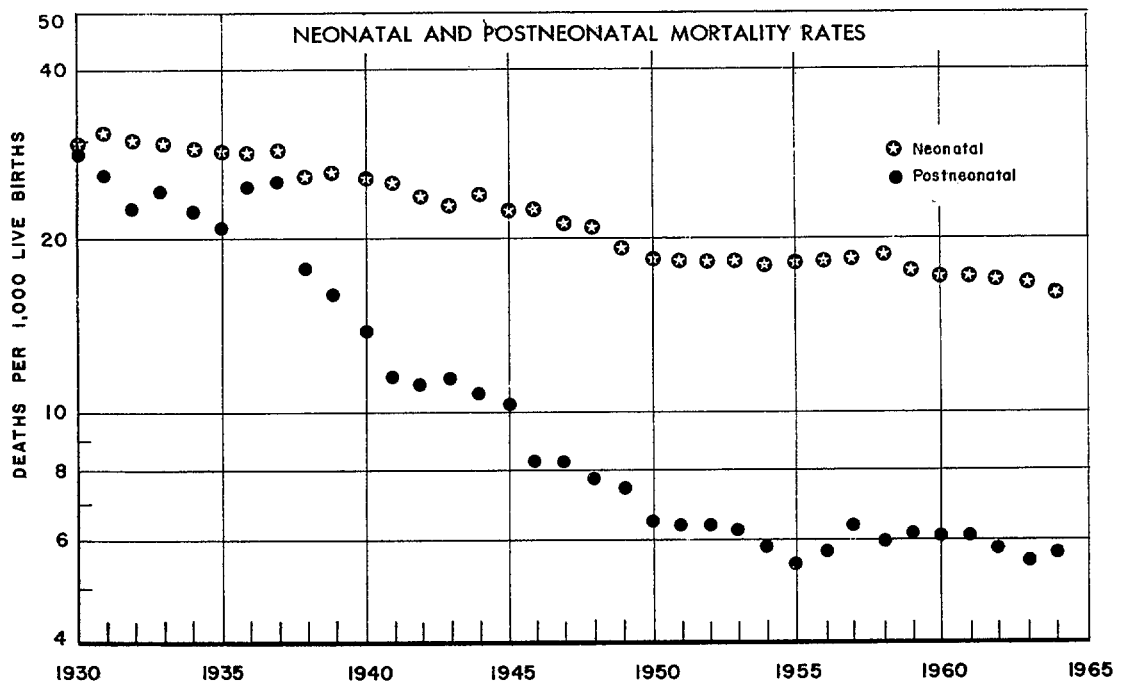
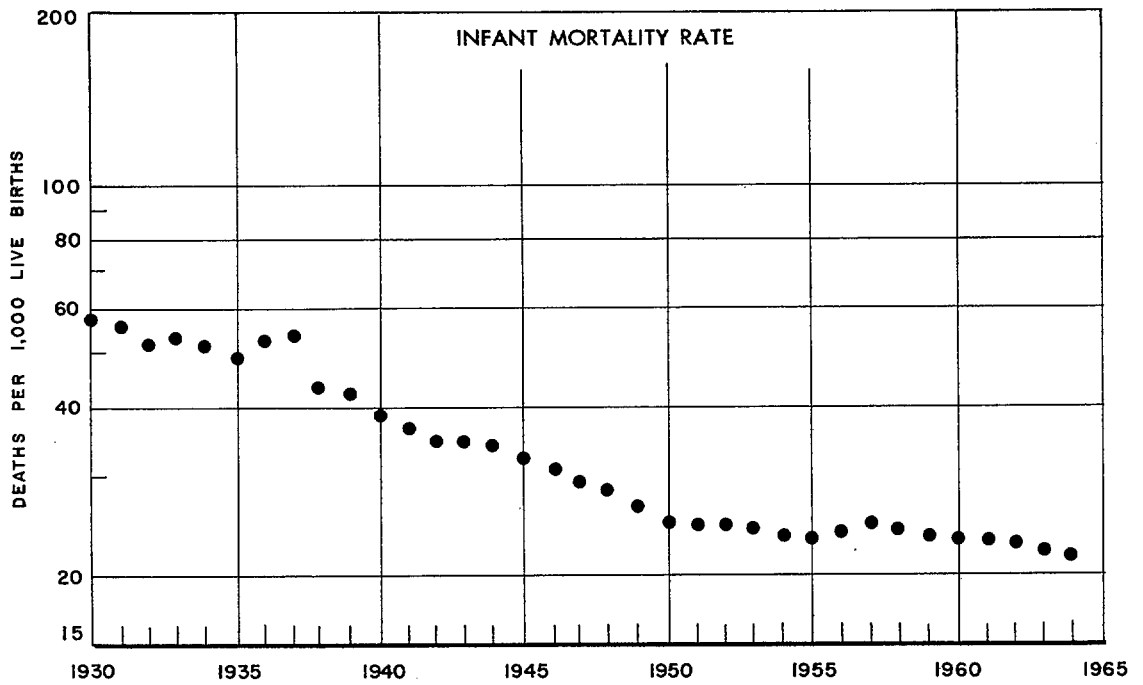
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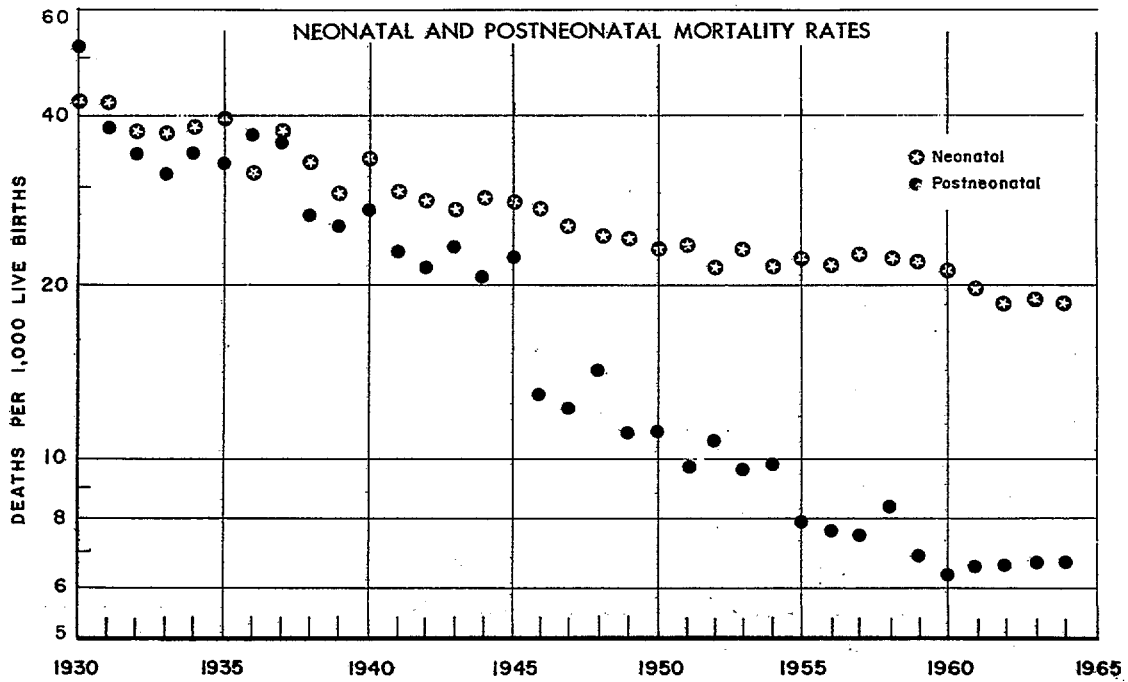
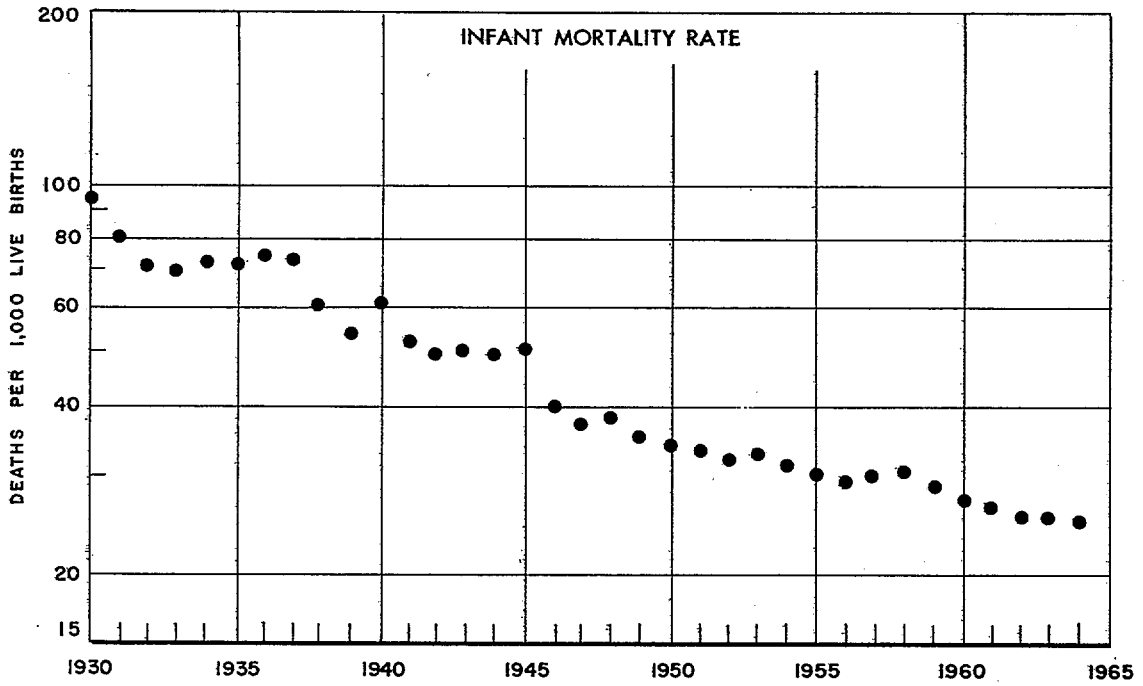
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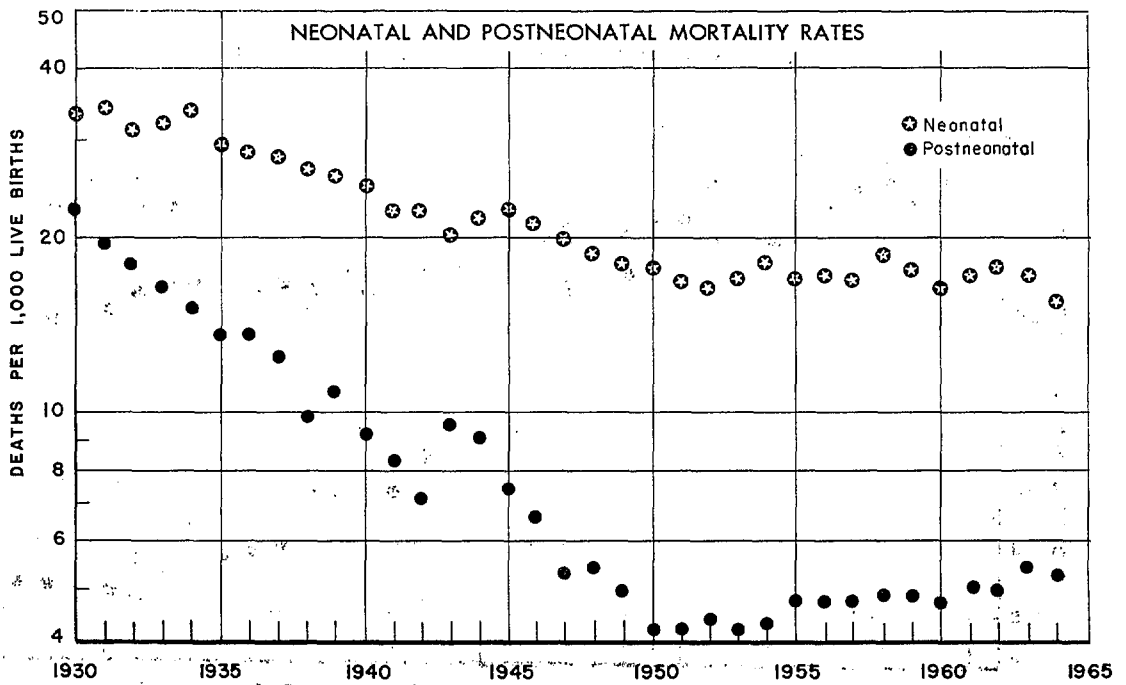
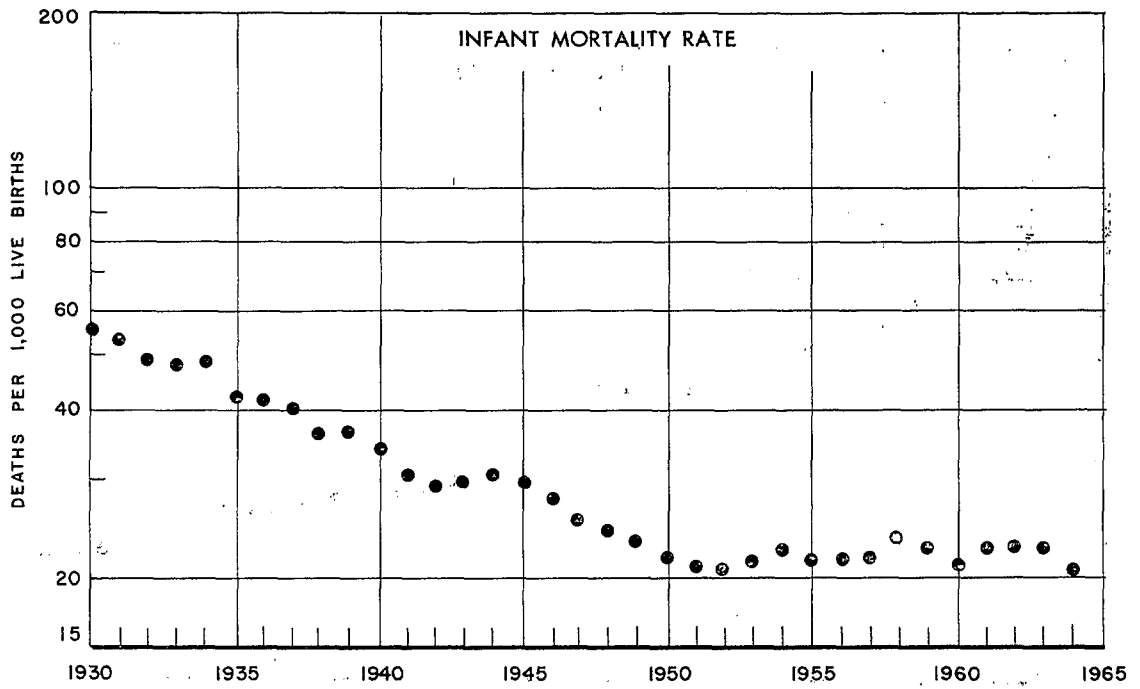


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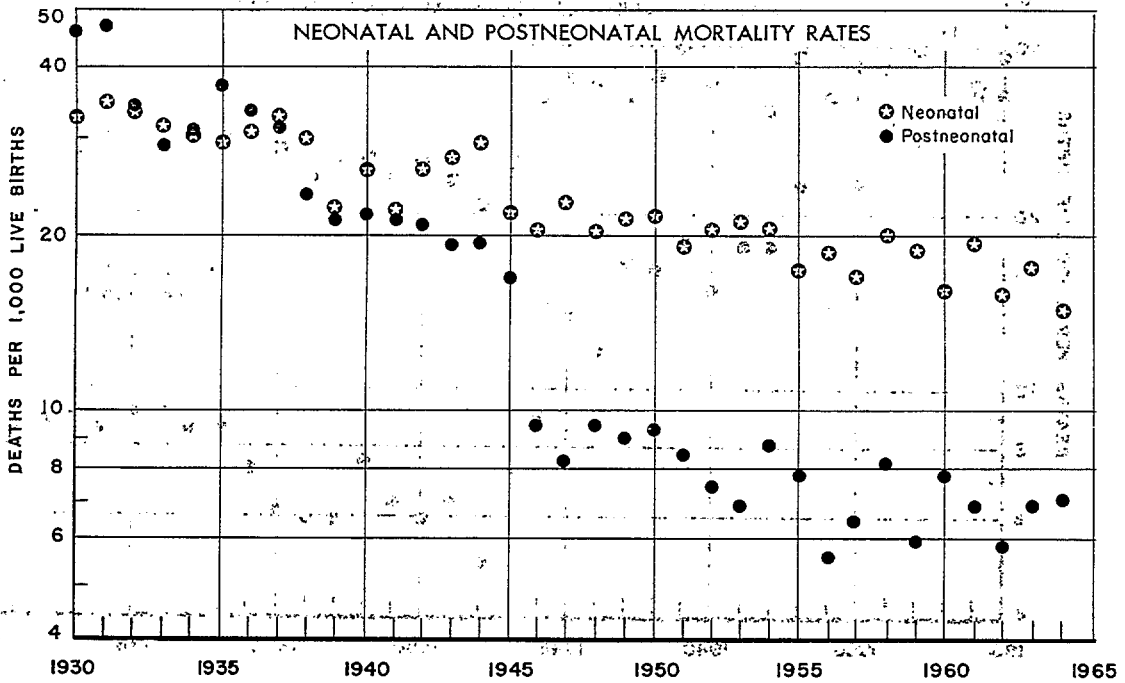
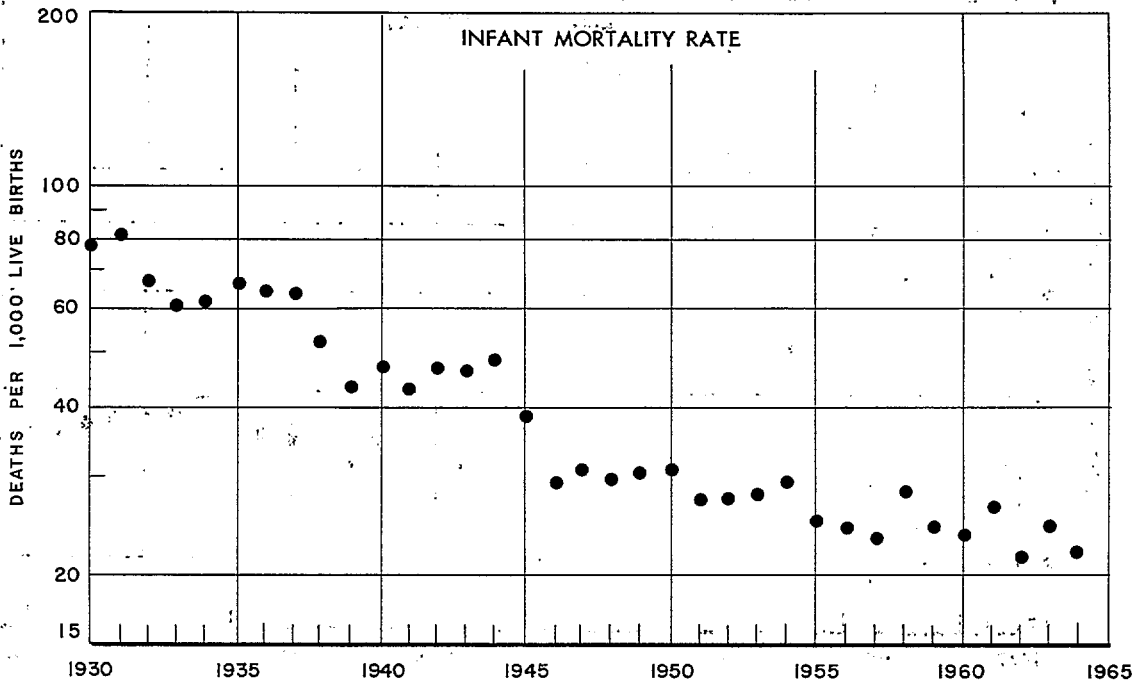




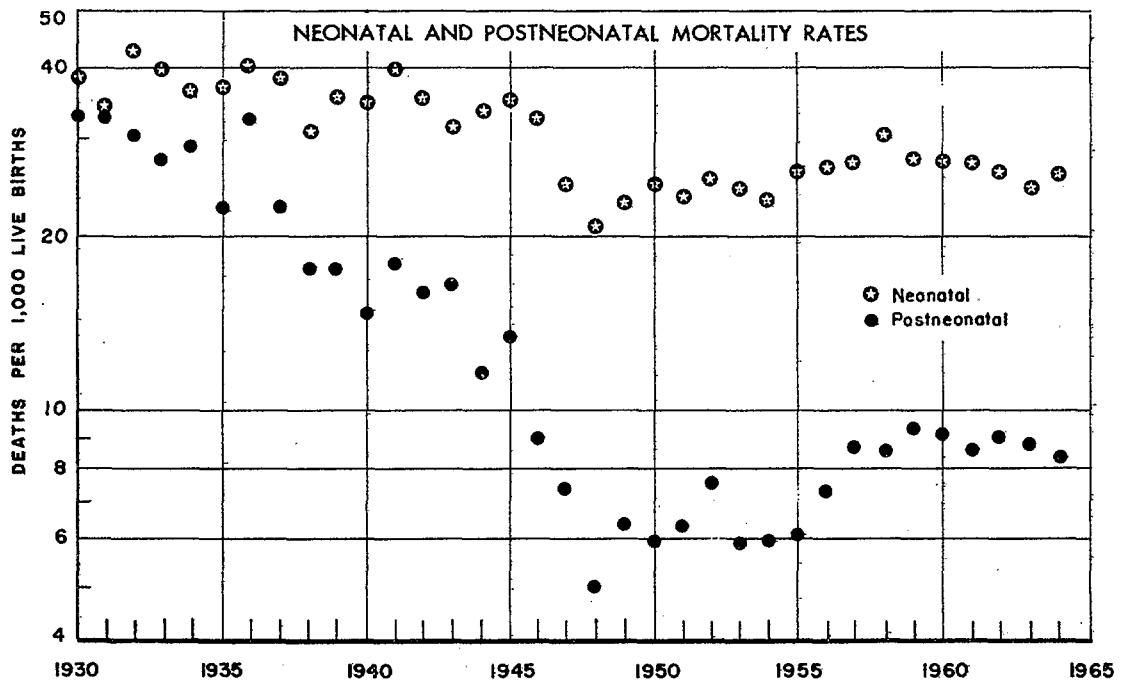
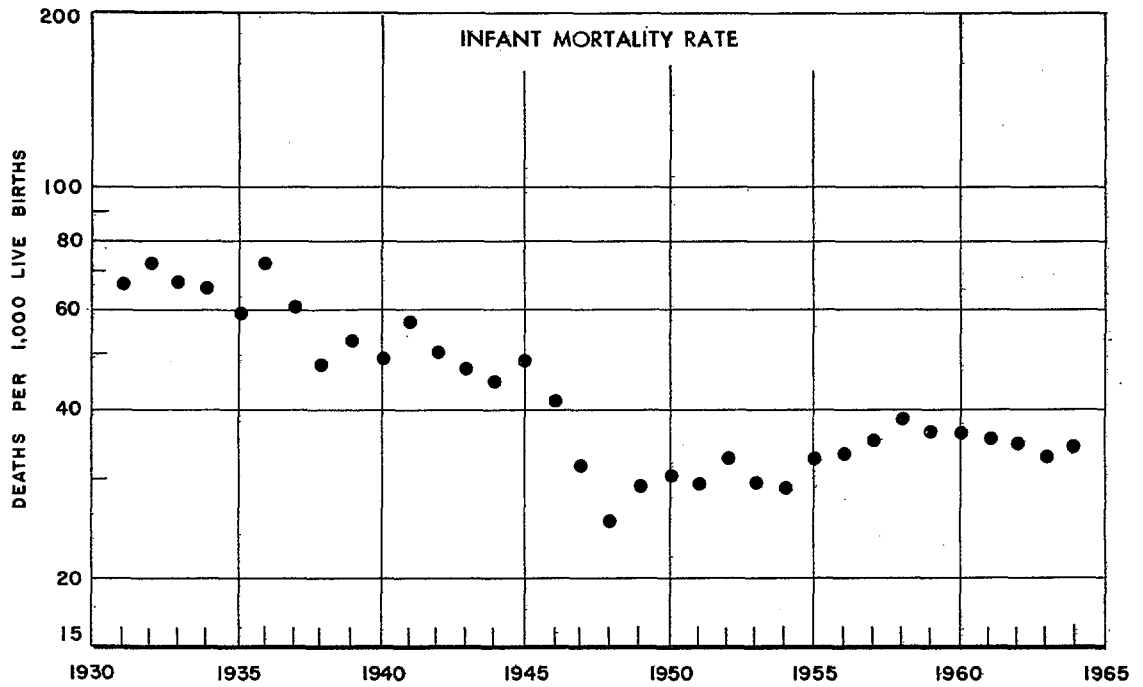
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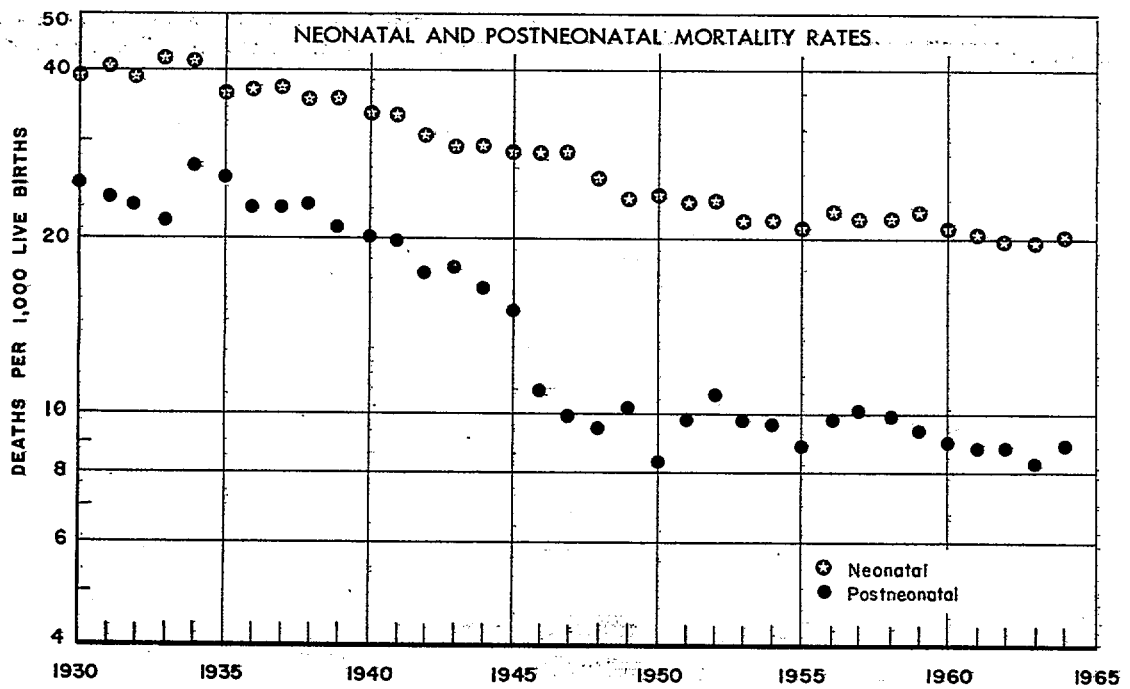
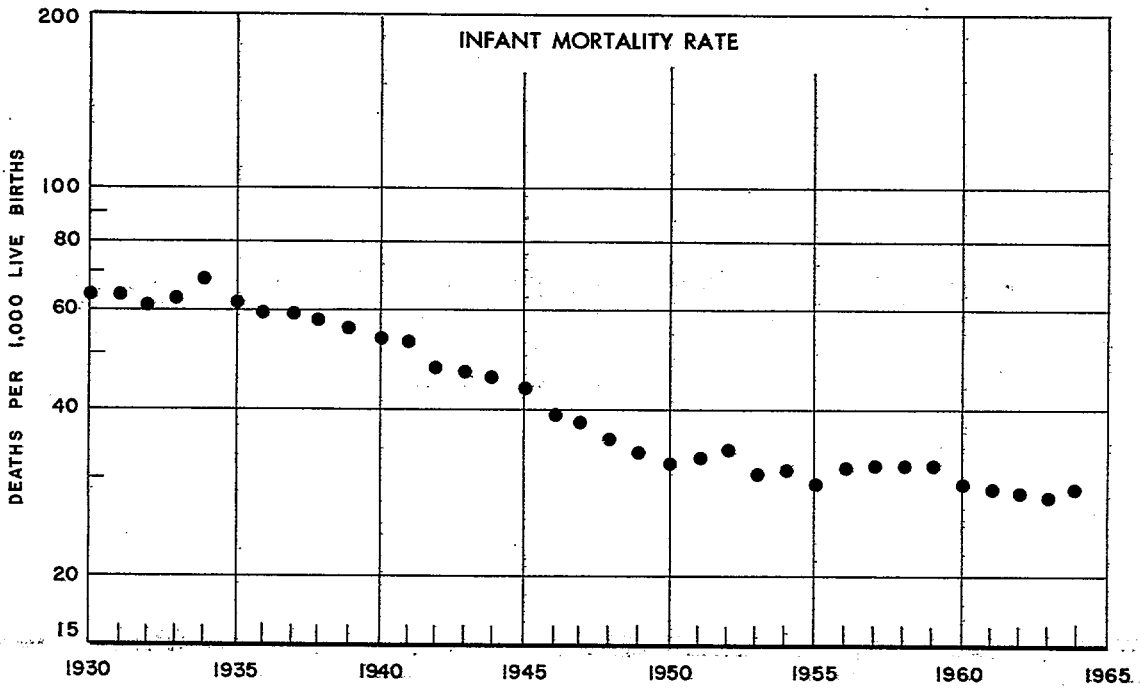
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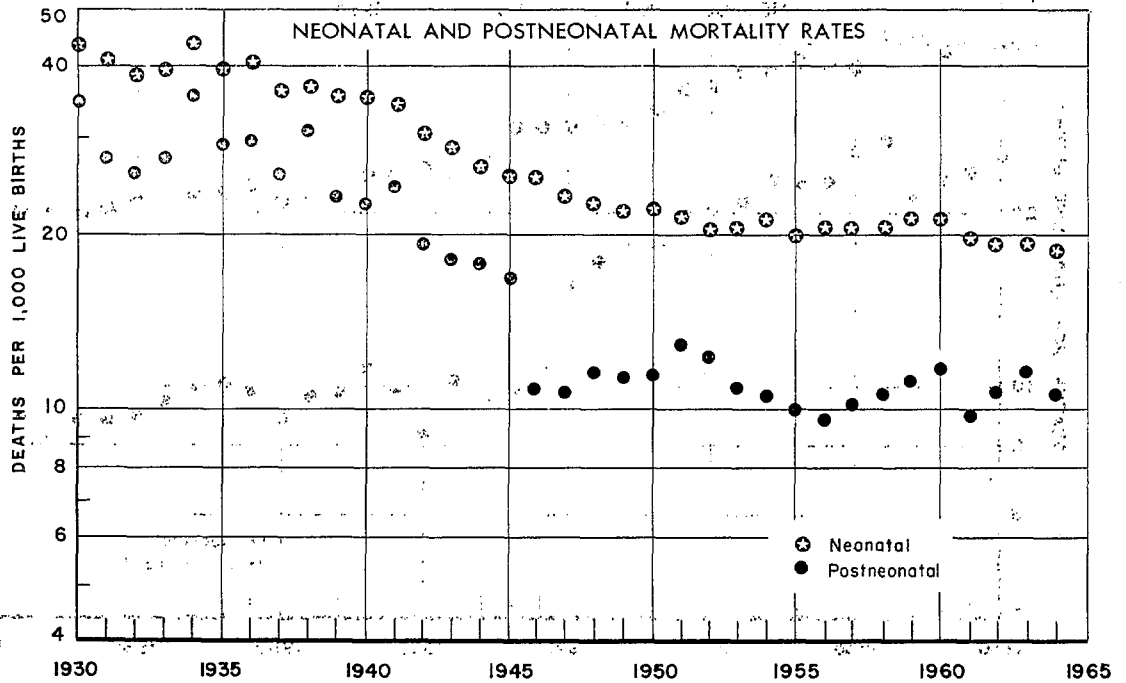
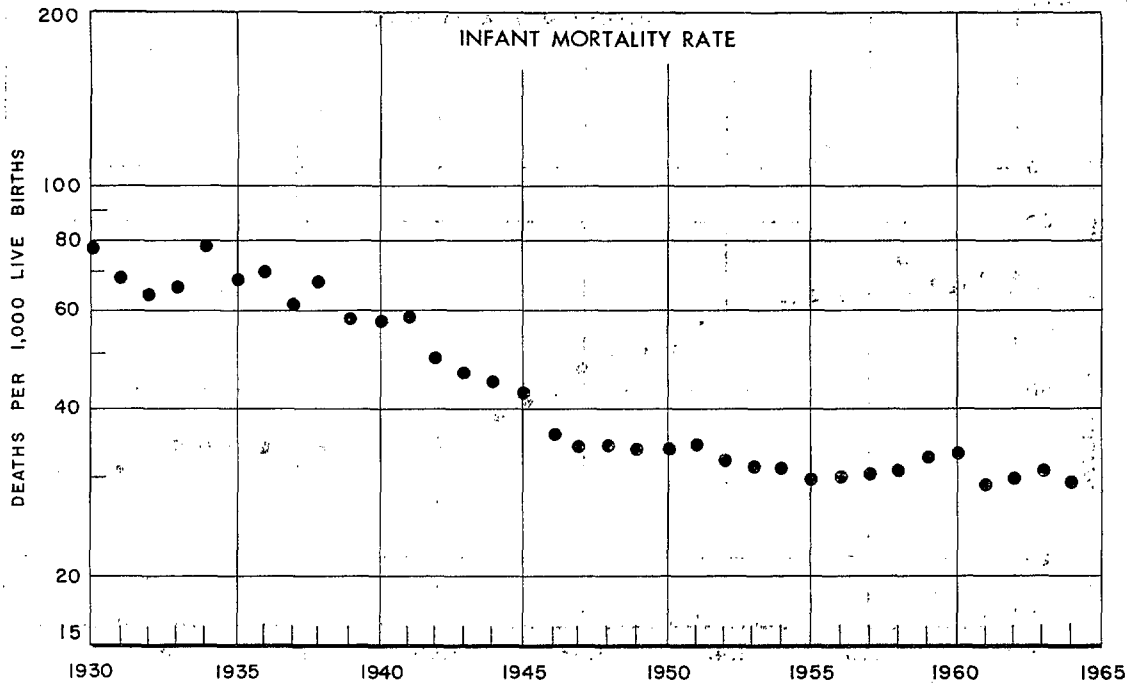
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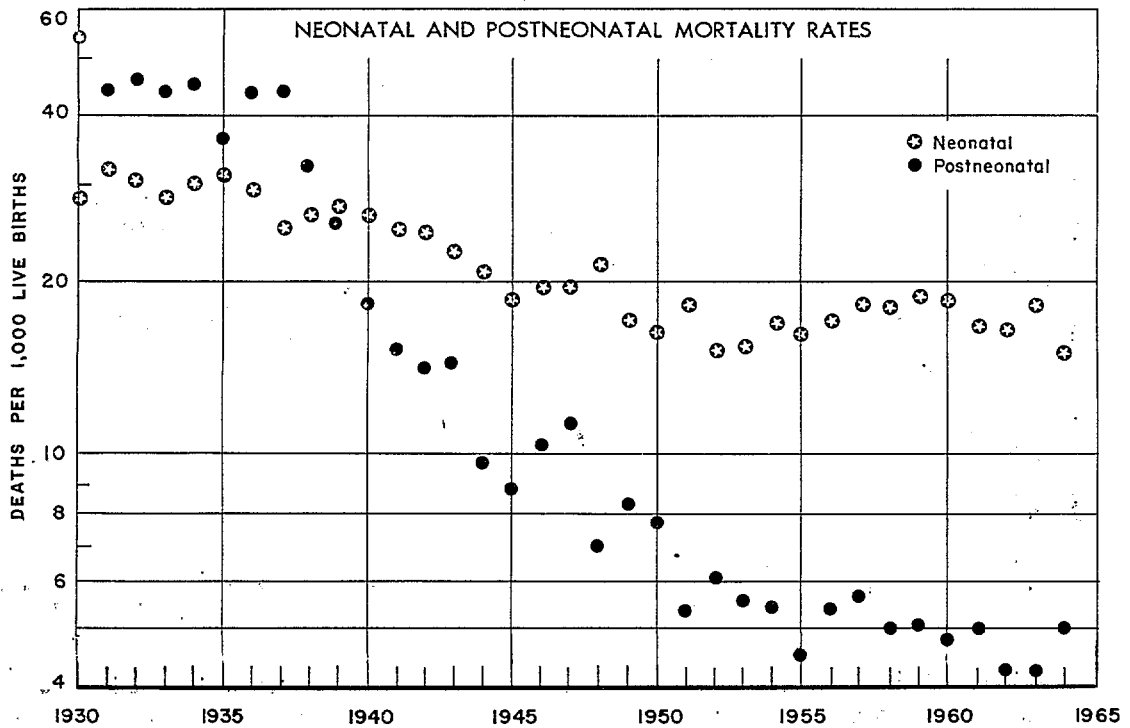
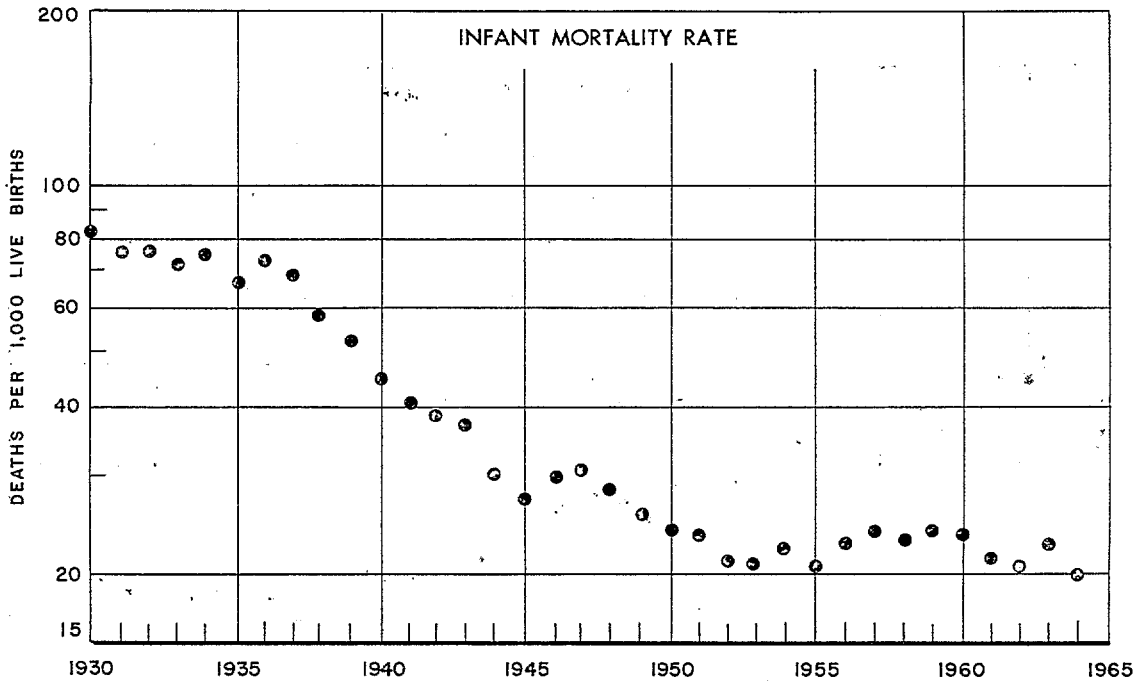
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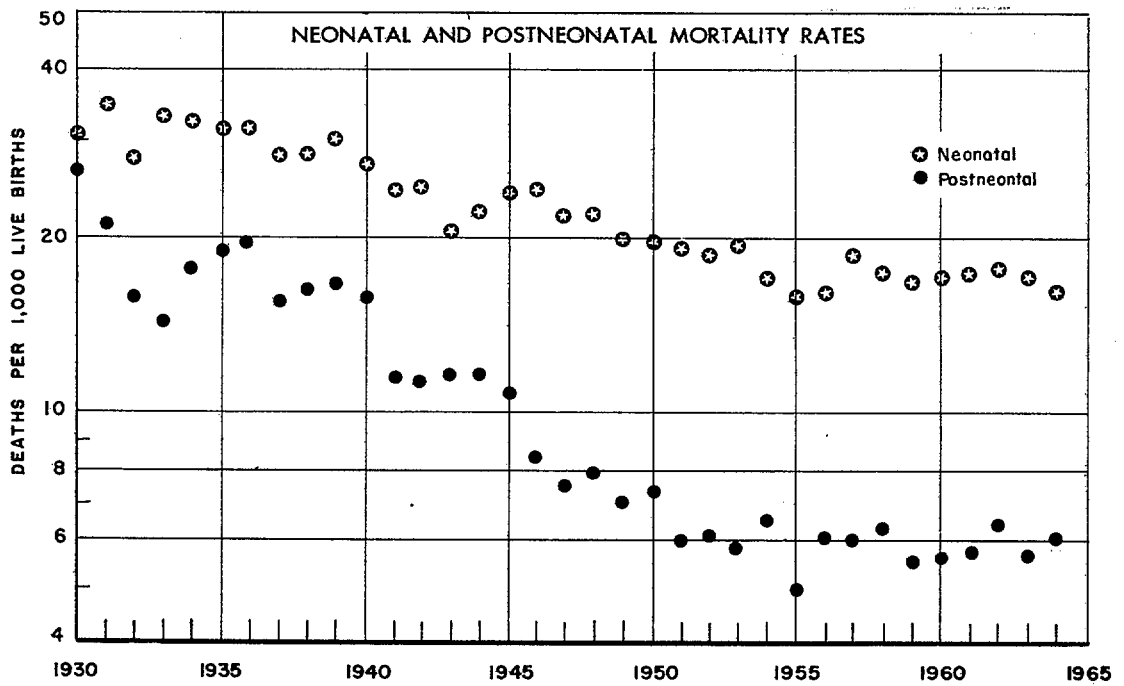
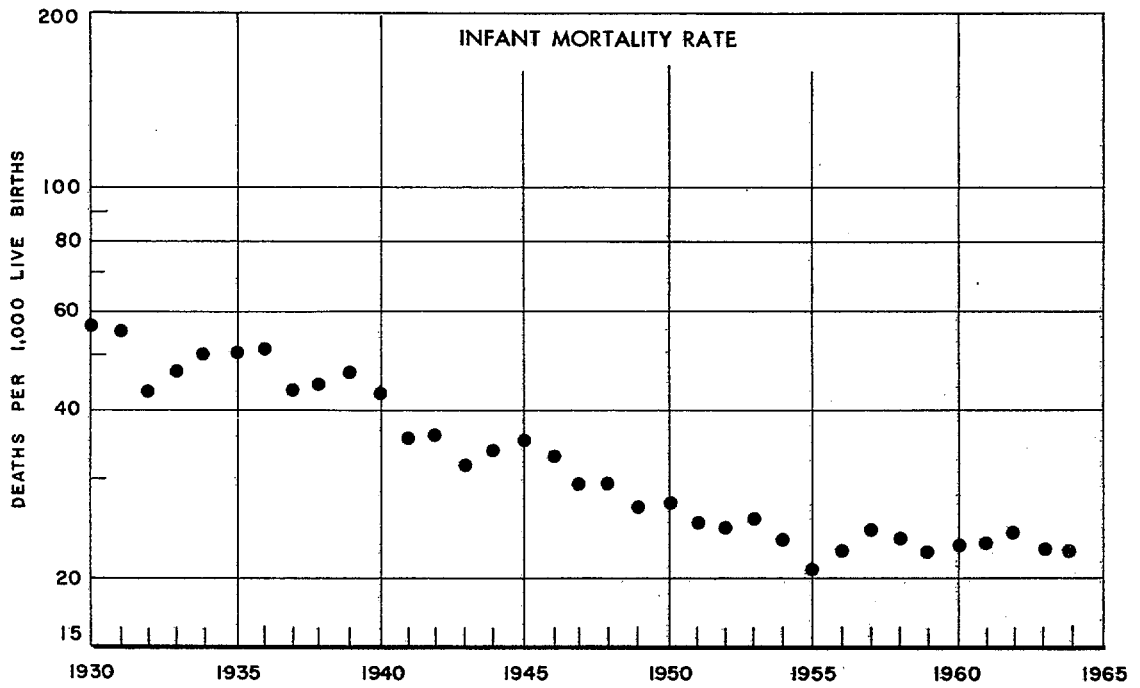
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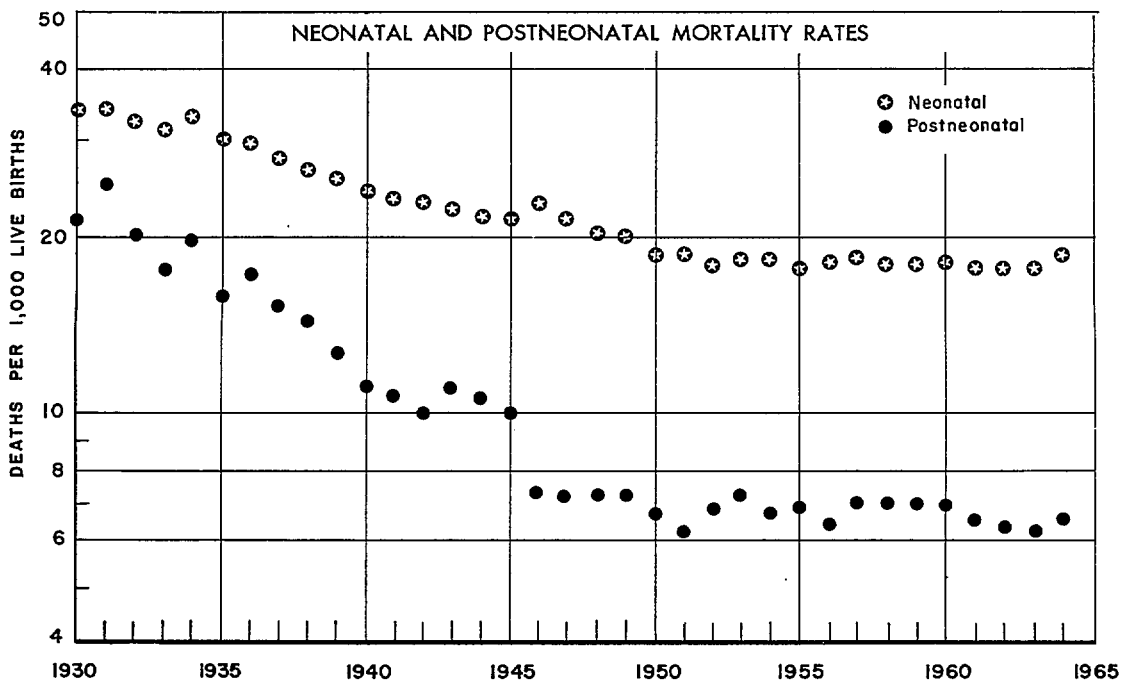
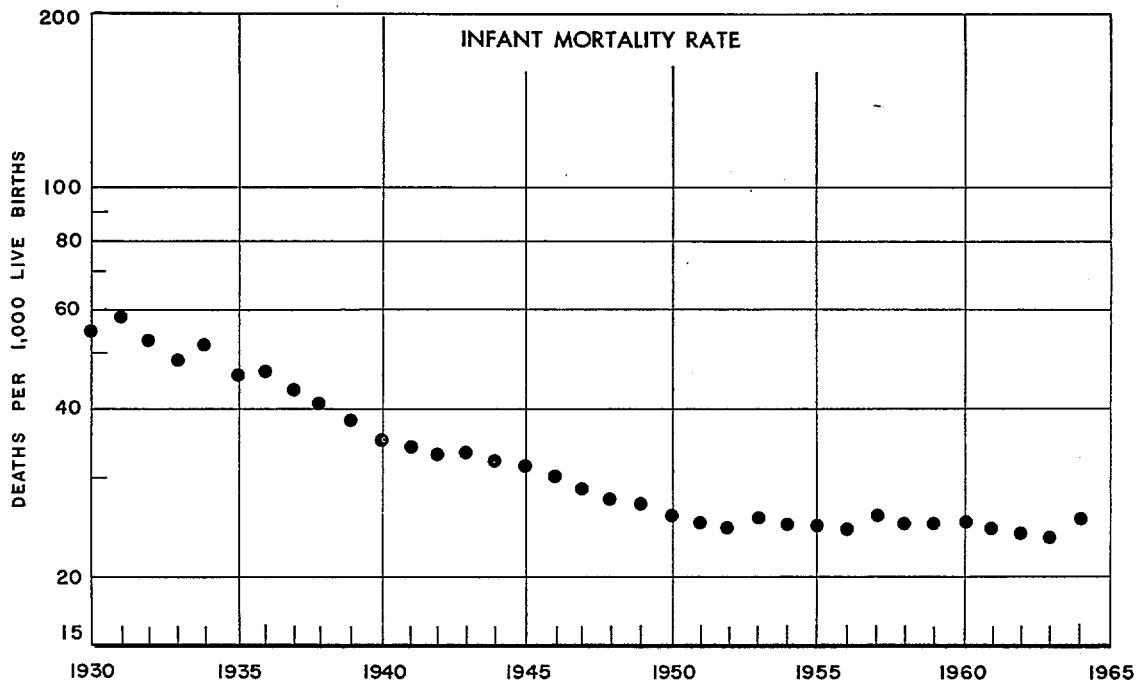
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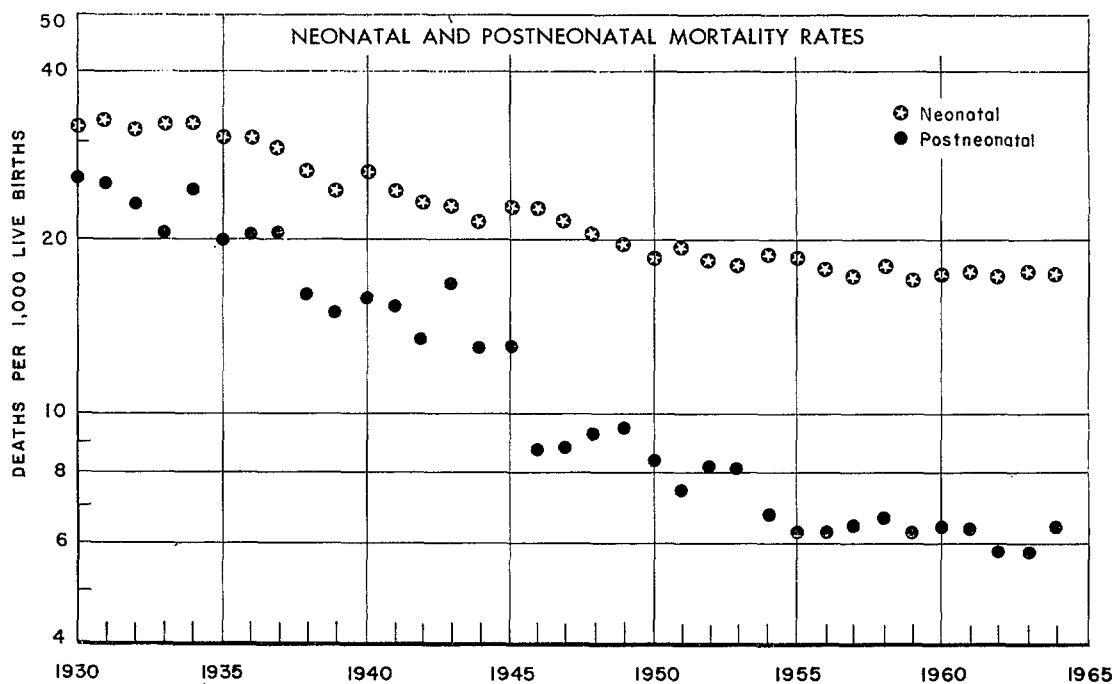
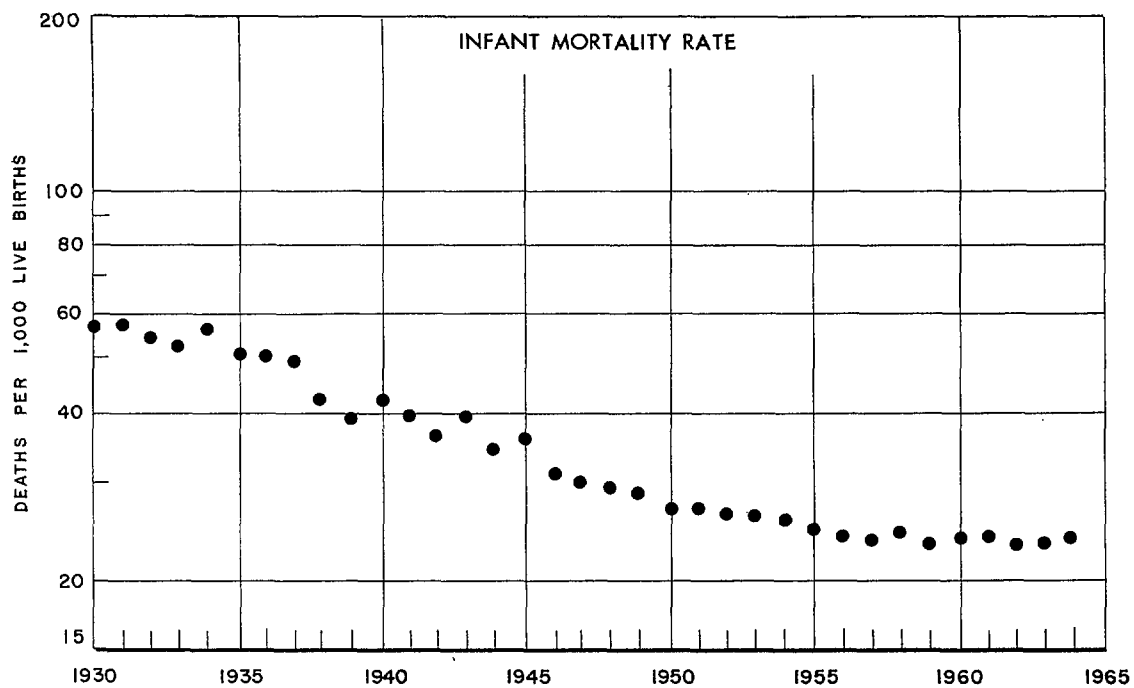


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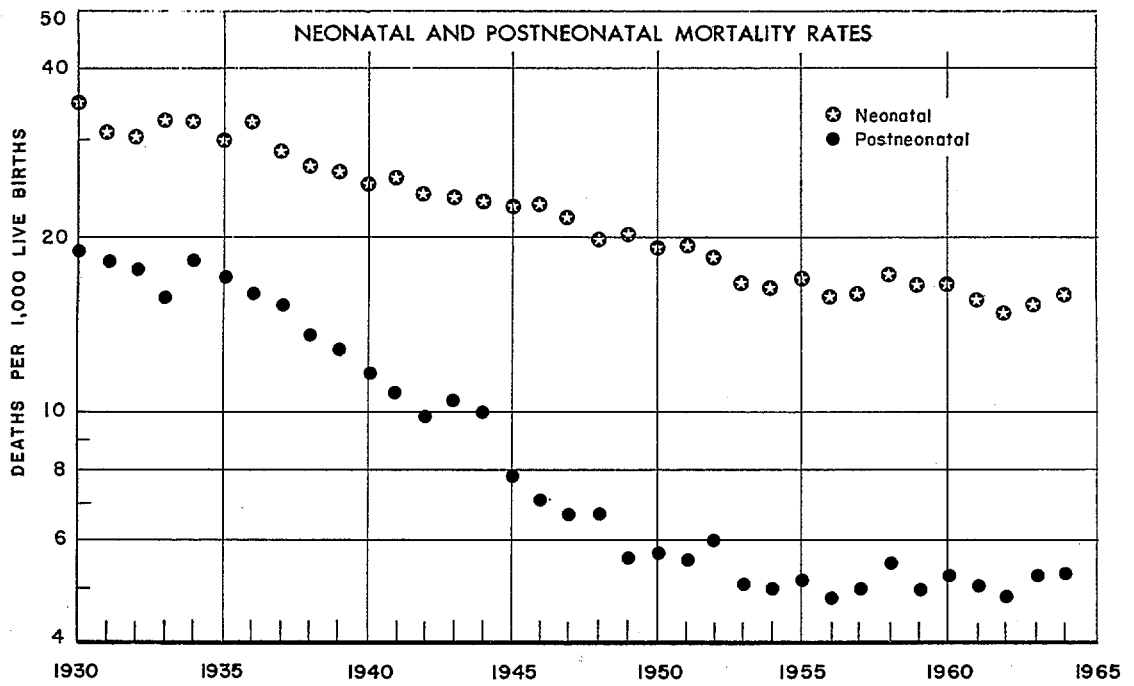
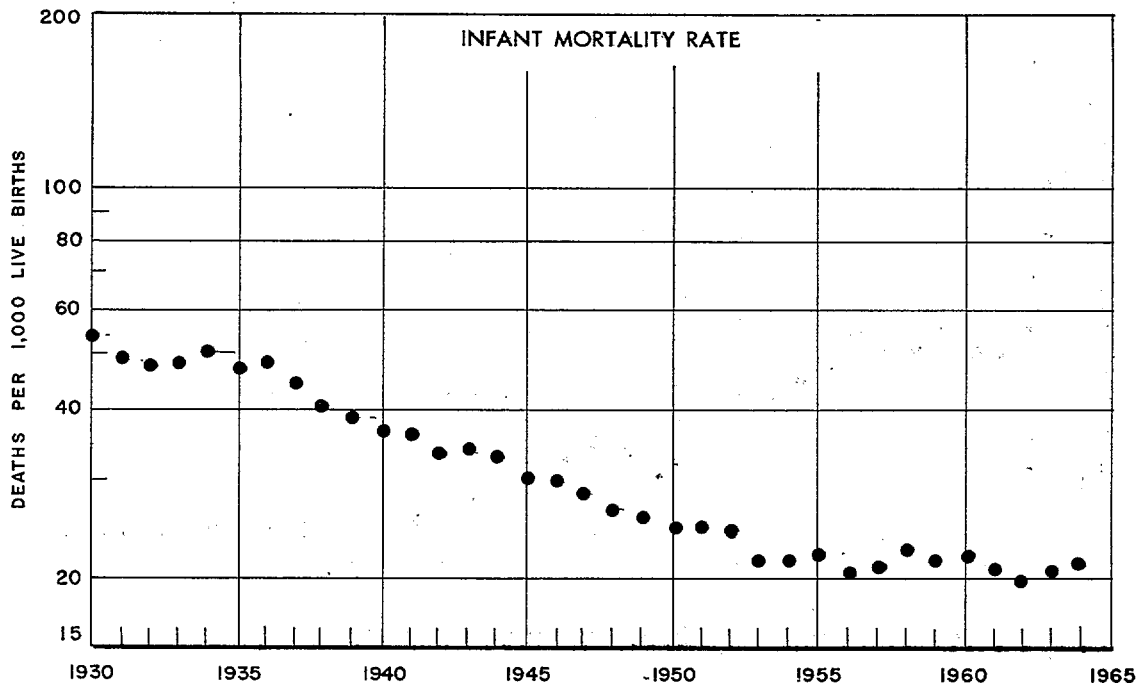




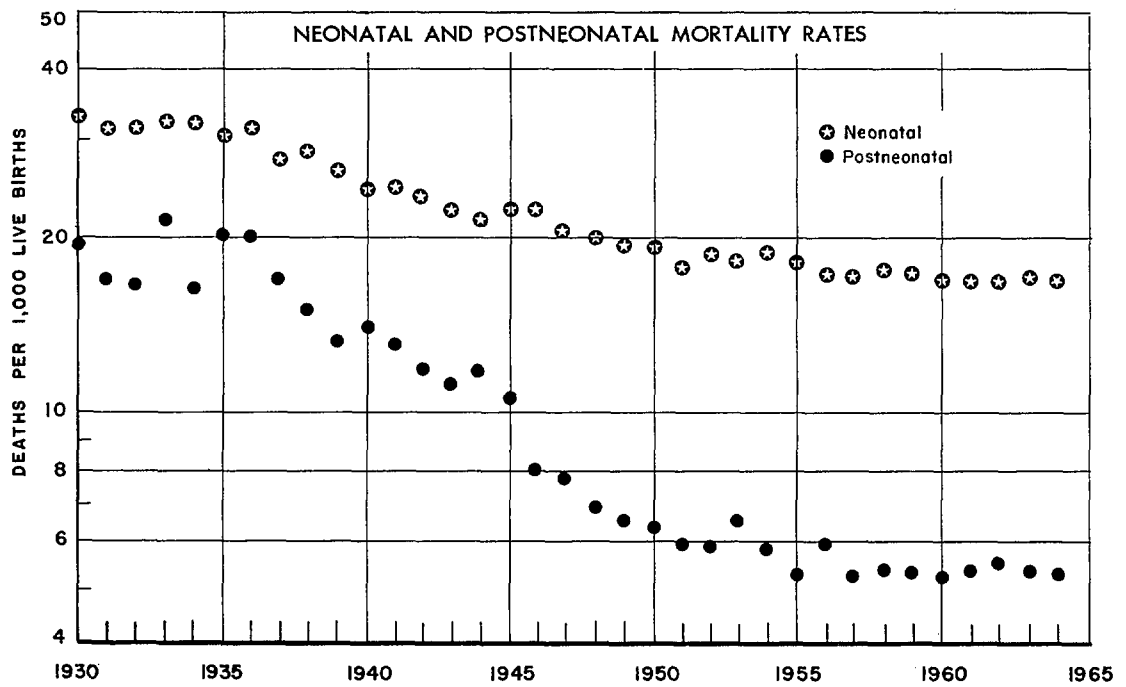
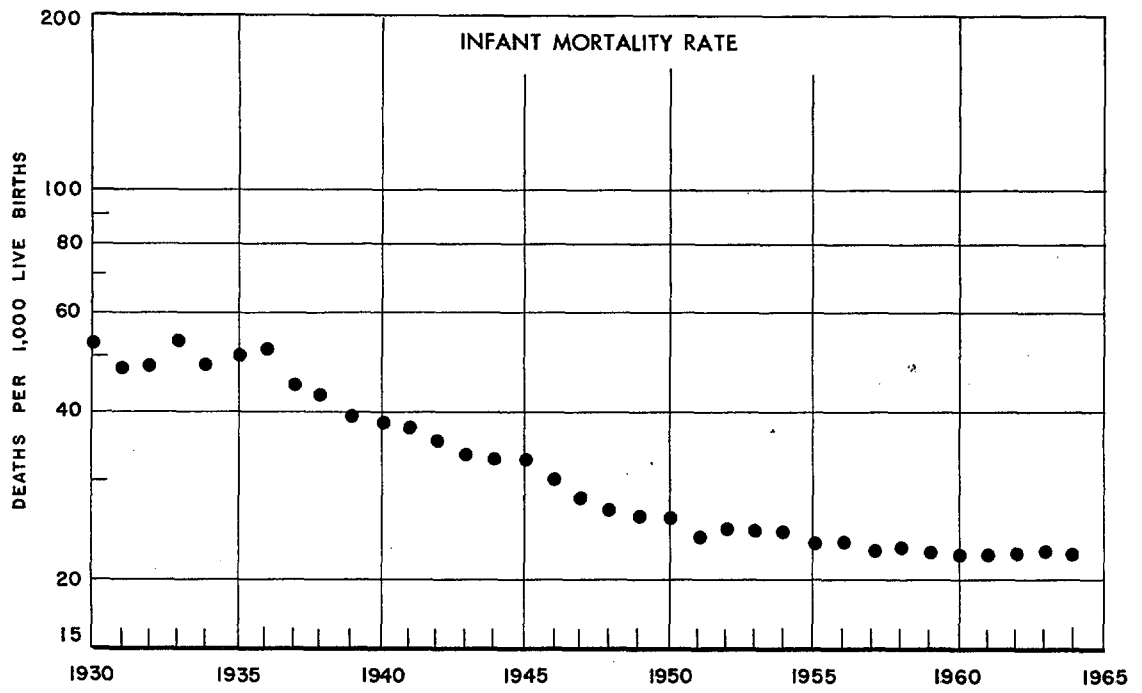
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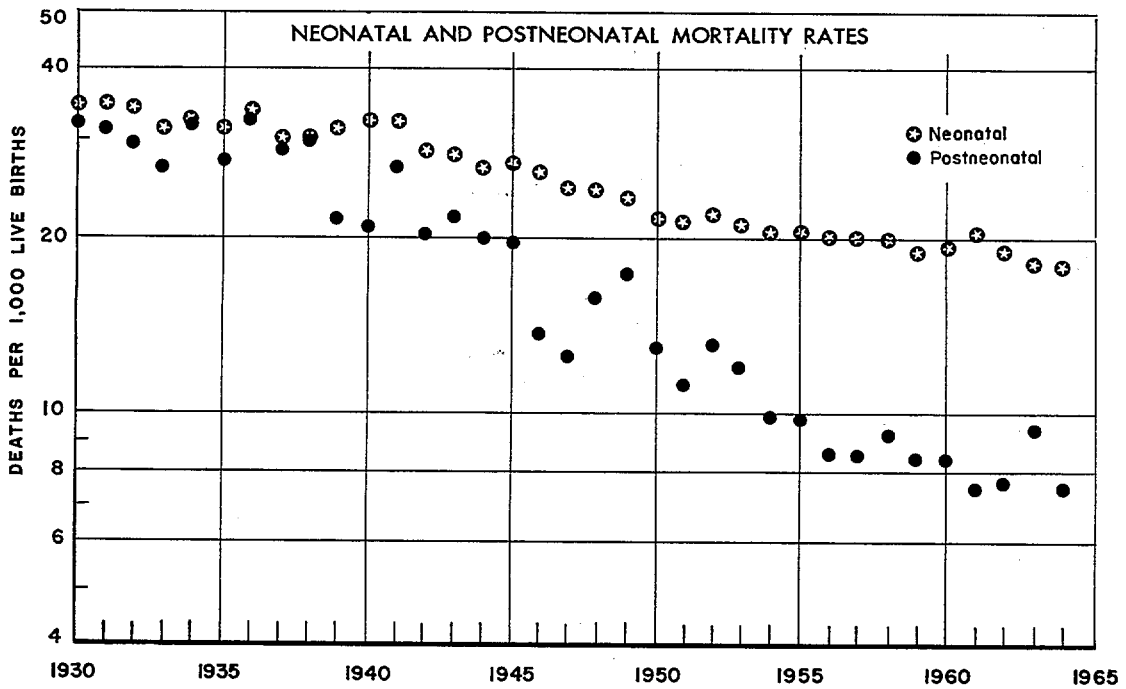
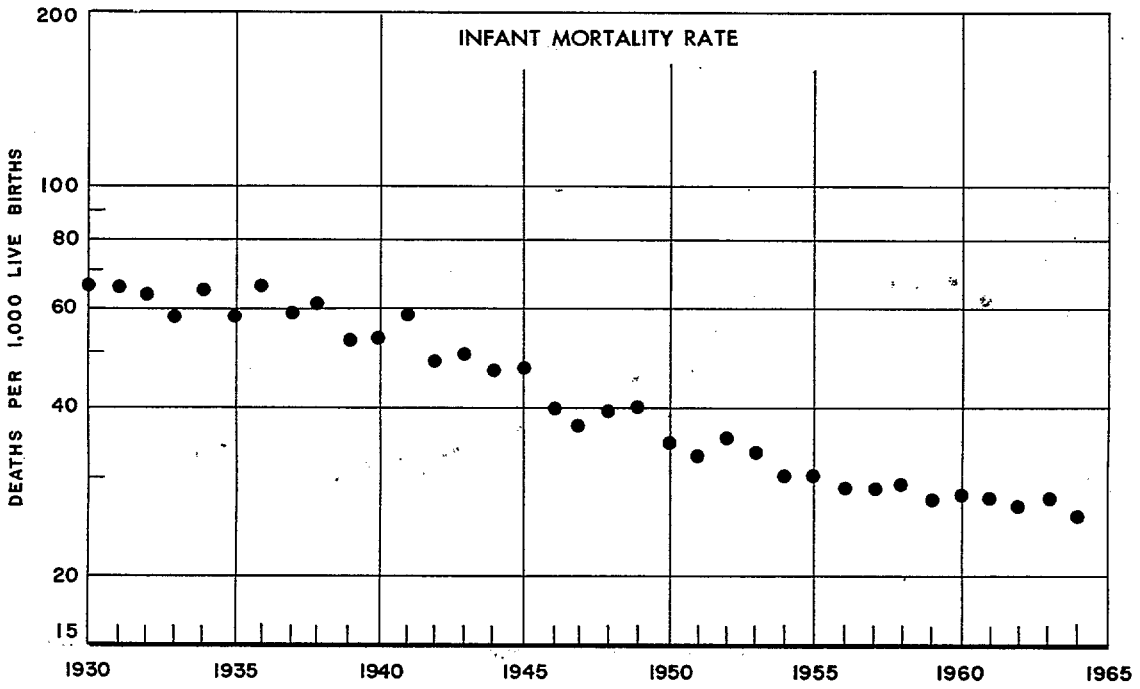
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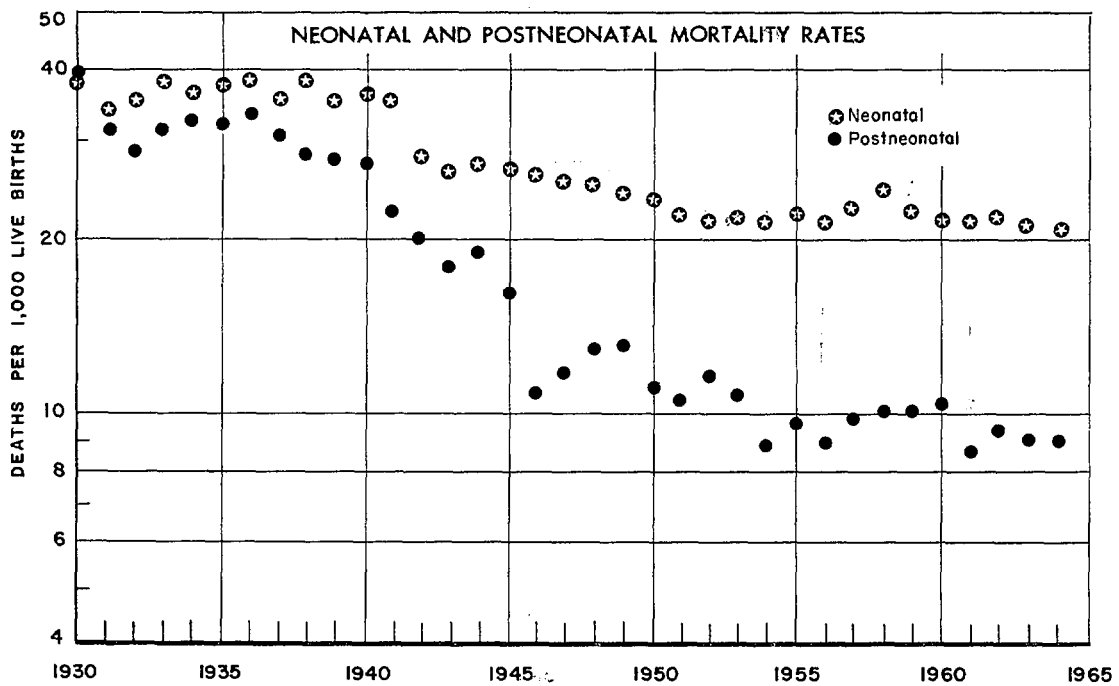
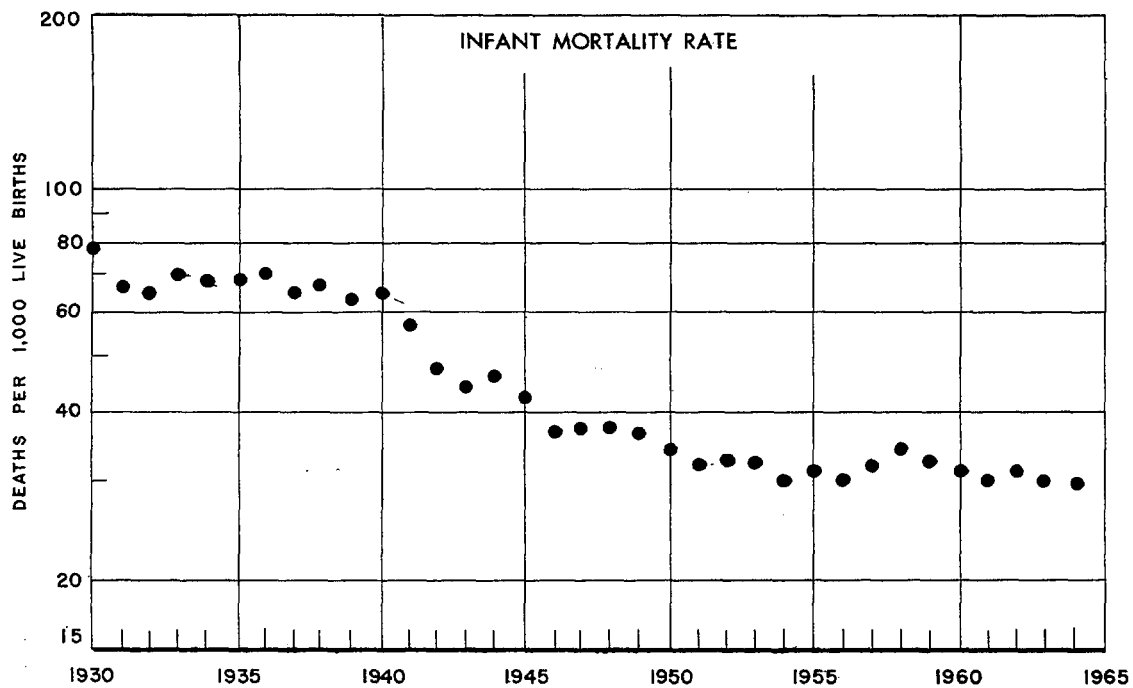
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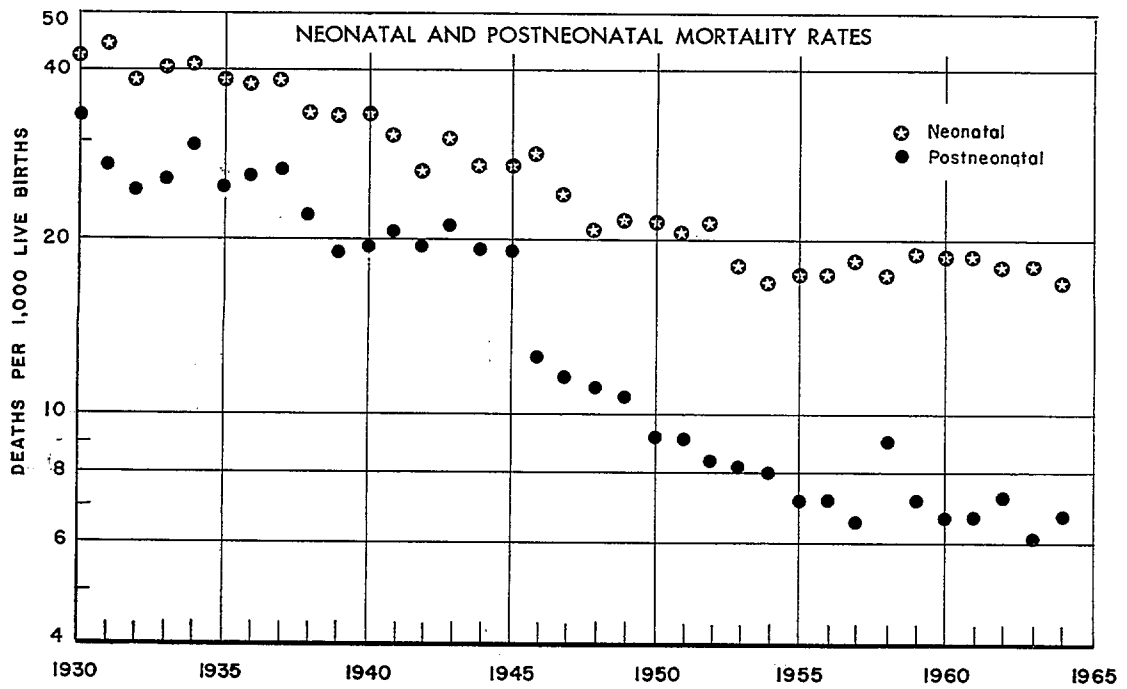
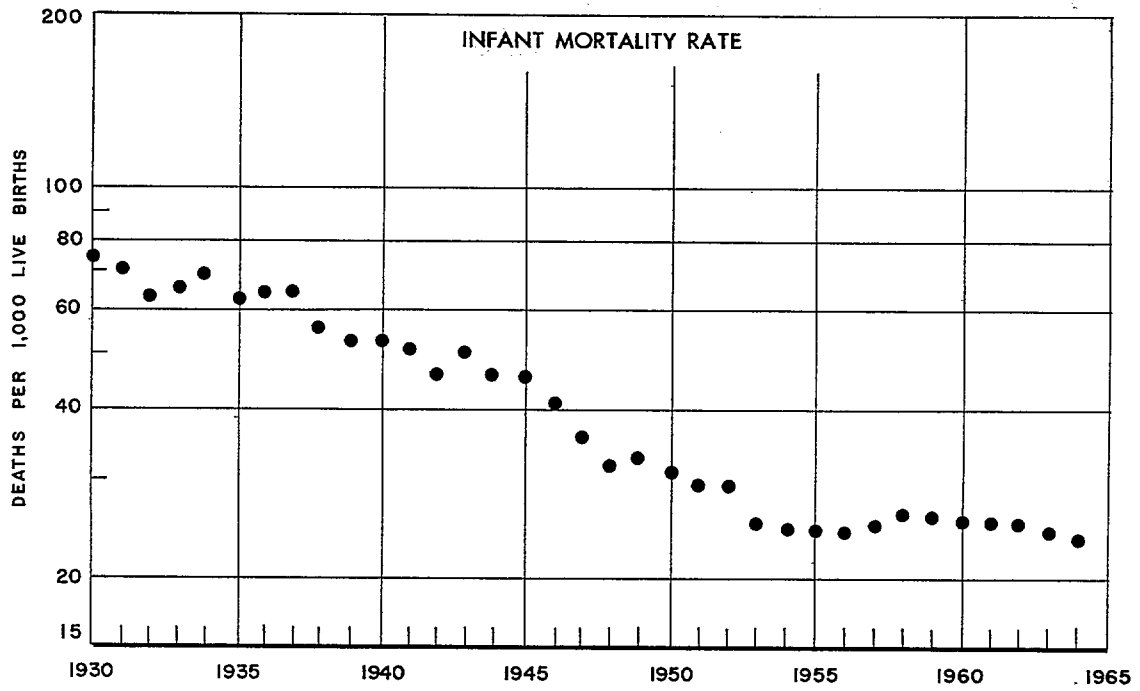
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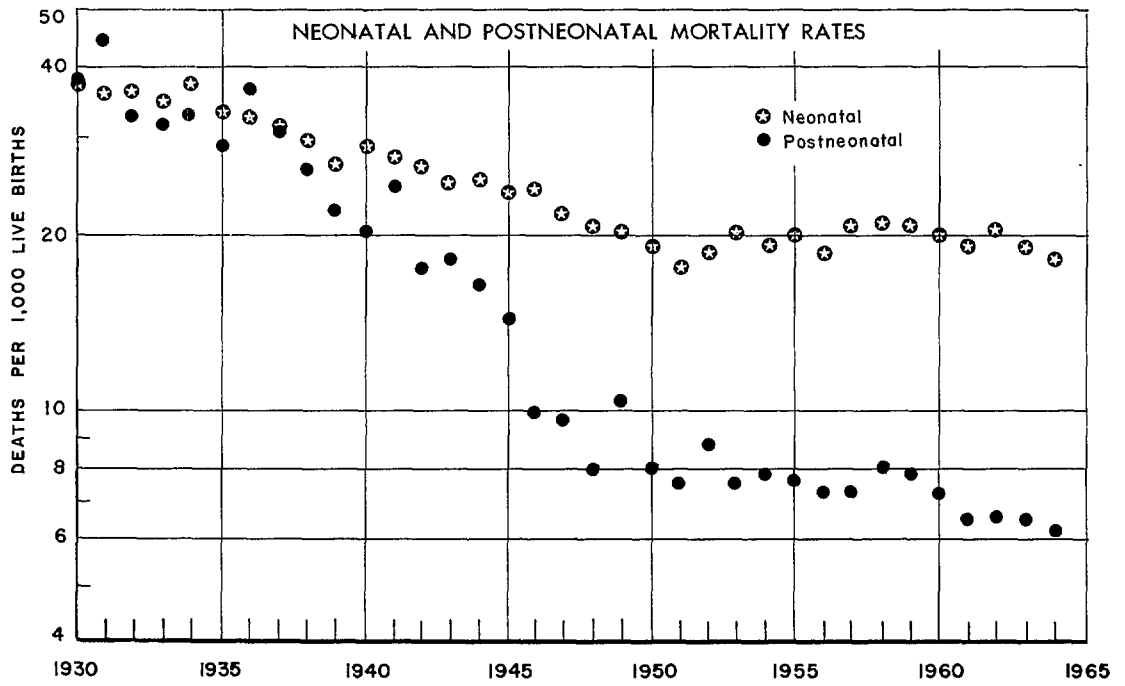
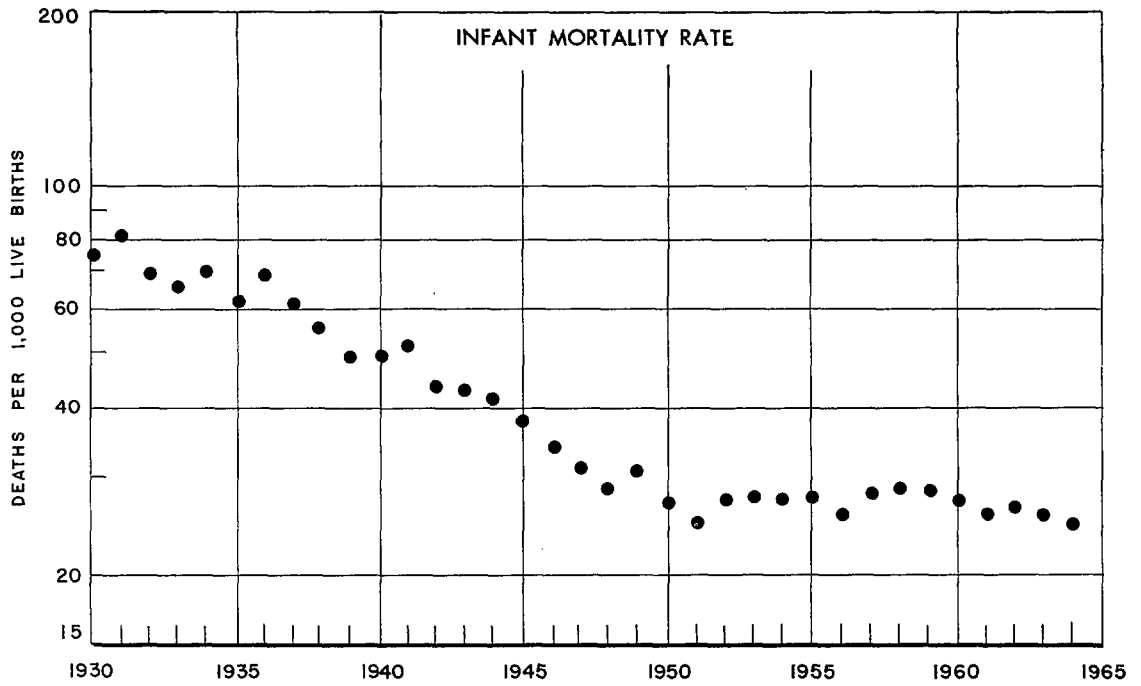
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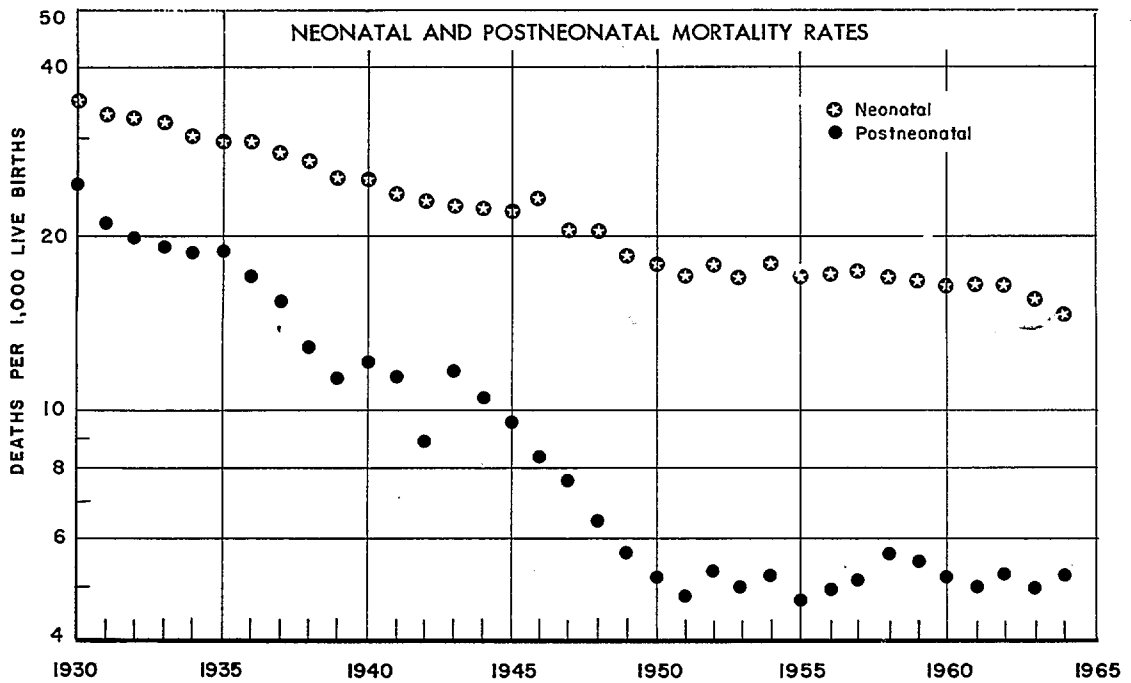
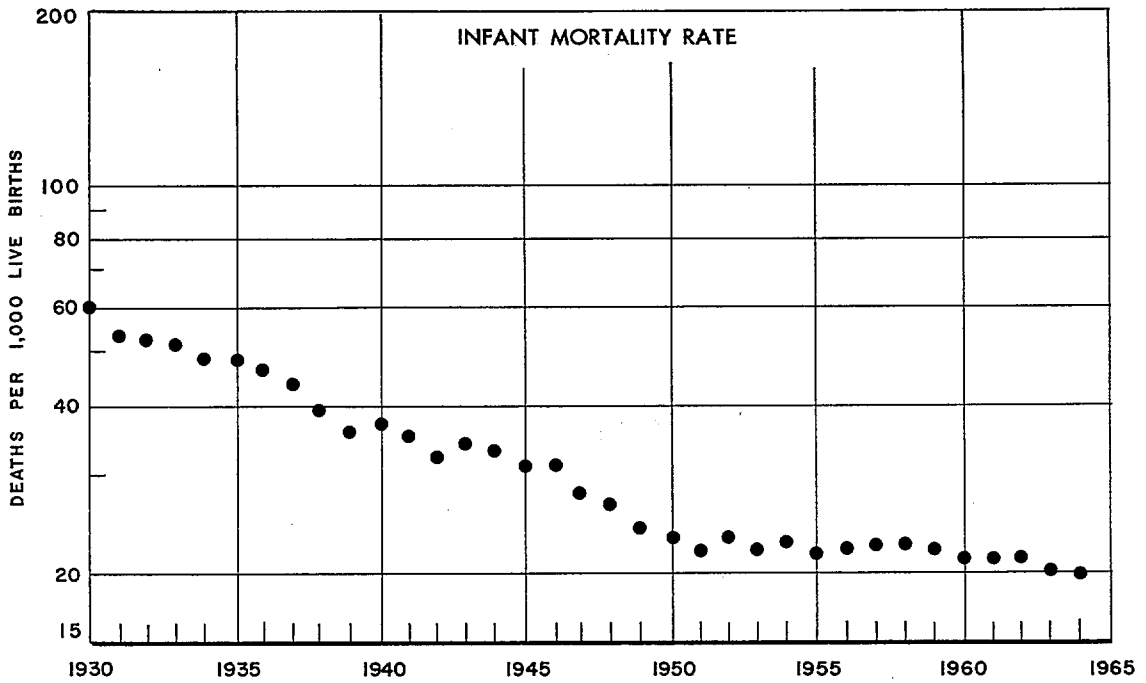
MAINE



MARYLAND

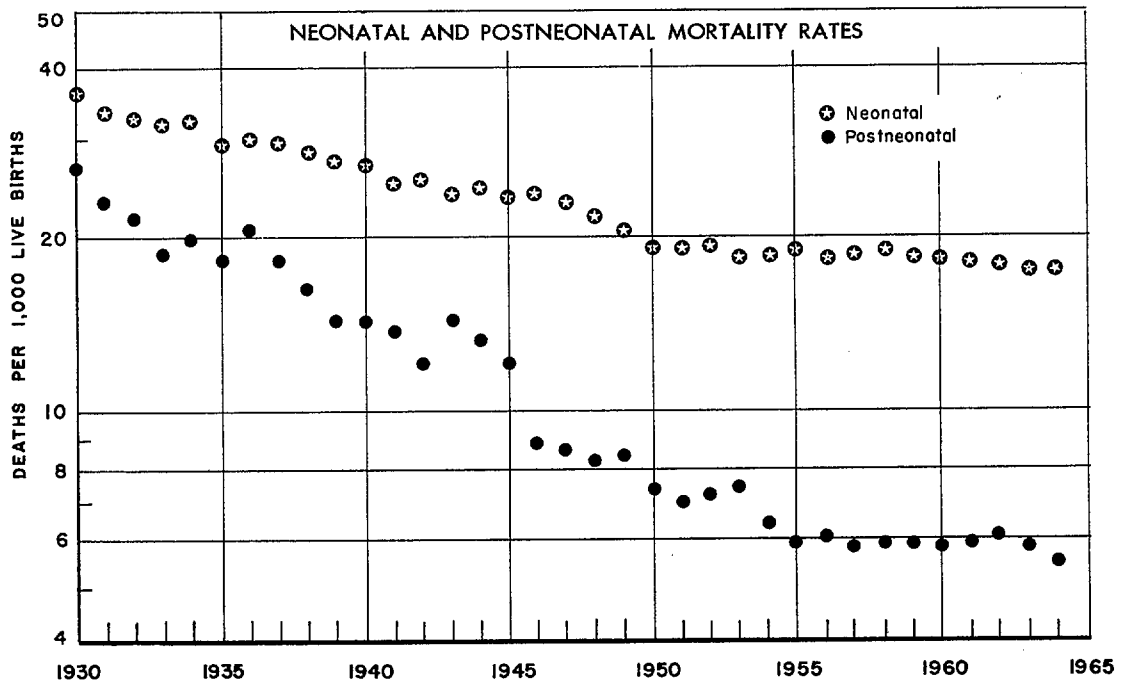
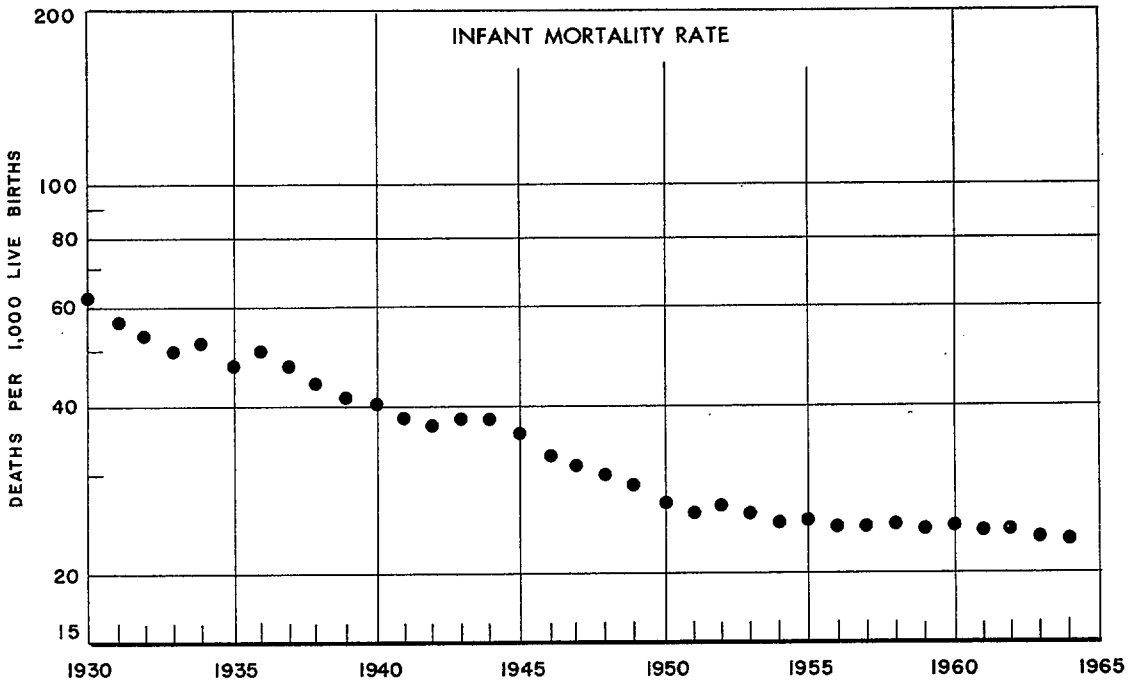


MASSACHUSETTS

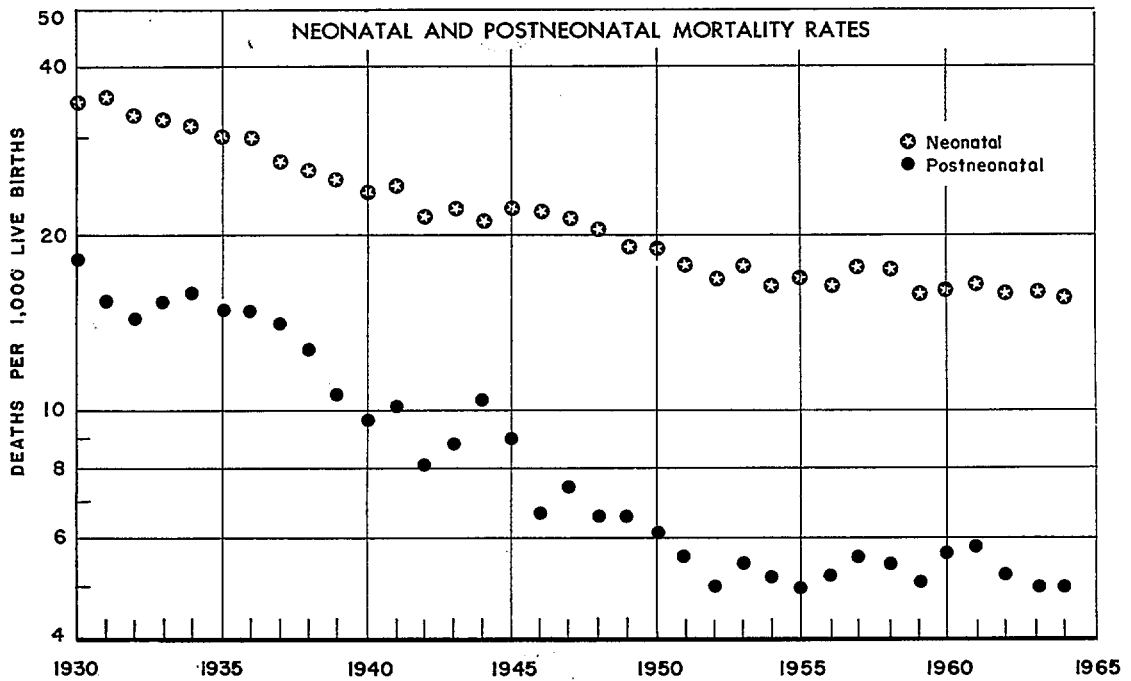
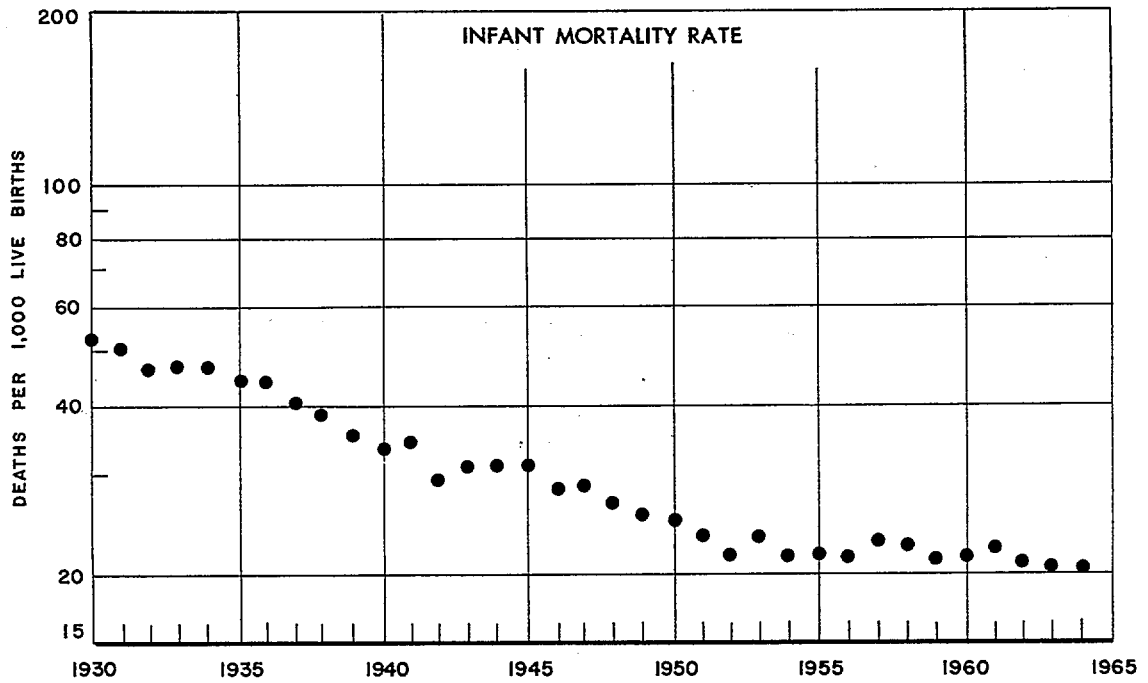




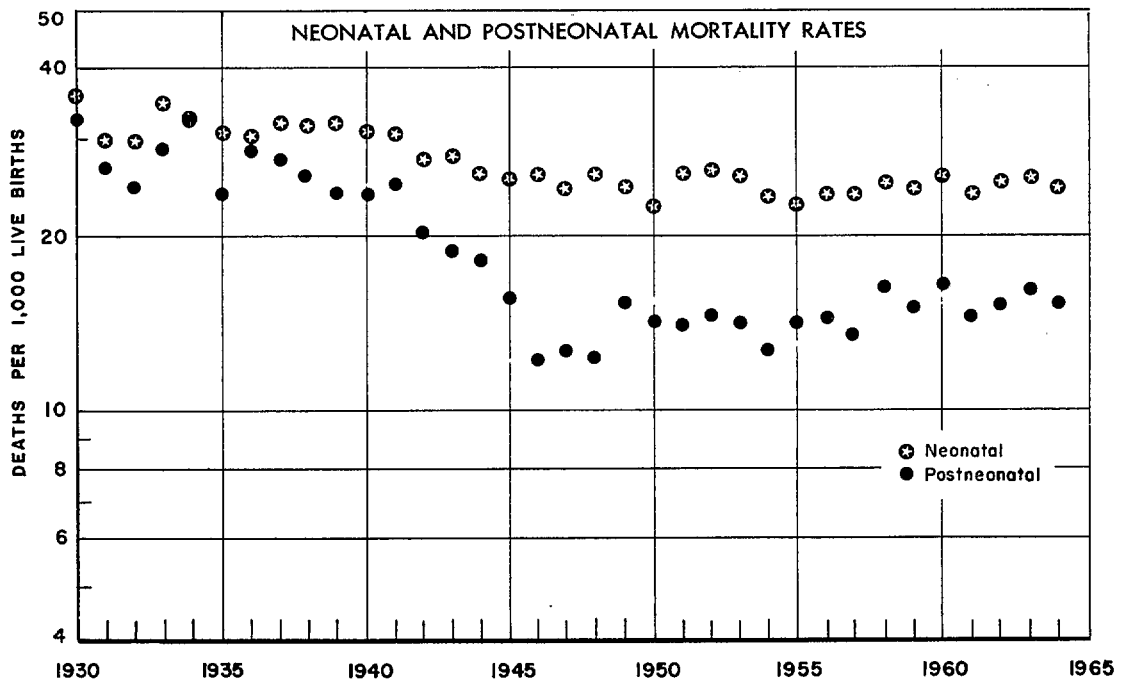
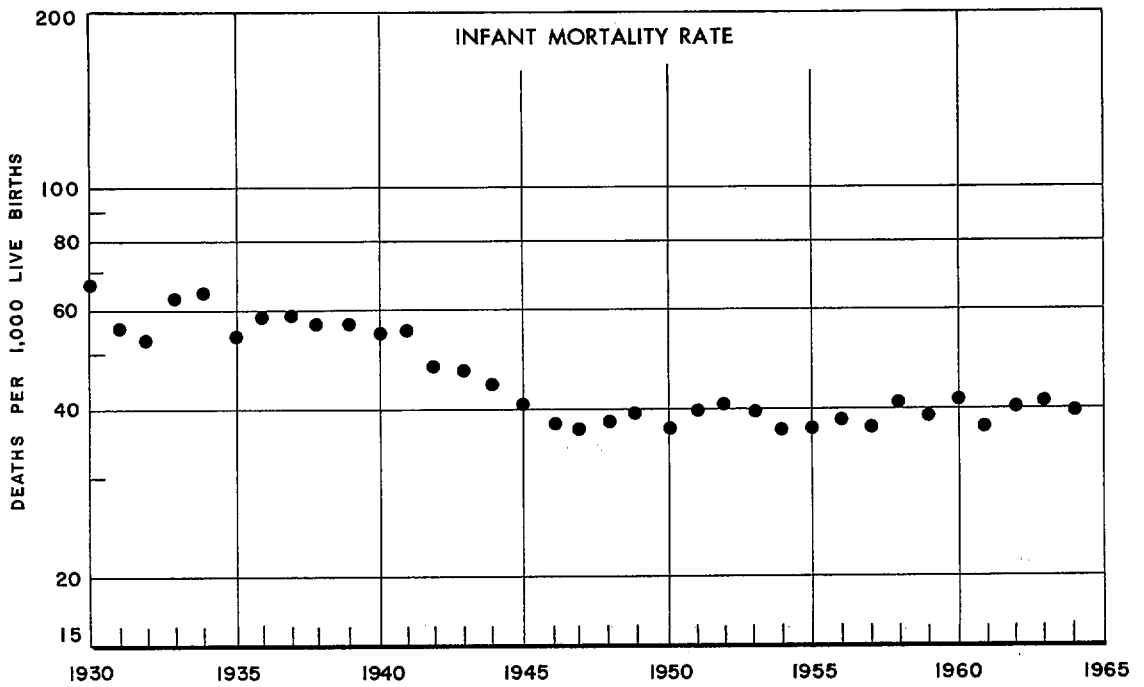
MICHIGAN



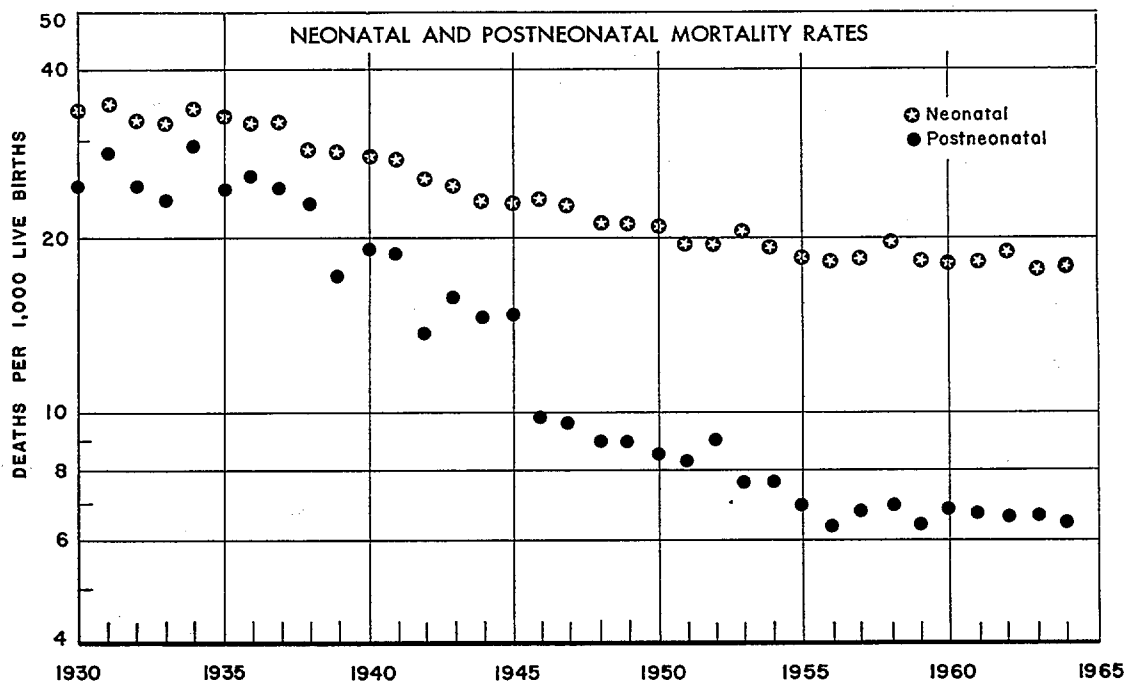
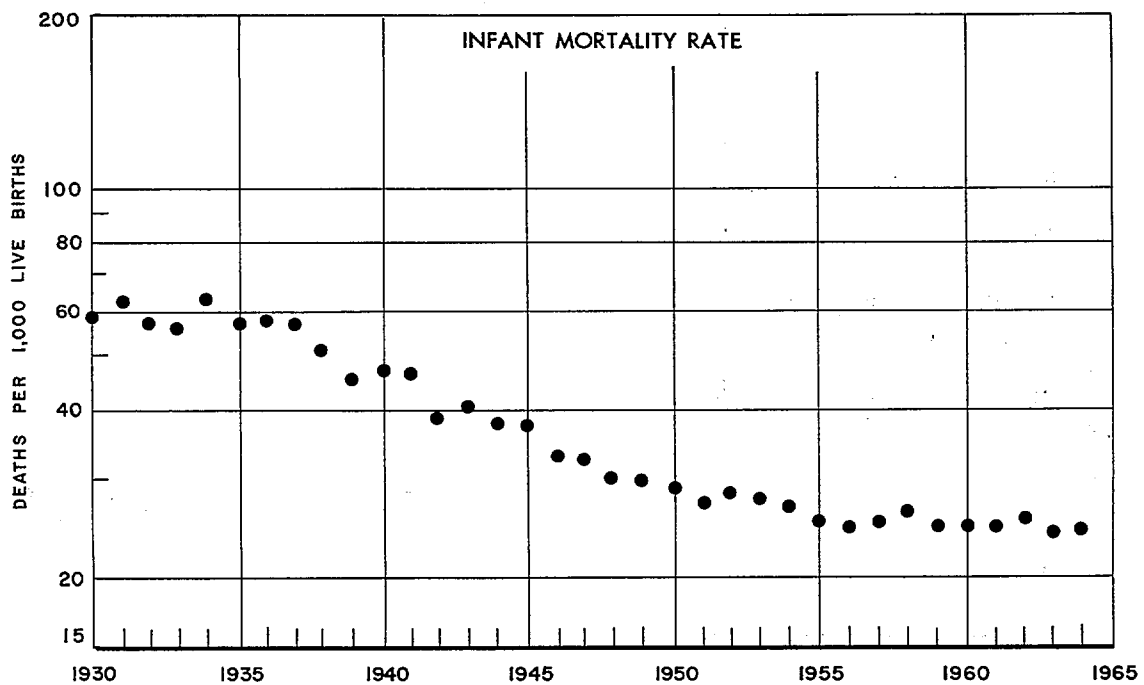
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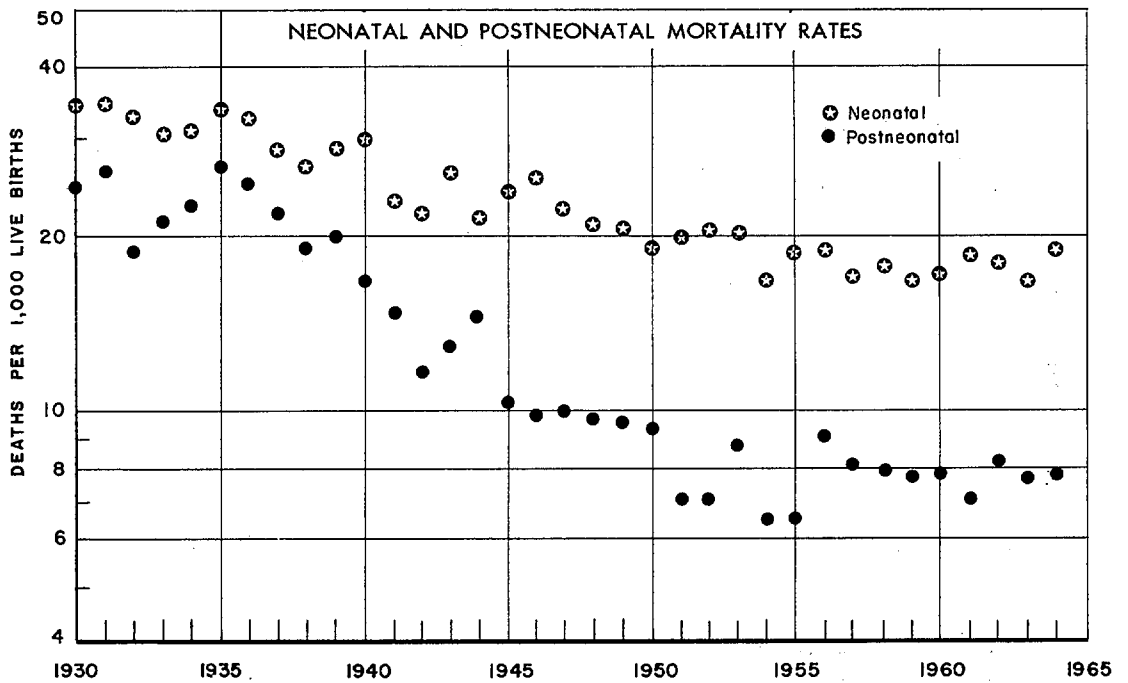
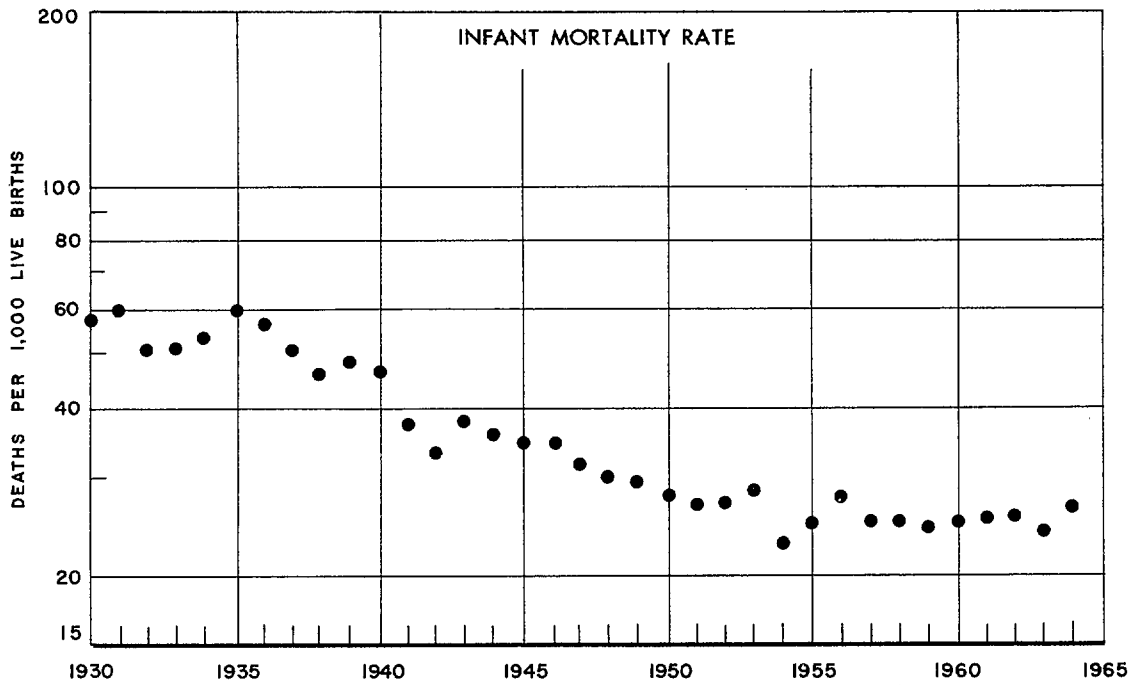
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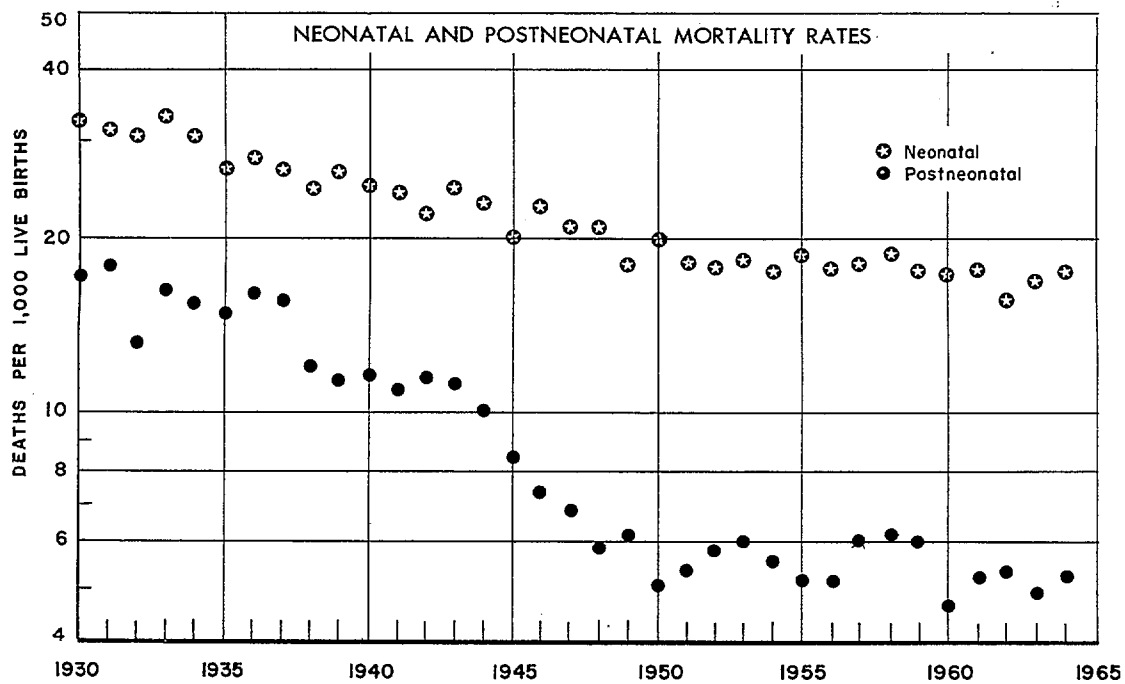
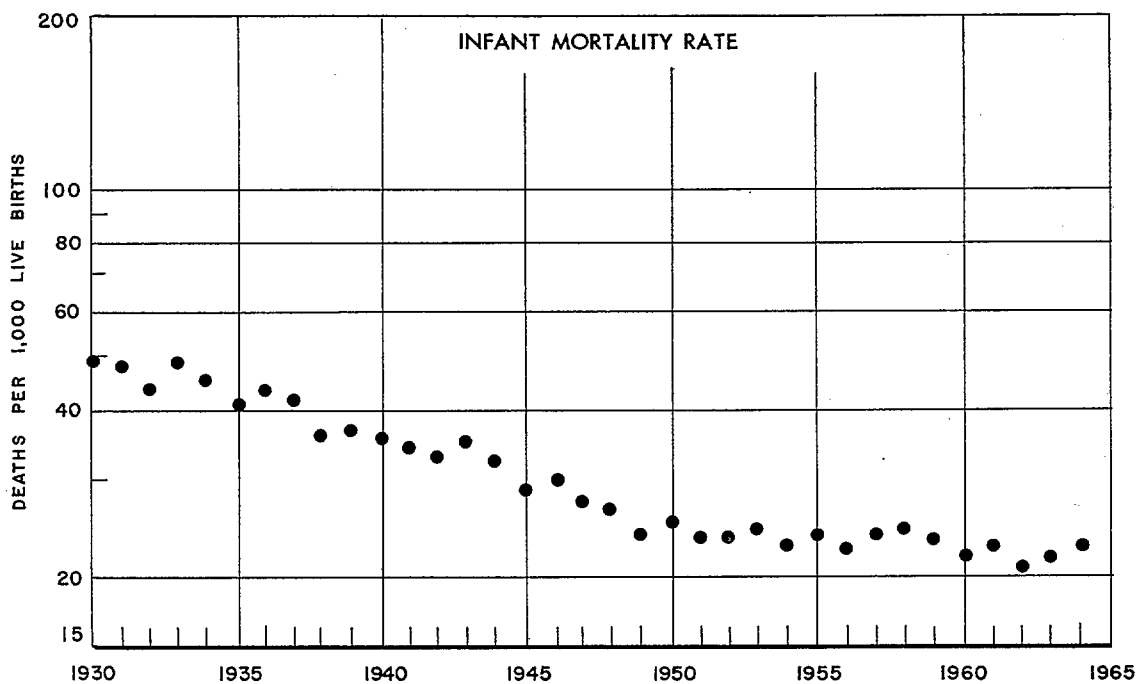
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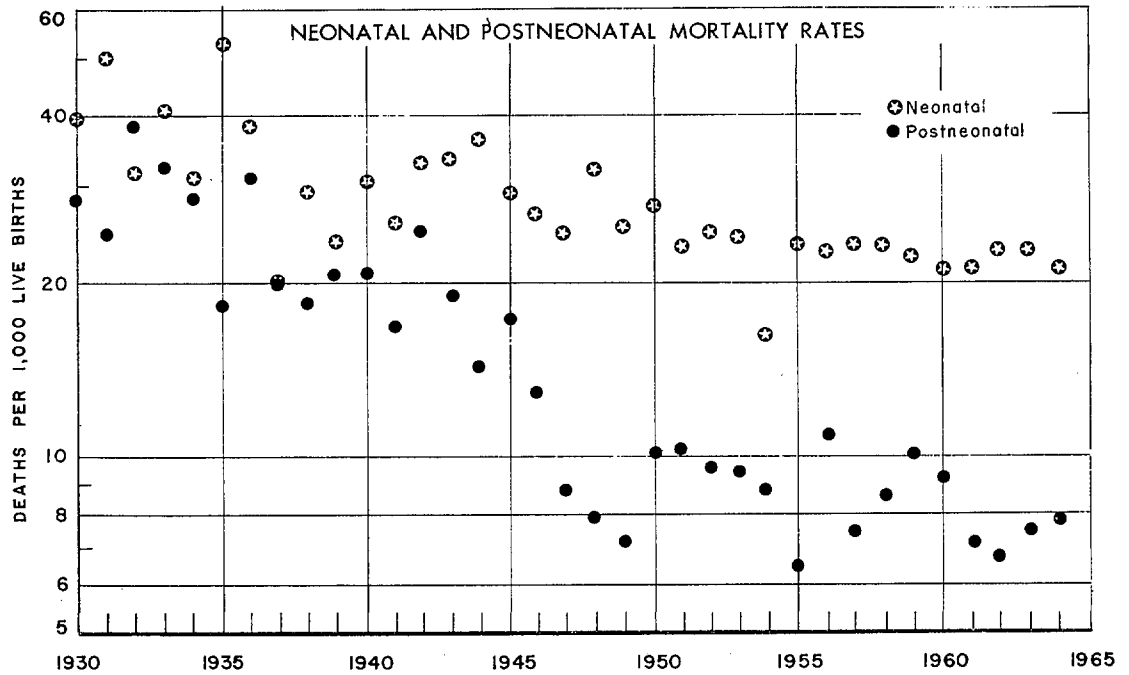
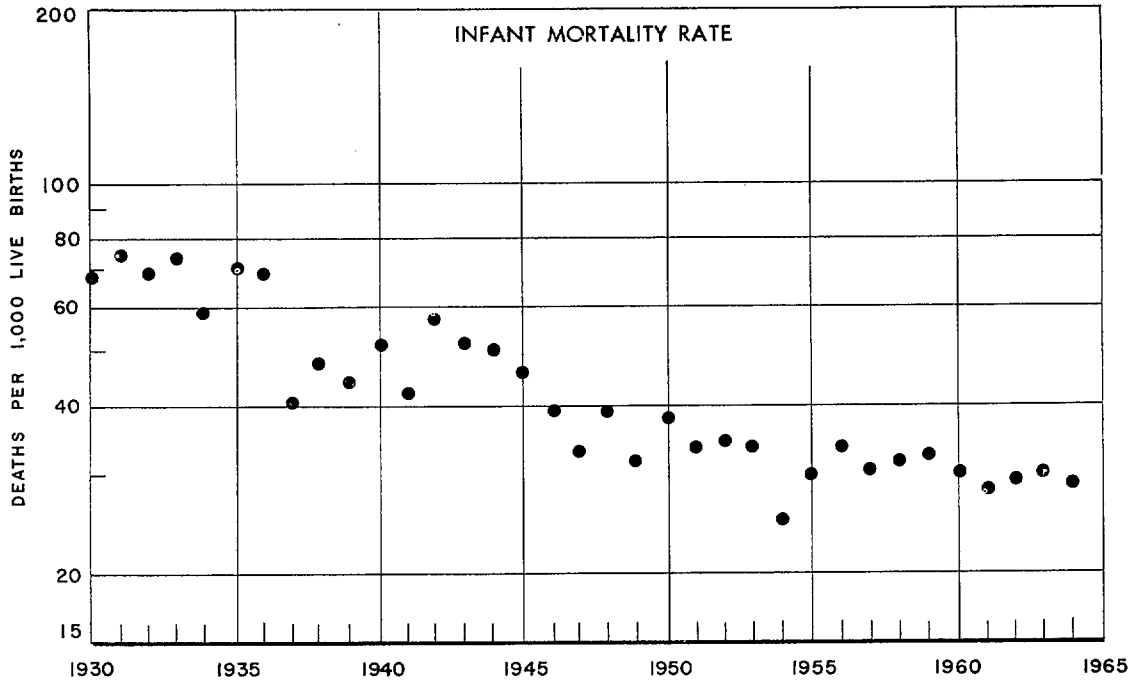
MONTANA



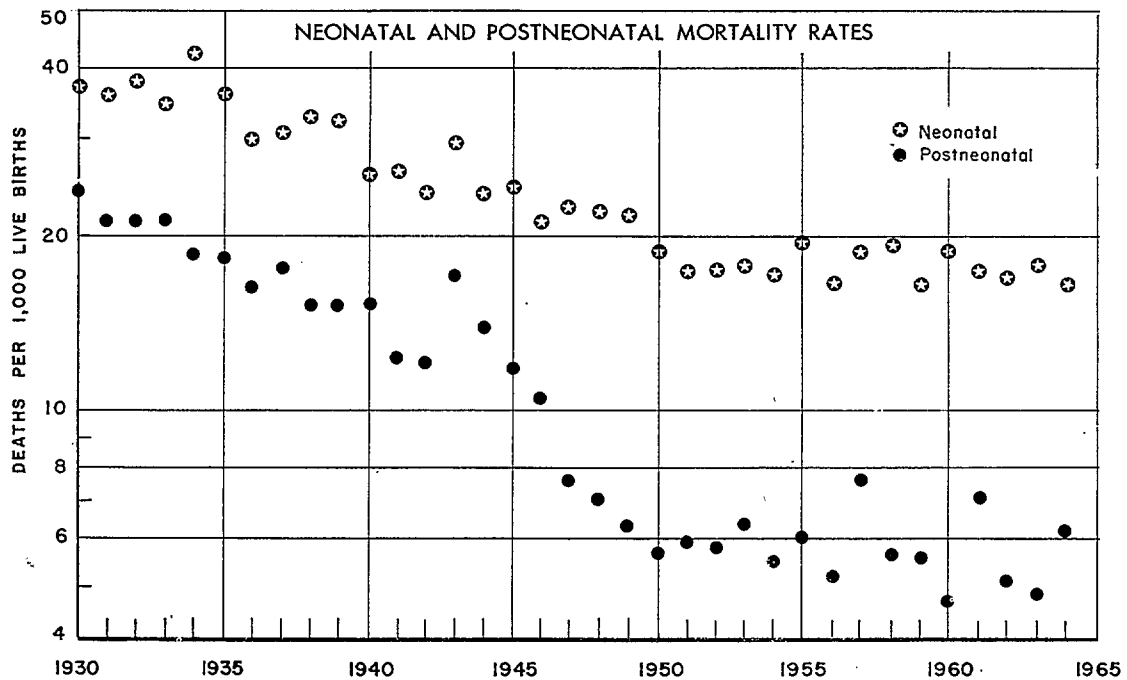
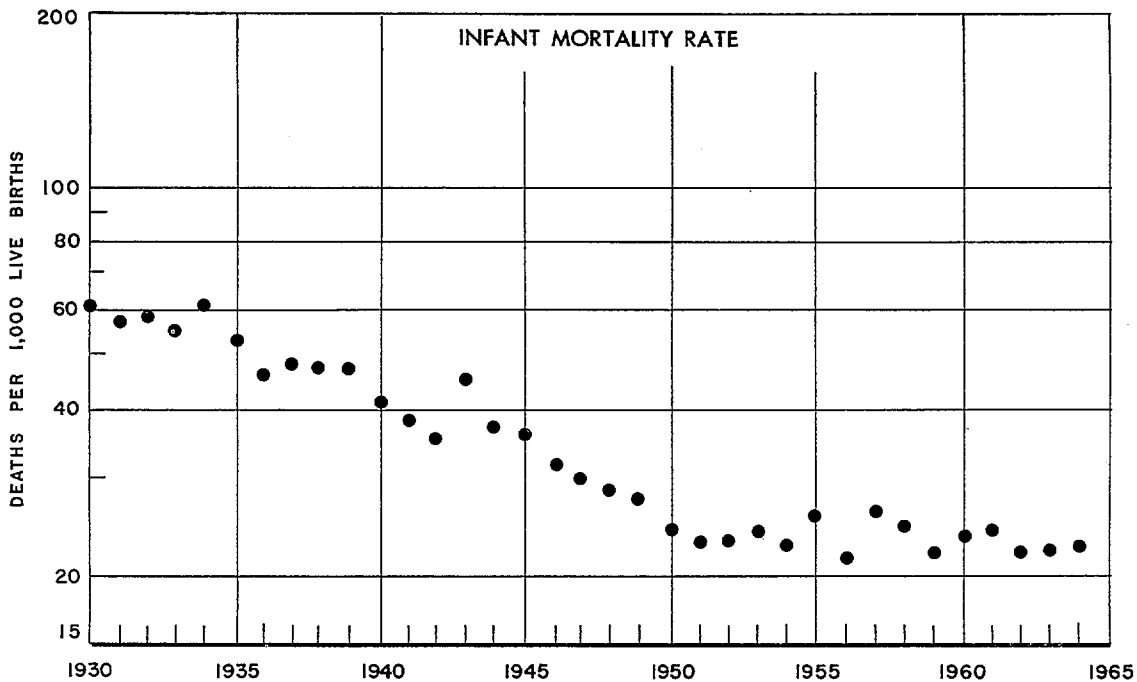
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NEVADA

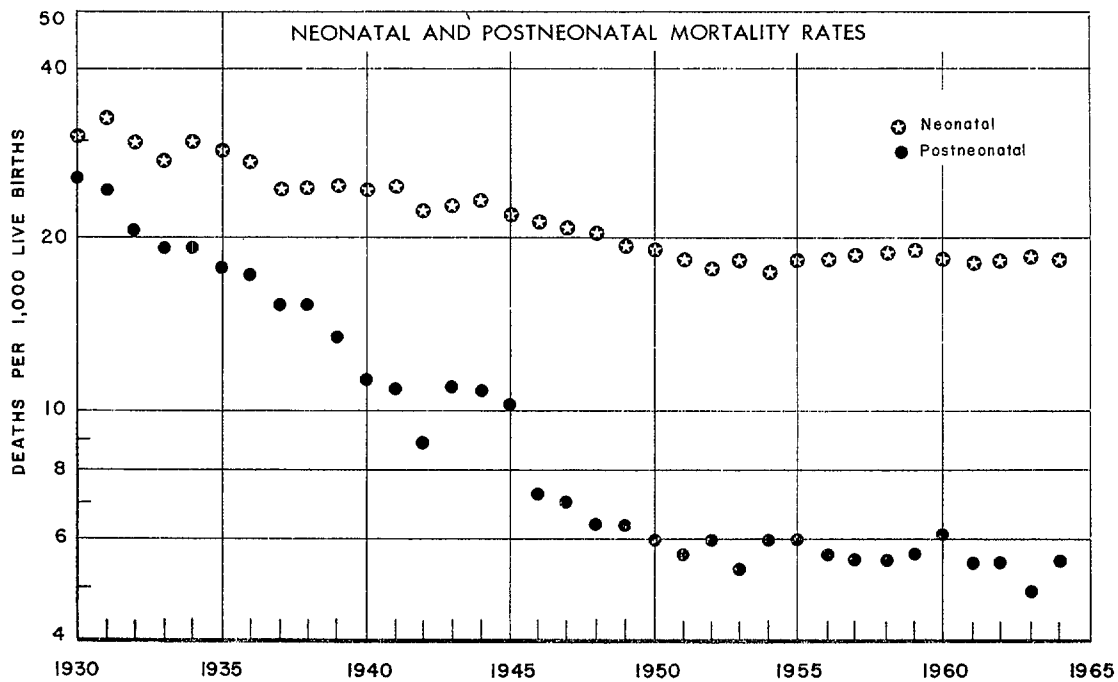
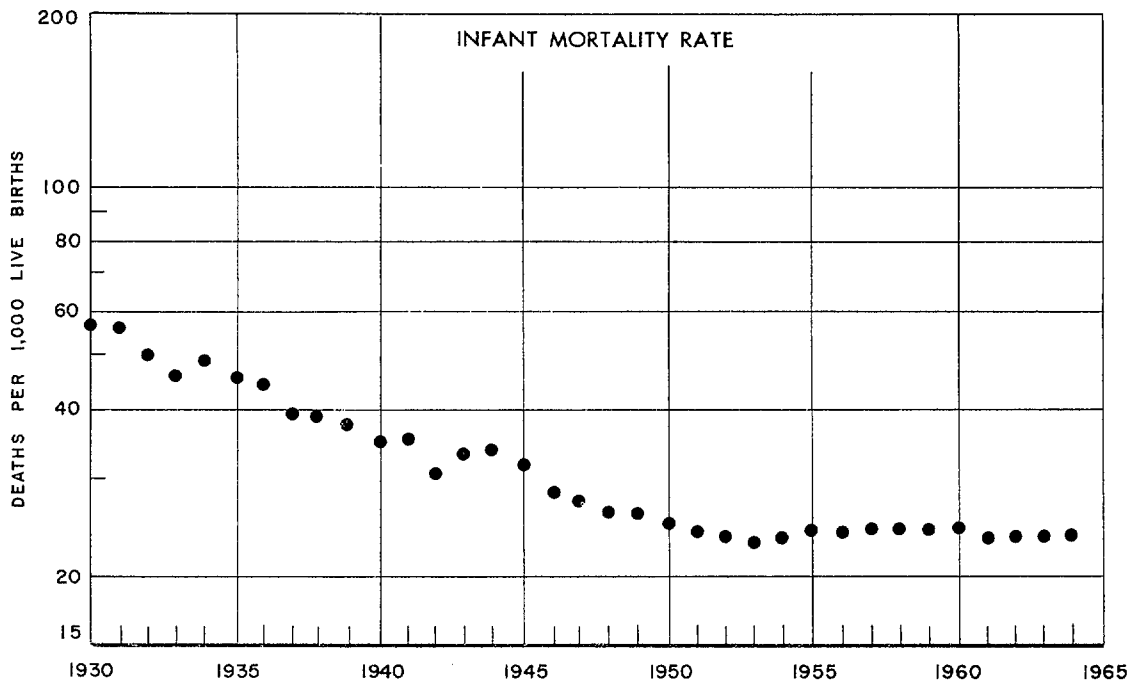


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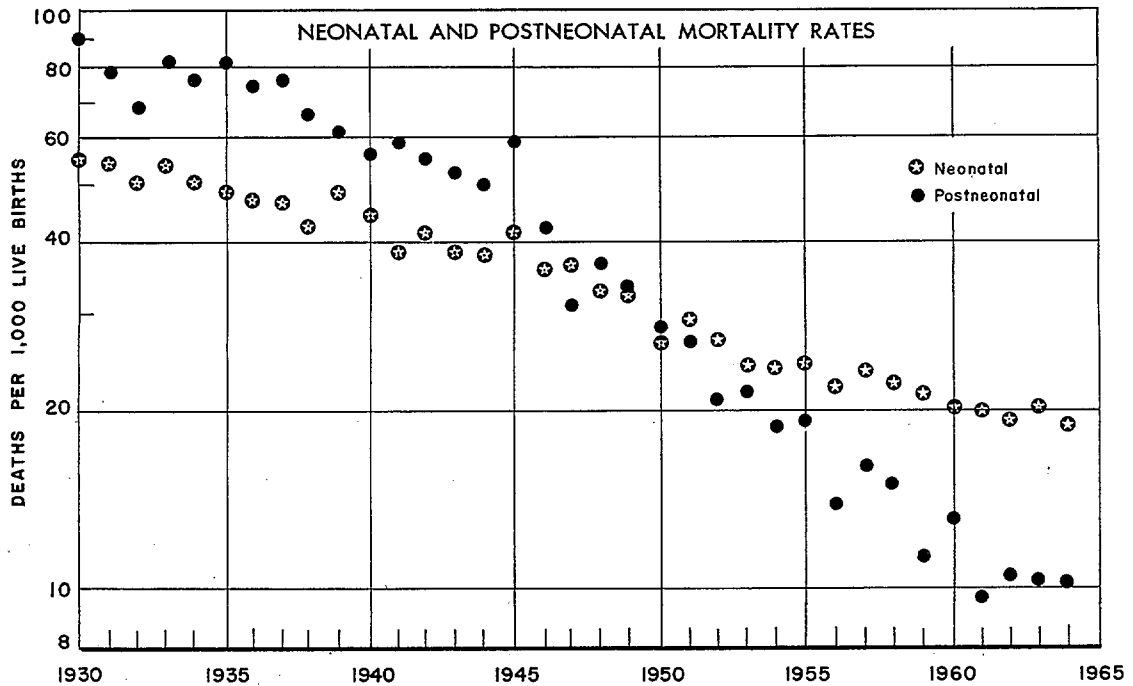
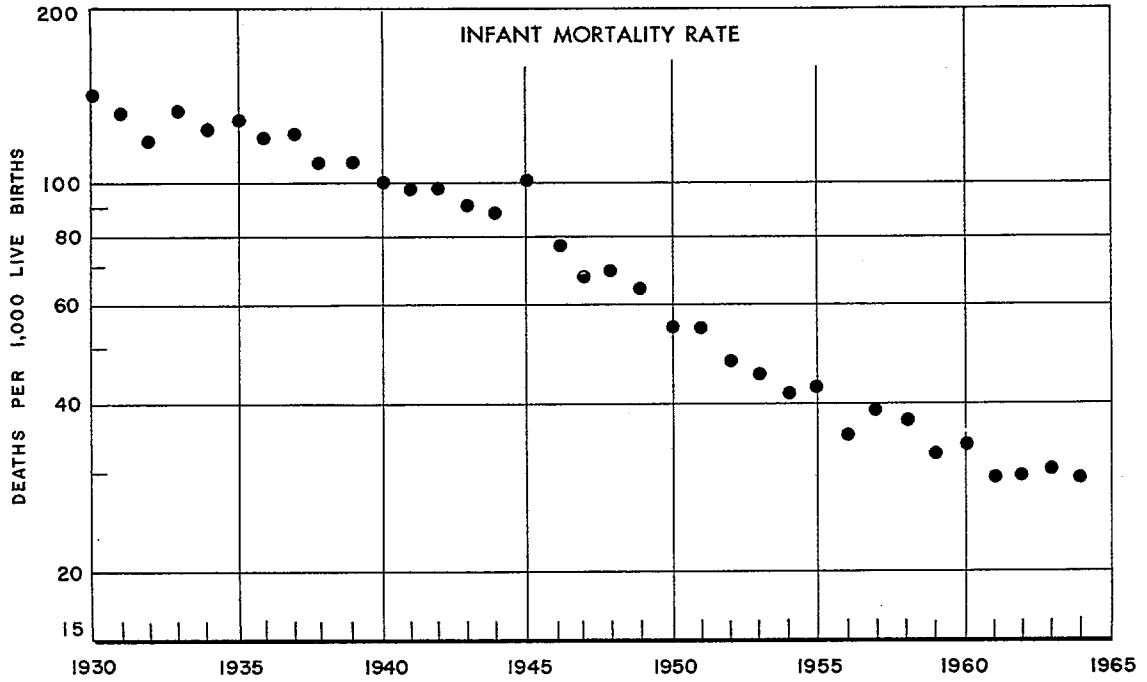




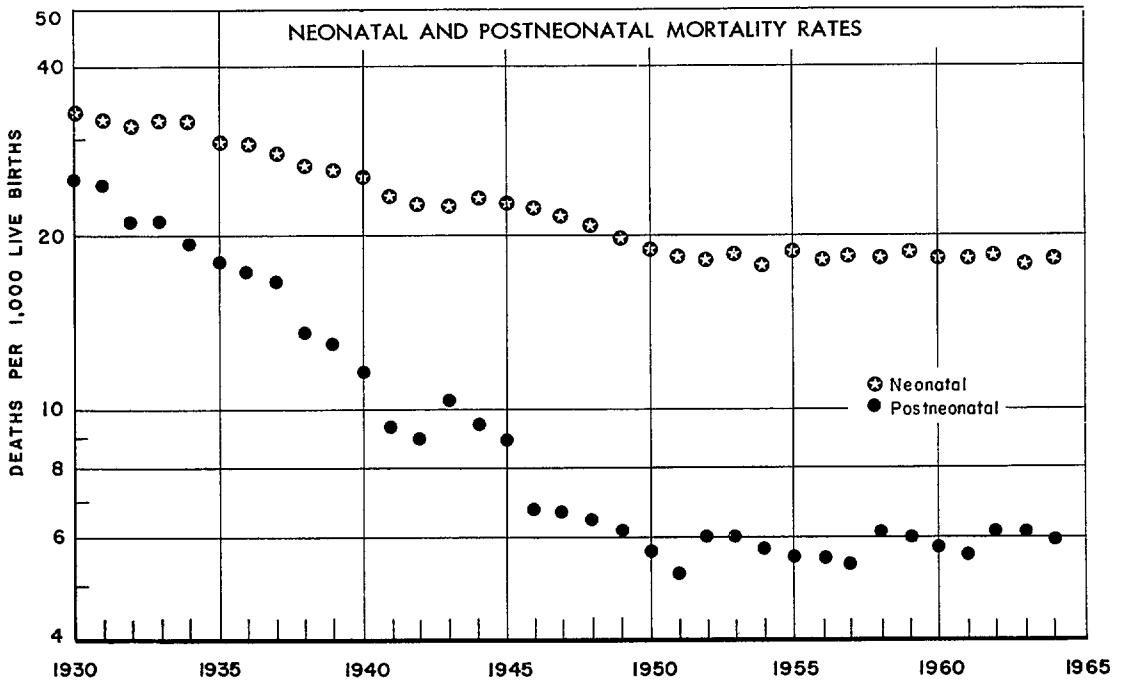
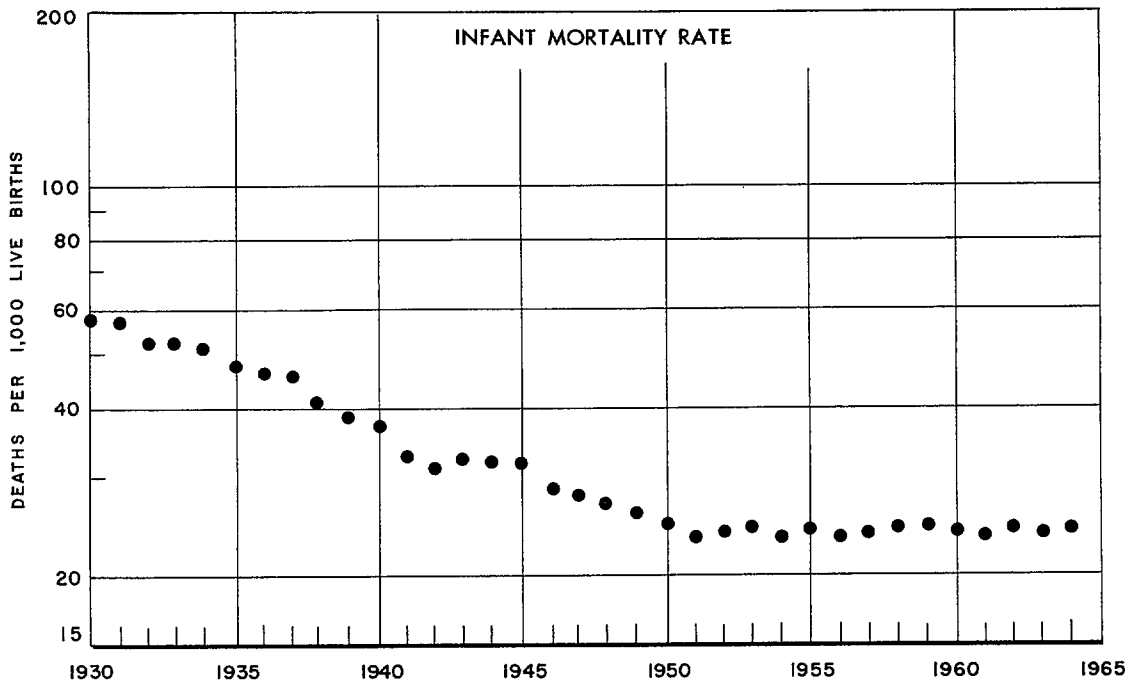
NEW JERSEY



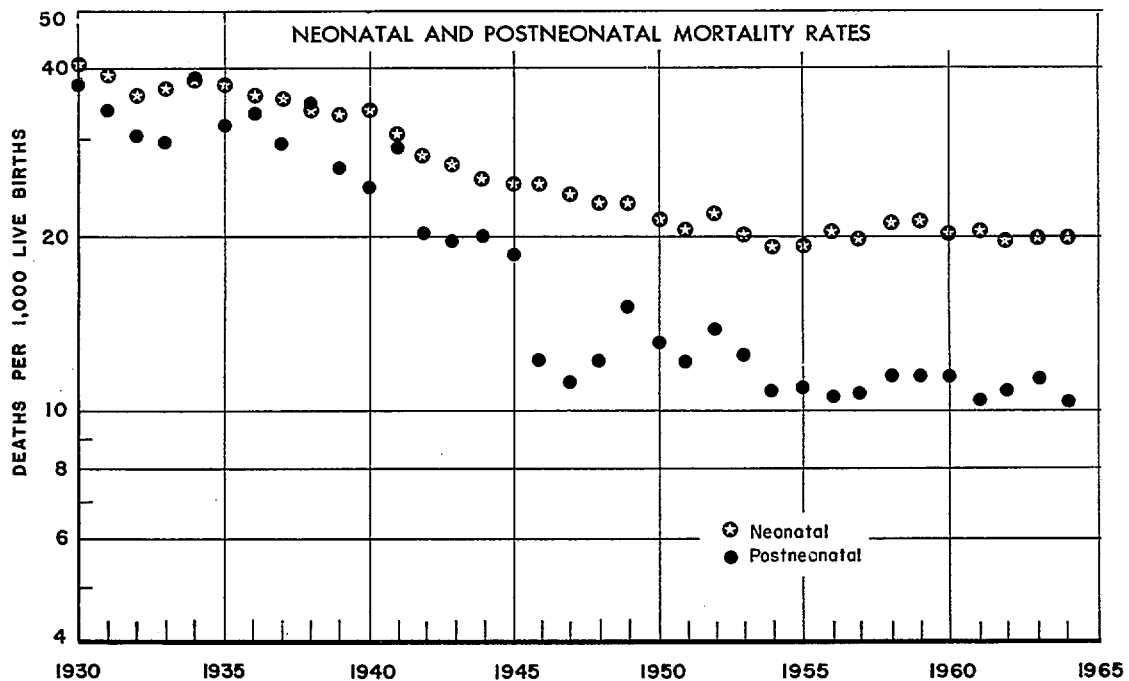
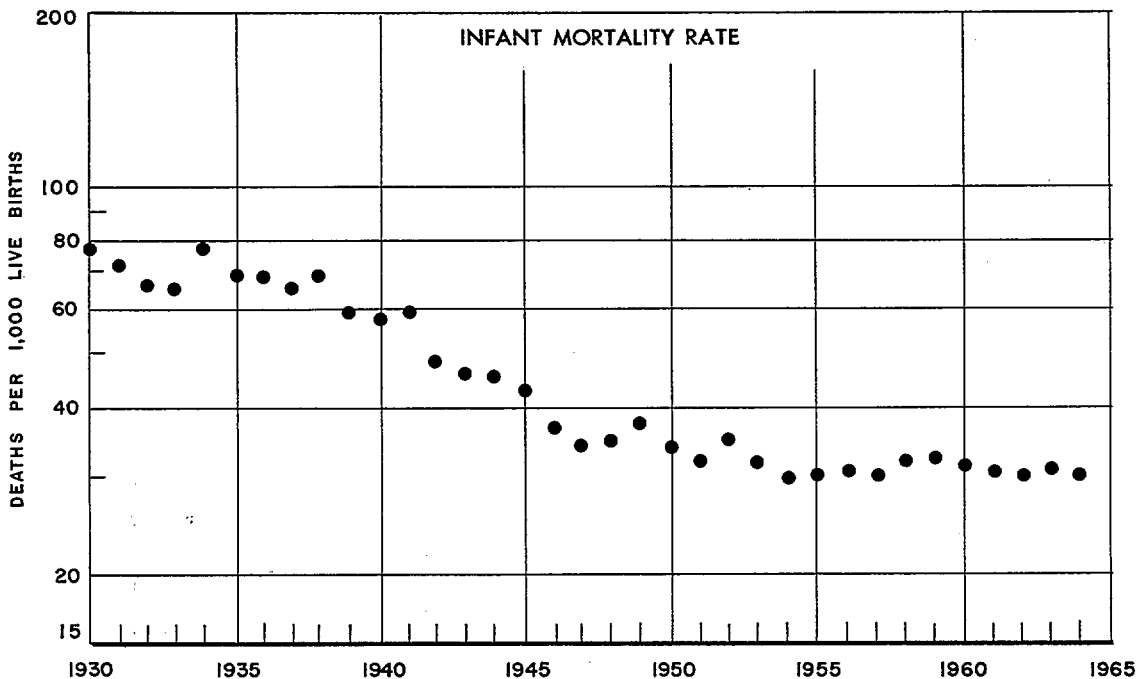
NEW MEXICO



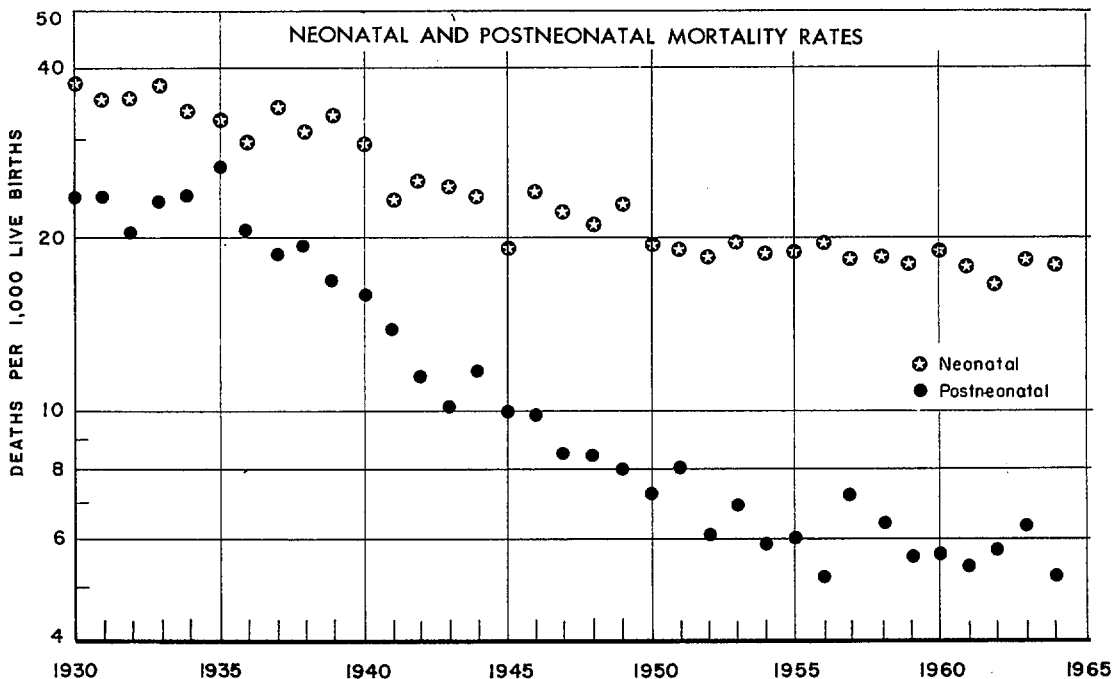
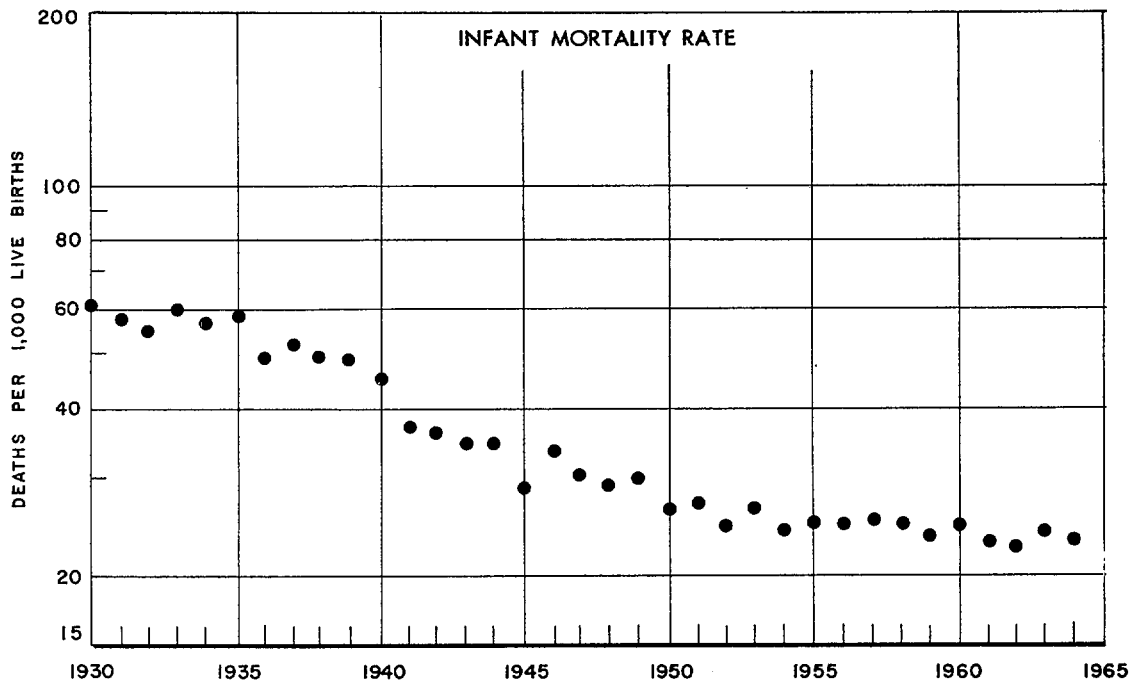
NEW YORK



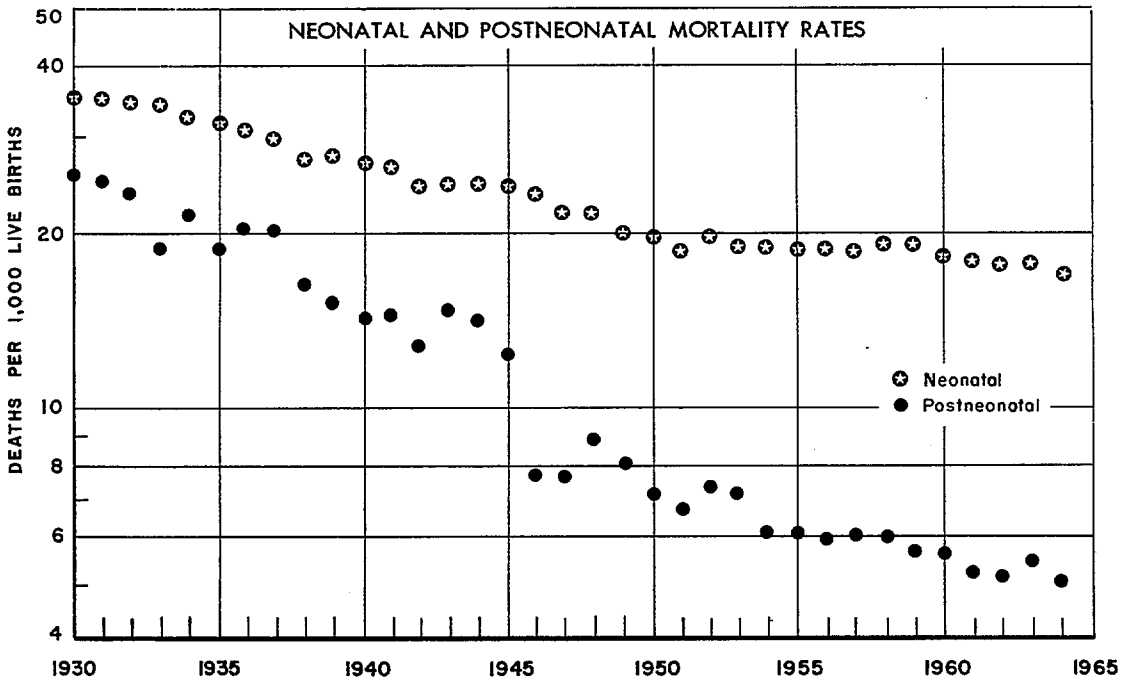
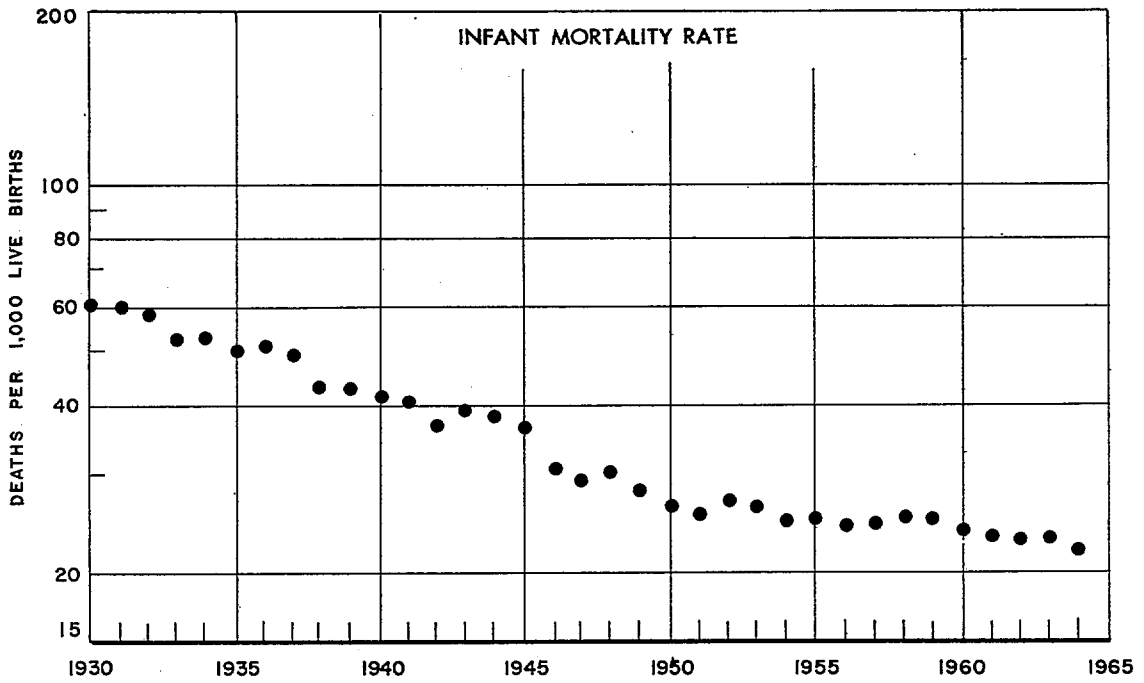
# NORTH CAROLINA



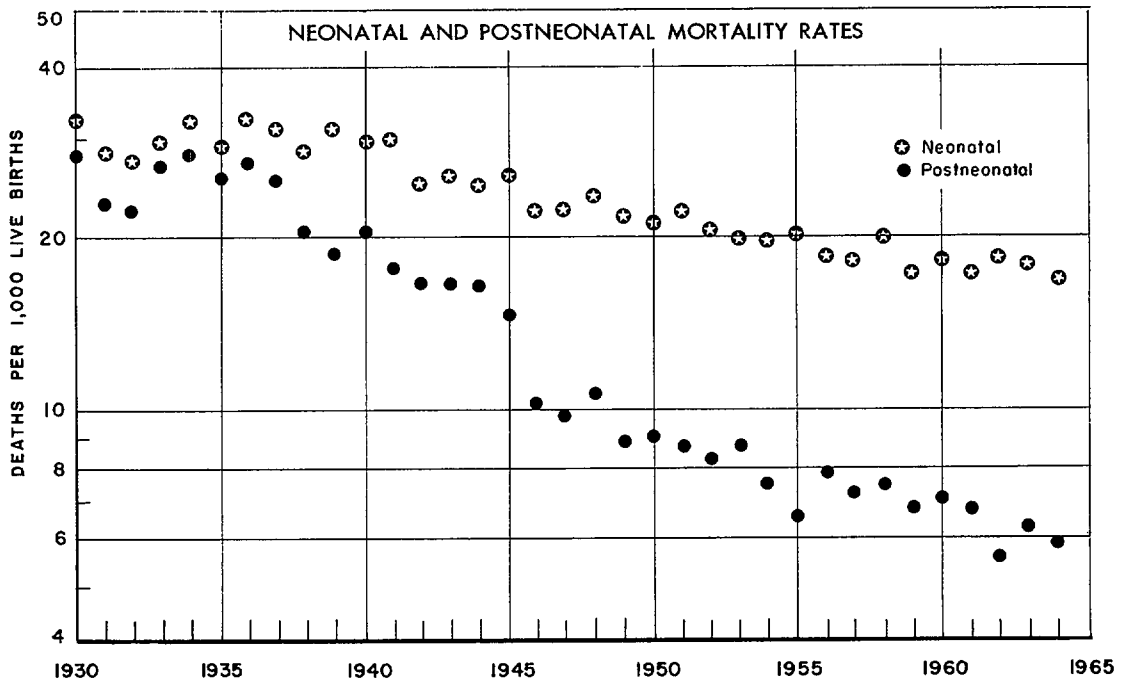
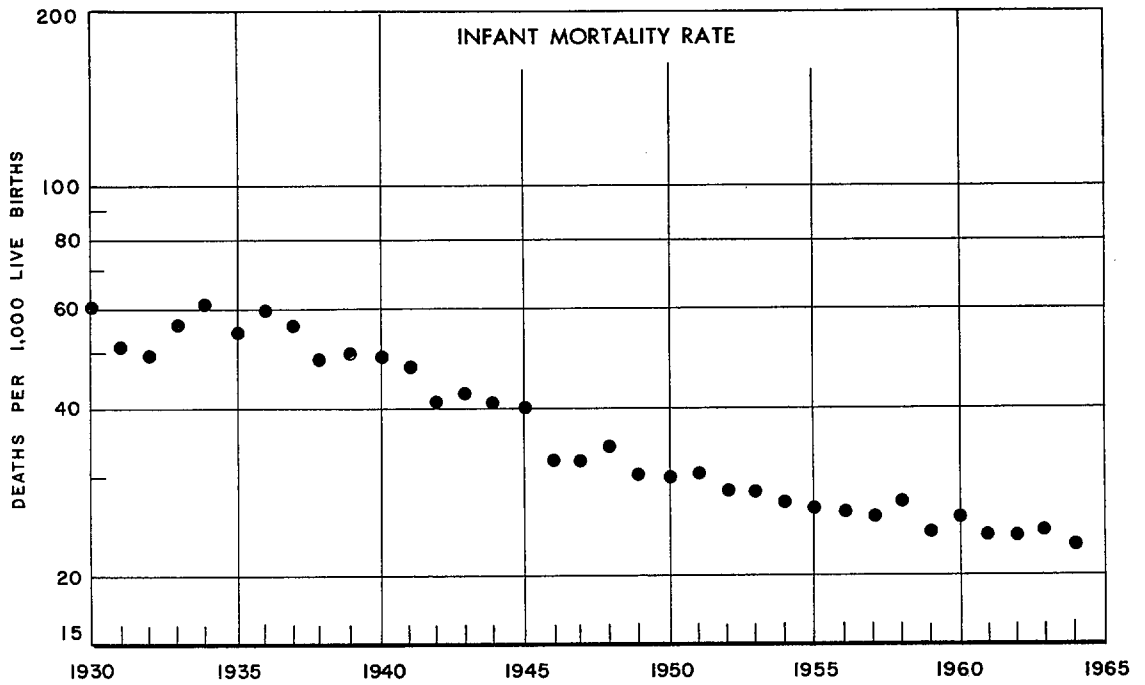
NORTH DAKOTA



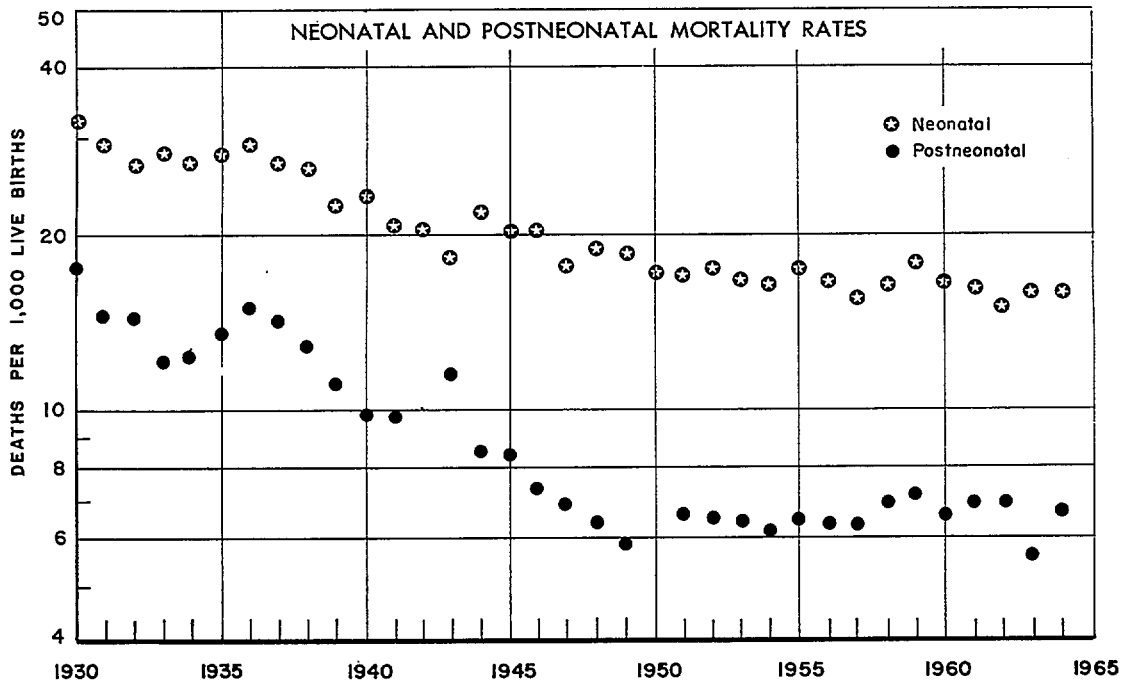
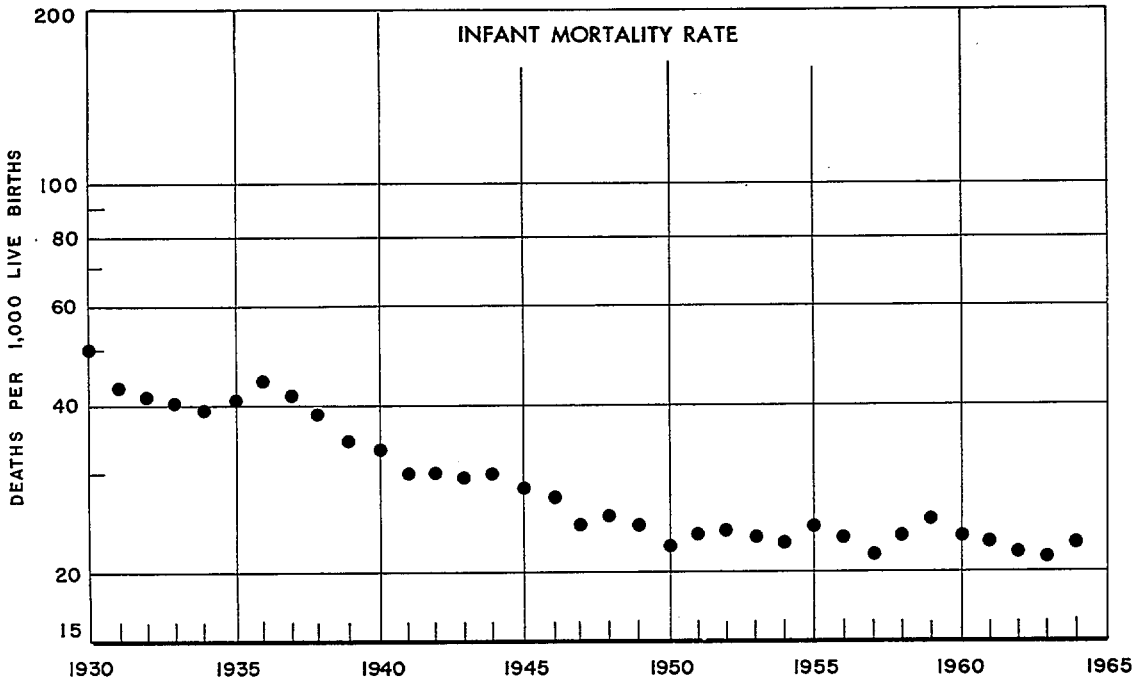
OHIO



OKLAHOMA

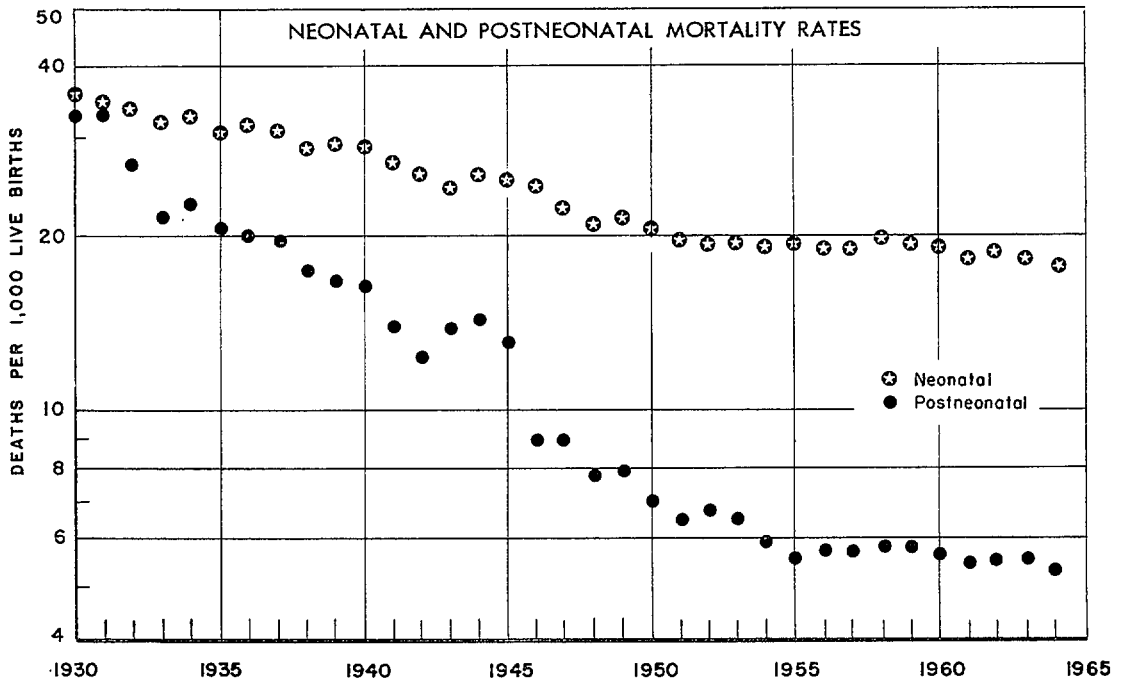
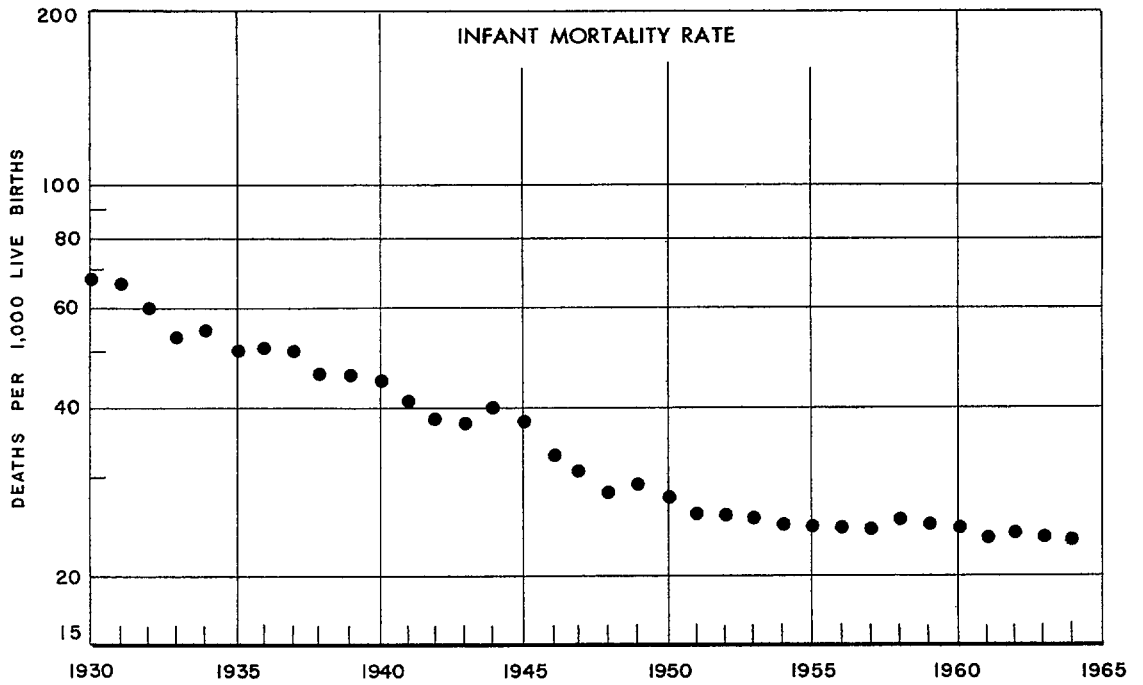


OREGON

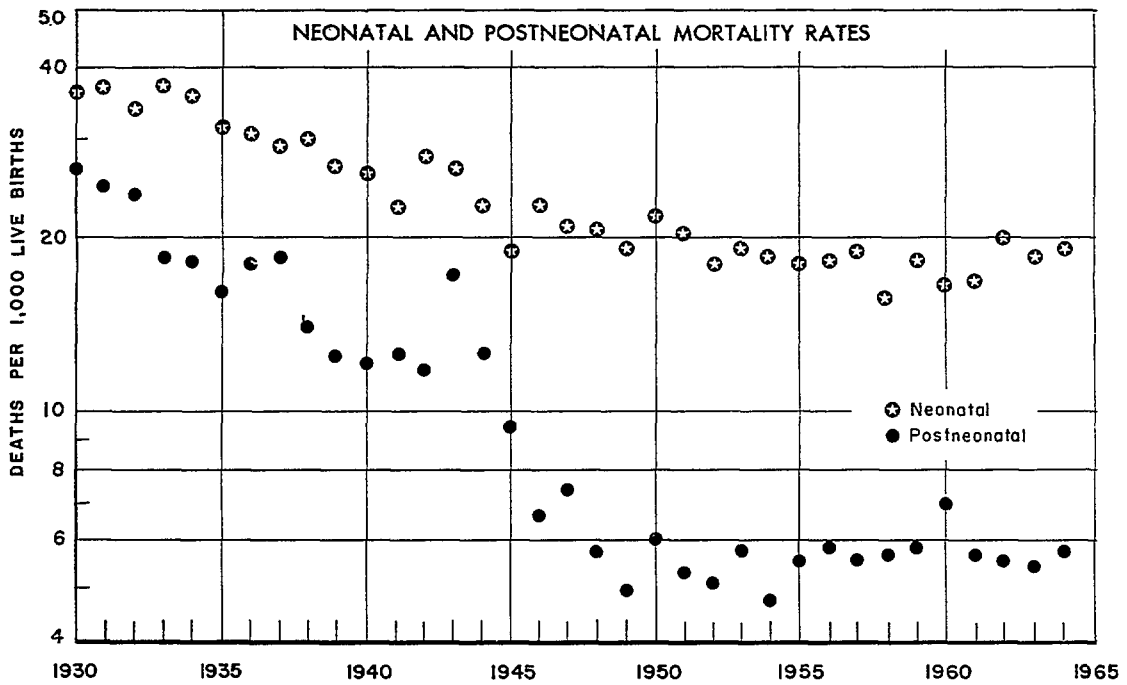
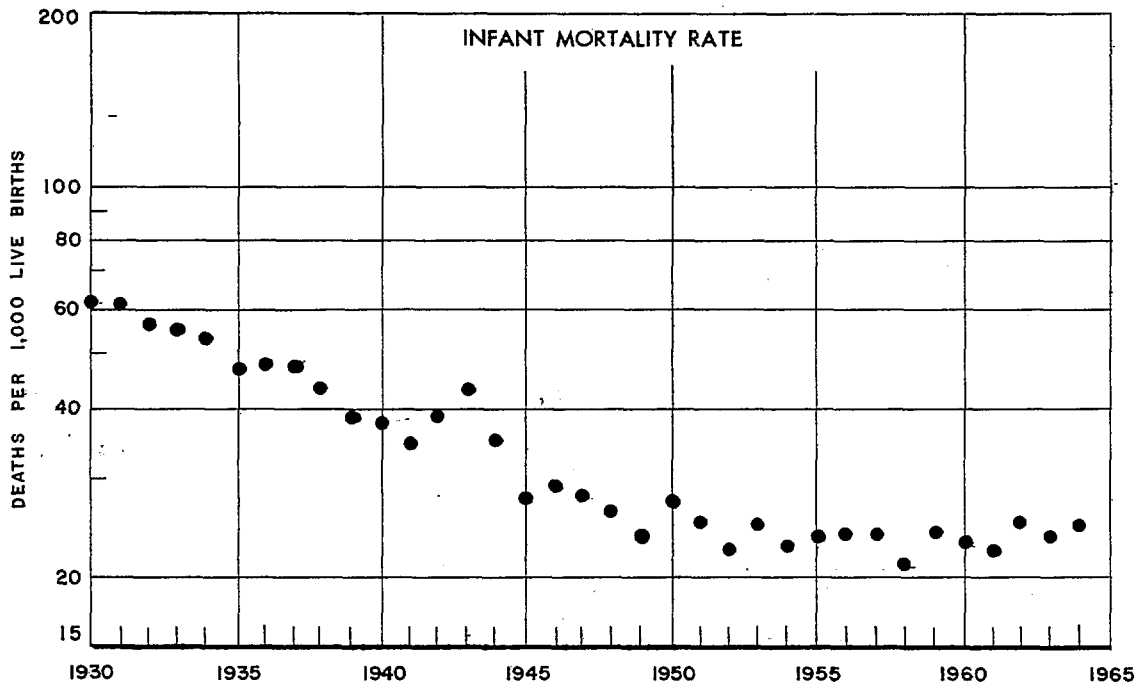




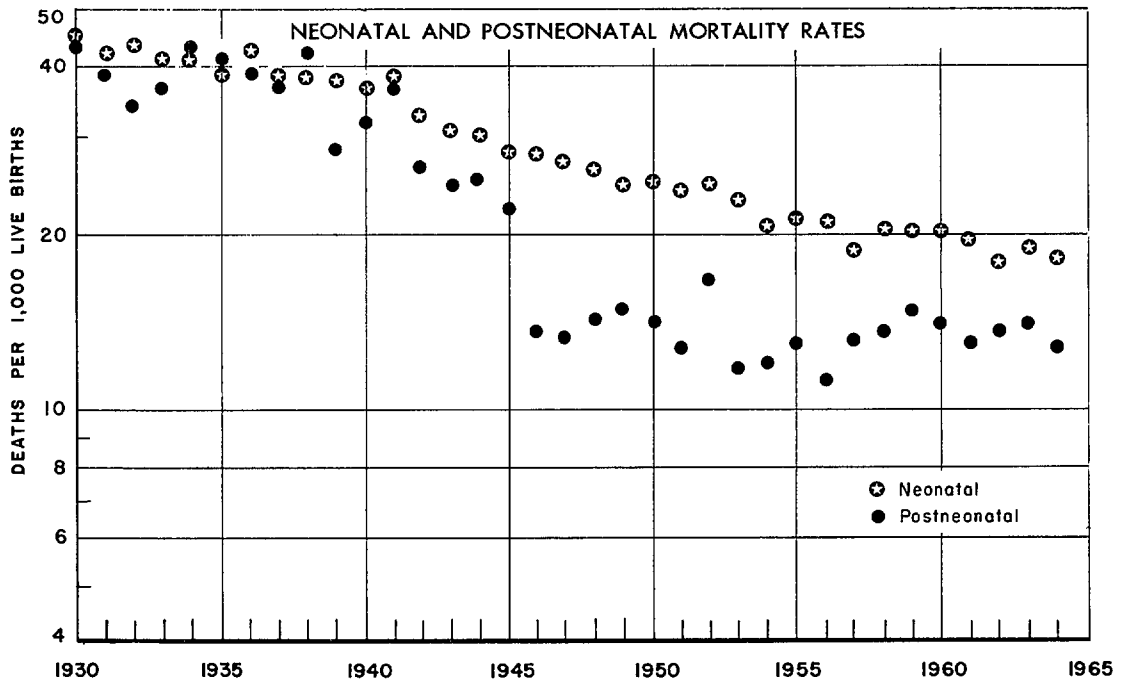
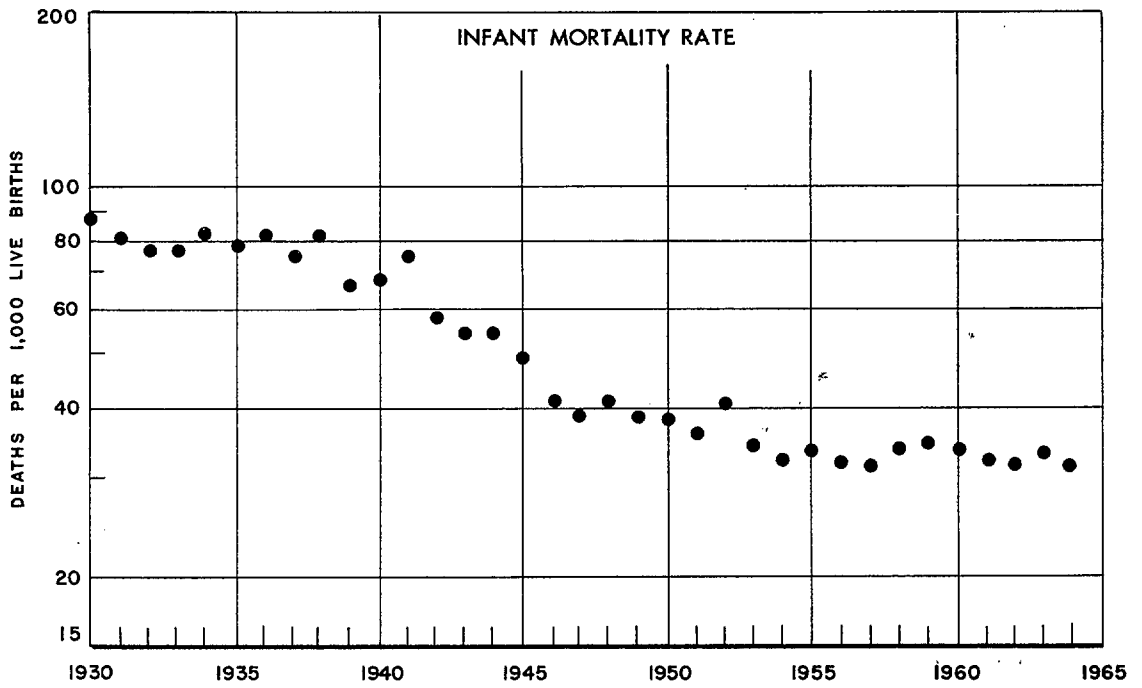
PENNSYLVANIA



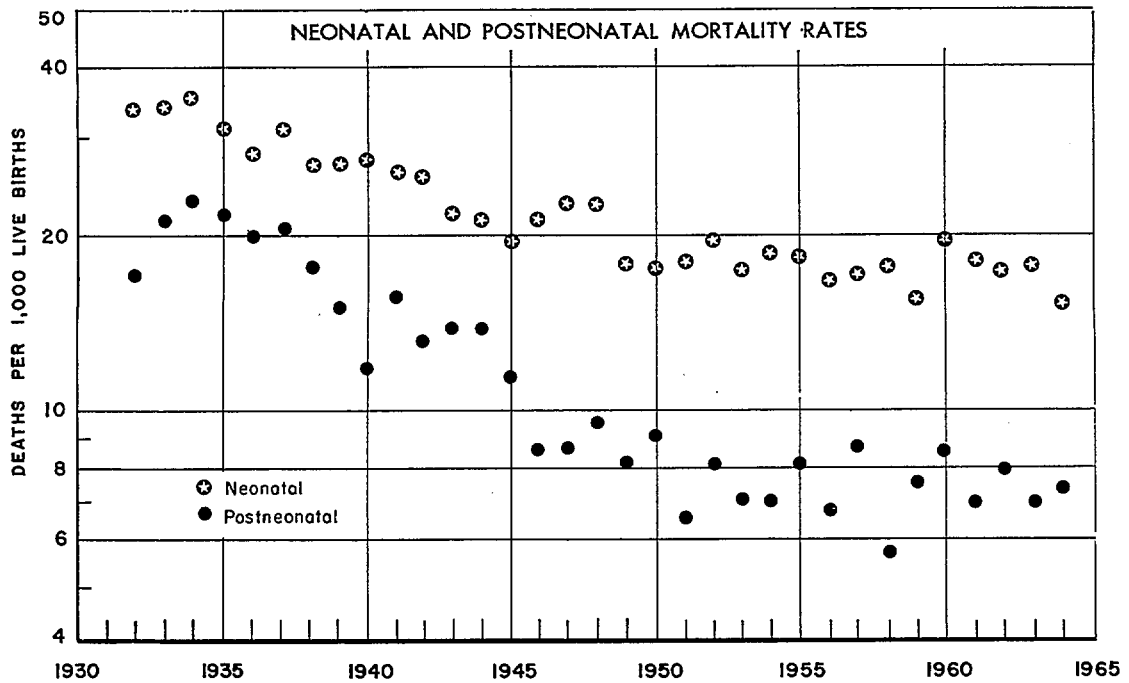
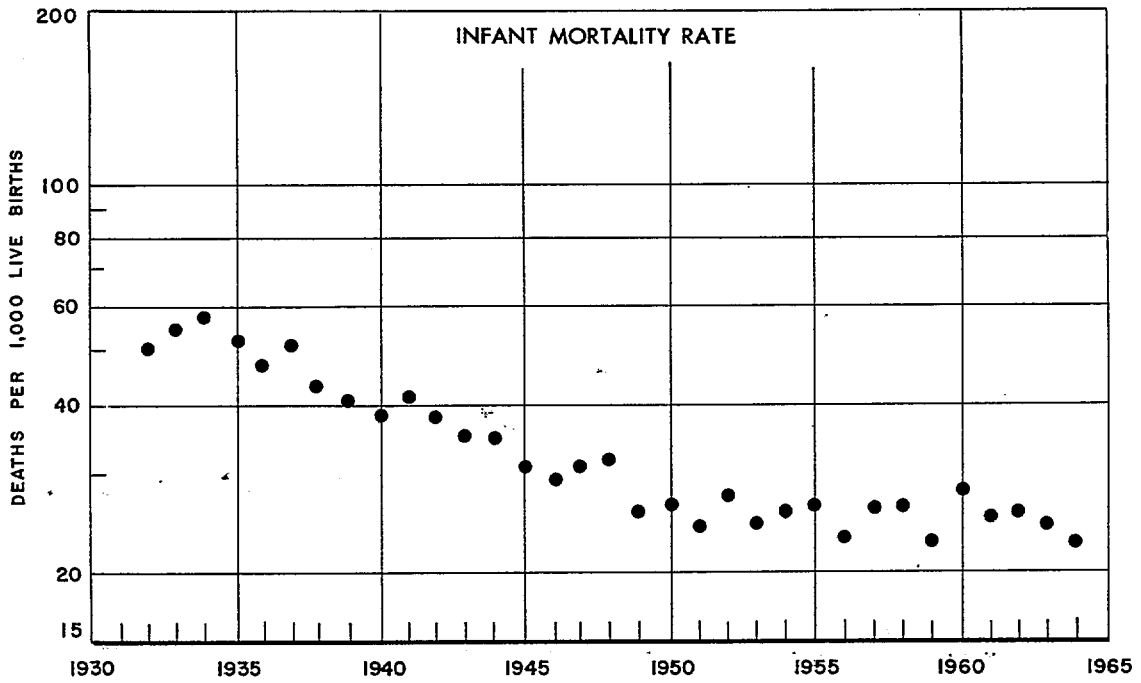
RHODE ISLAND



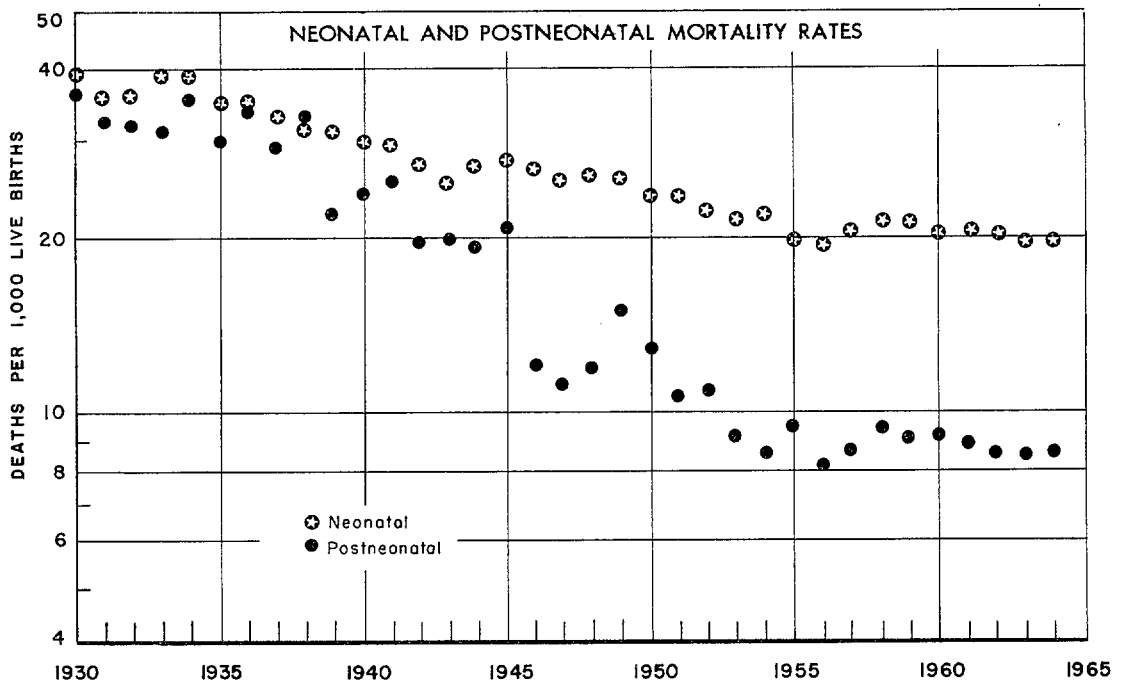
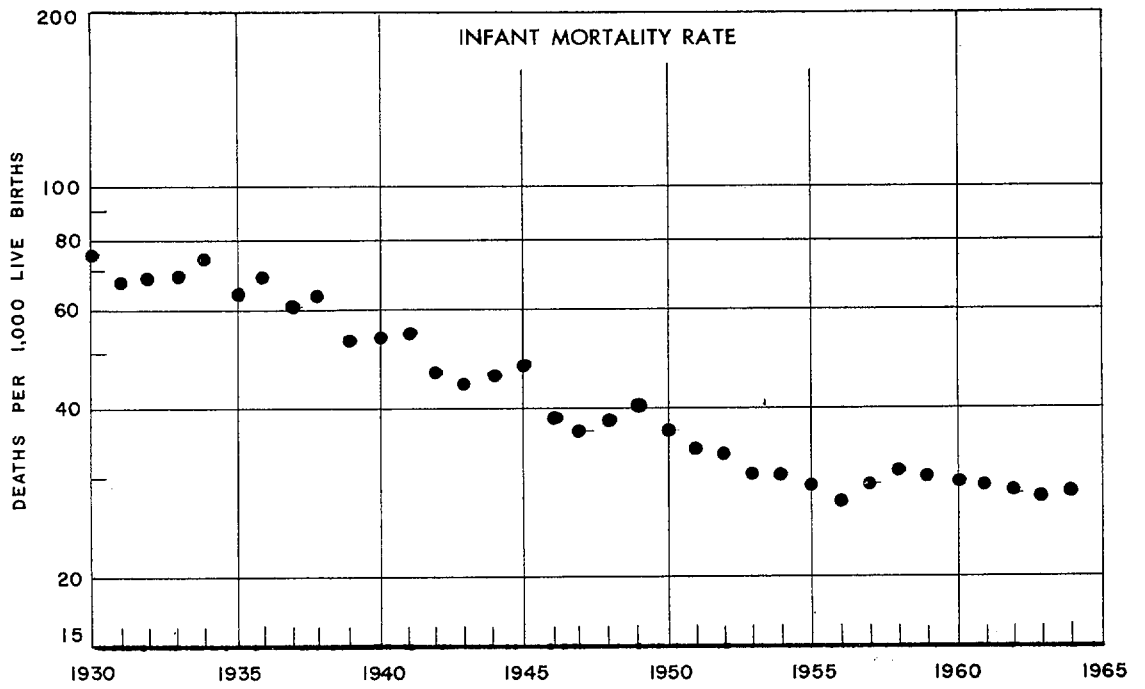
SOUTH CAROLINA



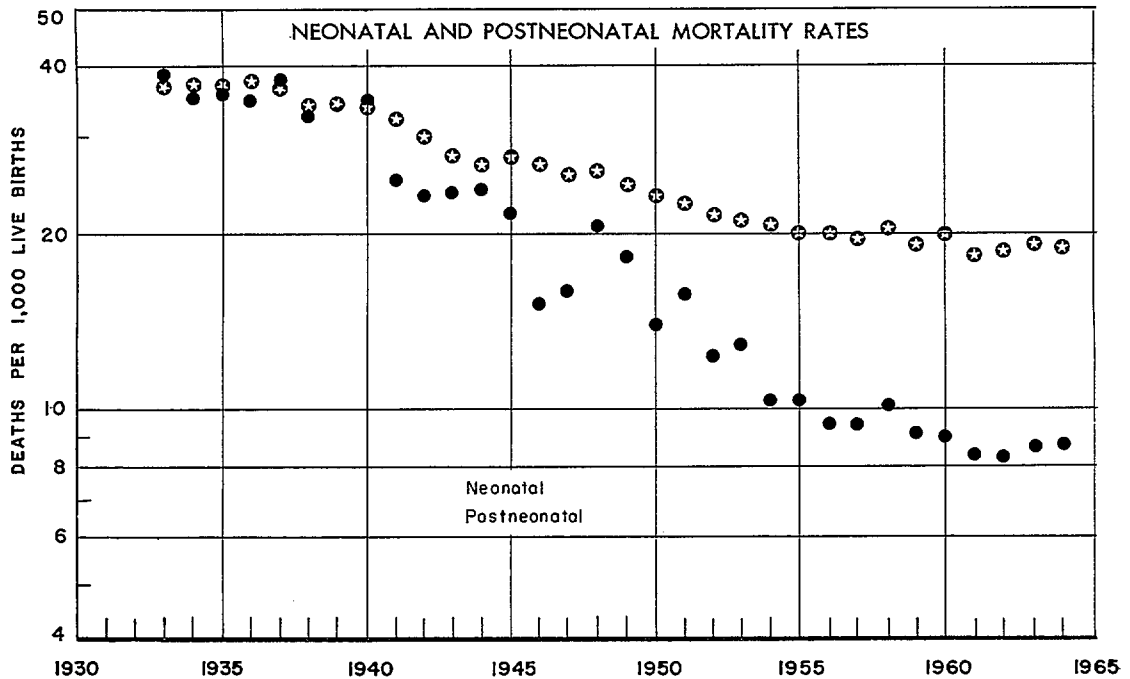
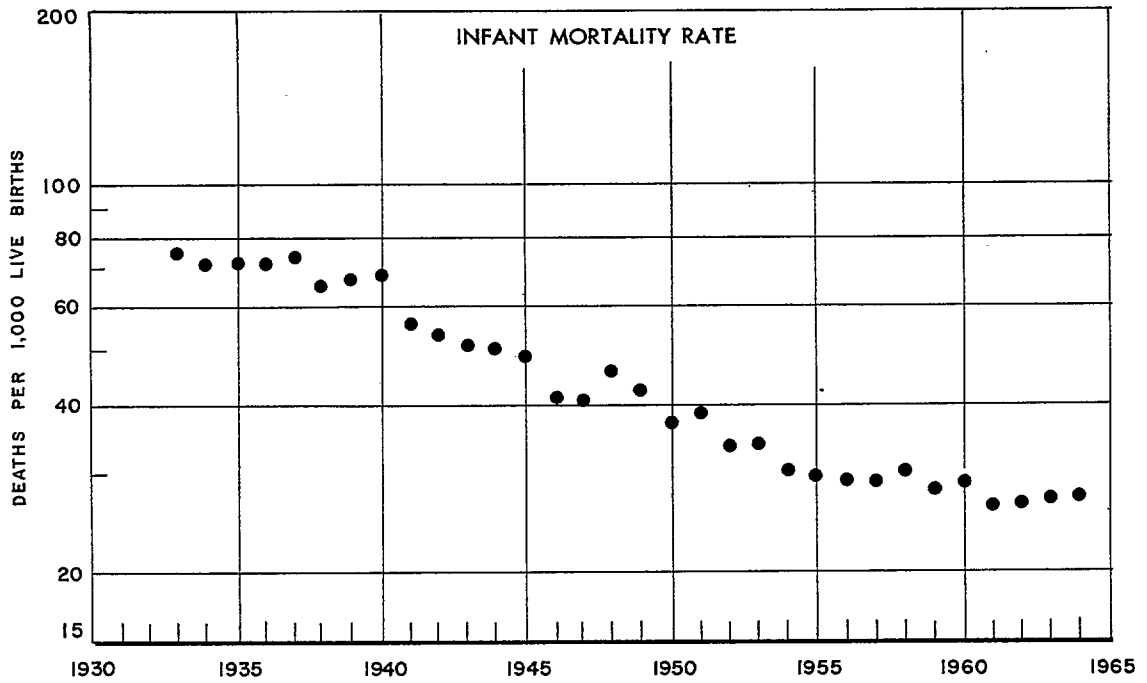
SOUTH DAKOTA



TENNESSEE

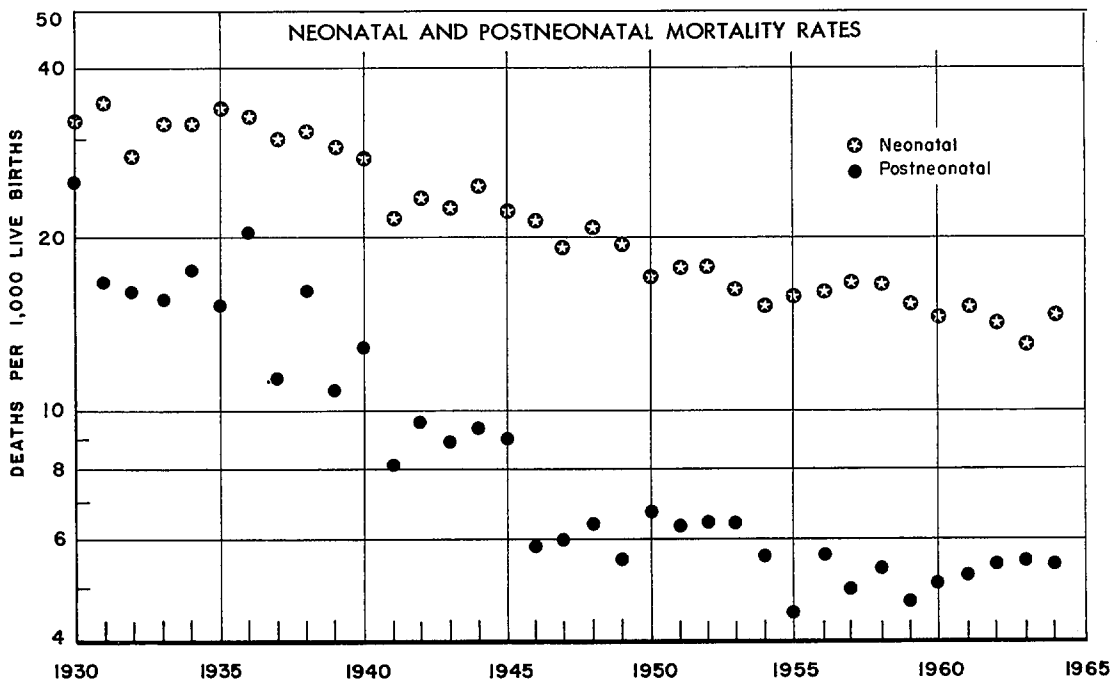
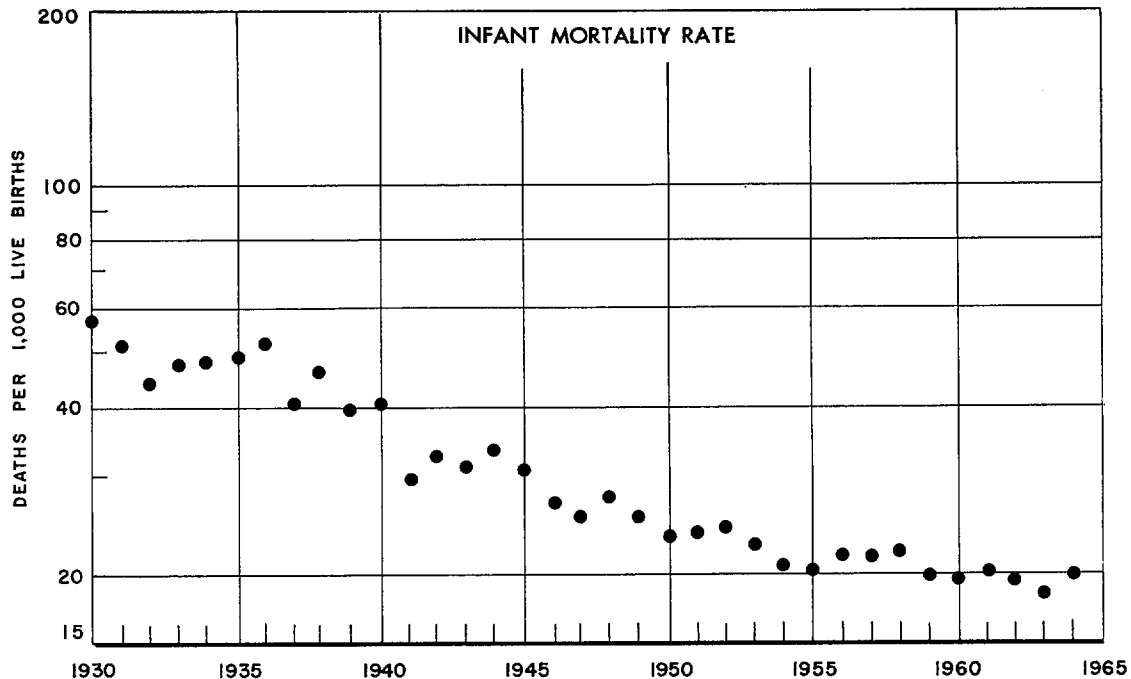


TEXAS<sup>1</sup>

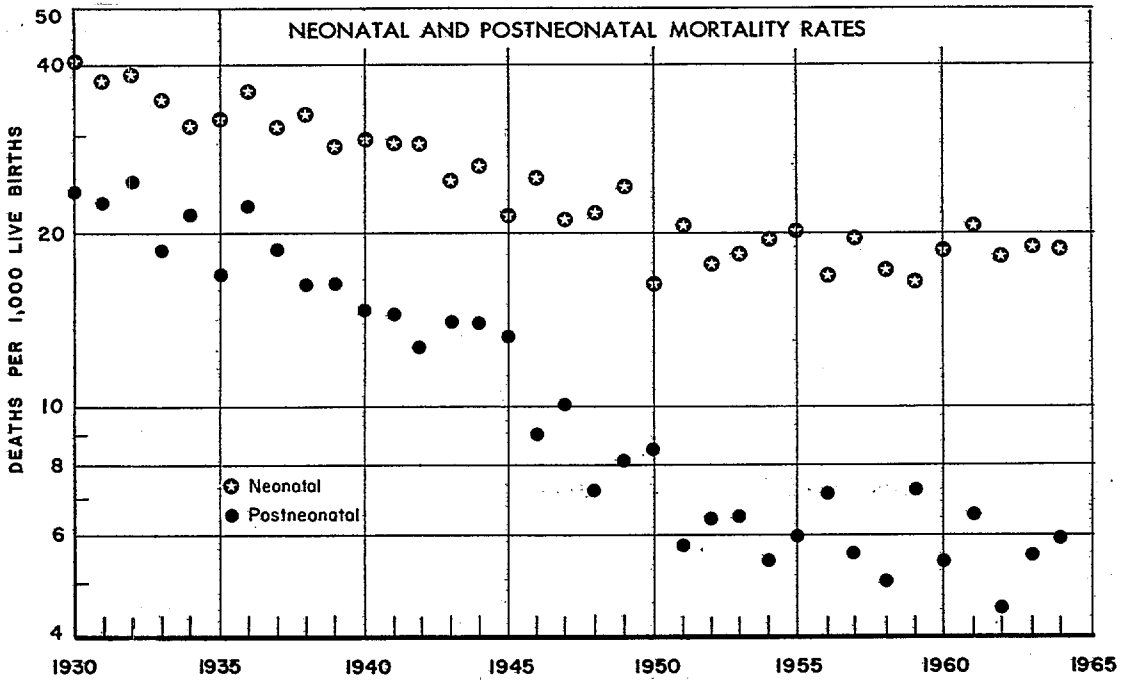
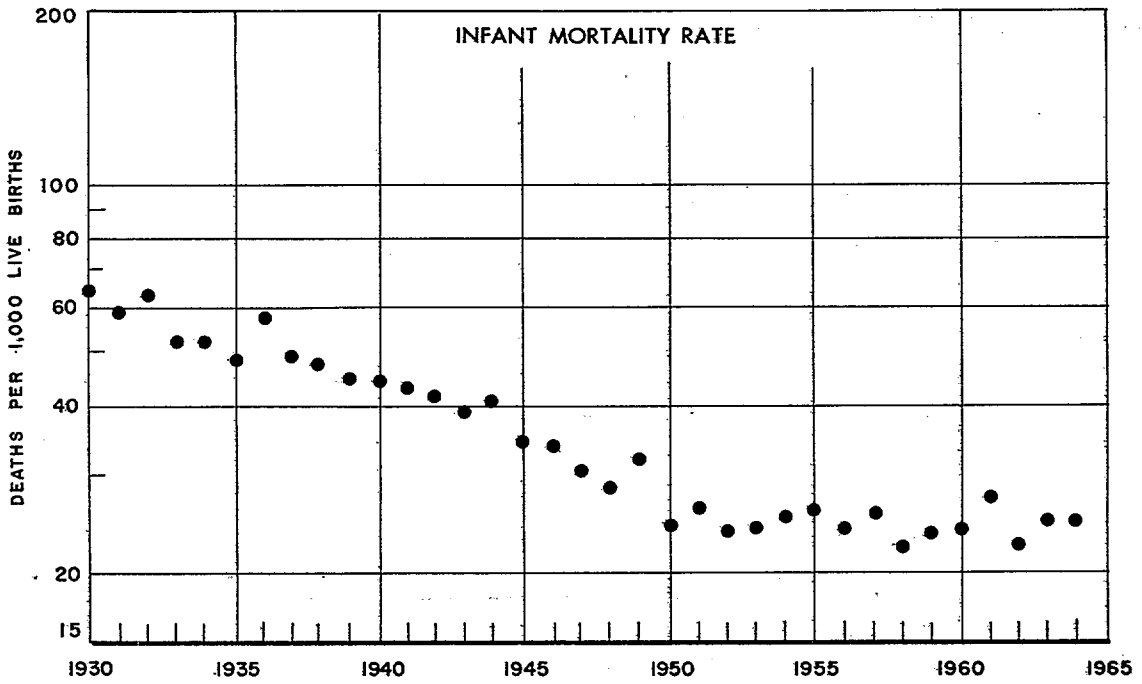


<sup>1</sup>Data not available prior to 1933.

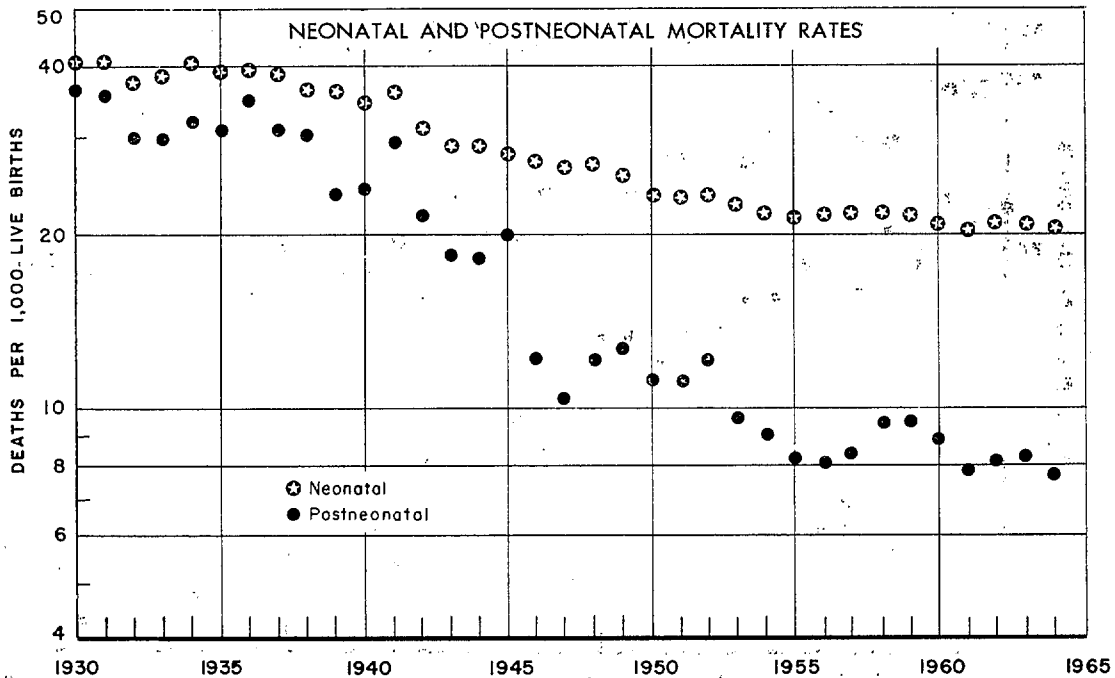
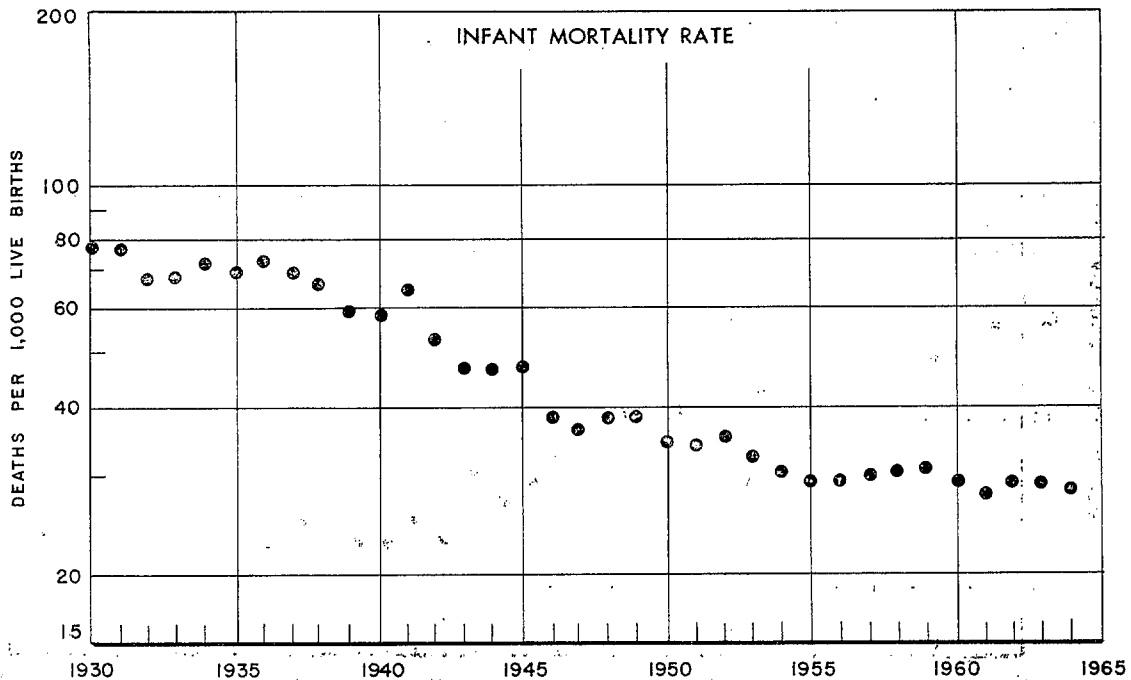
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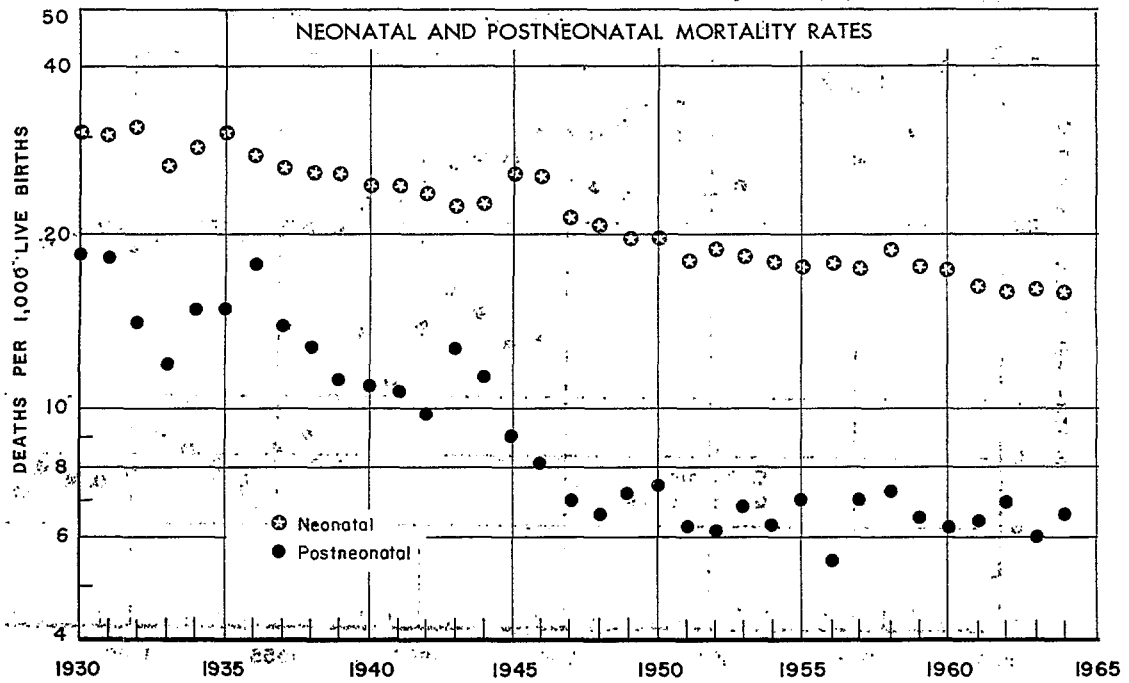
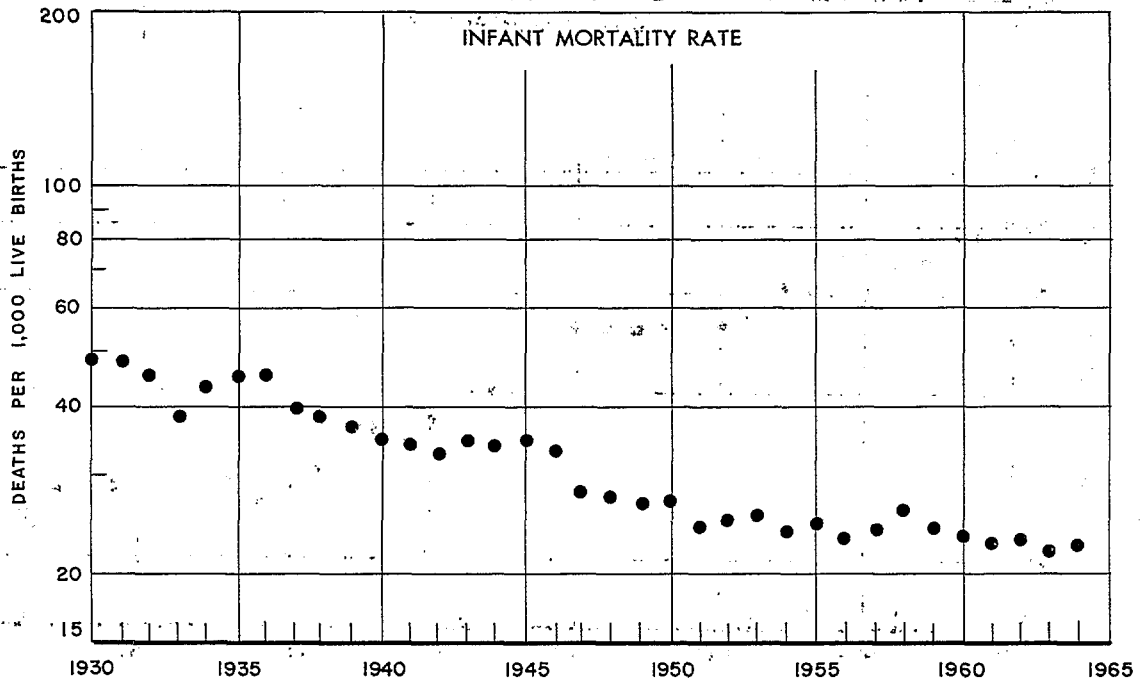
VERMONT



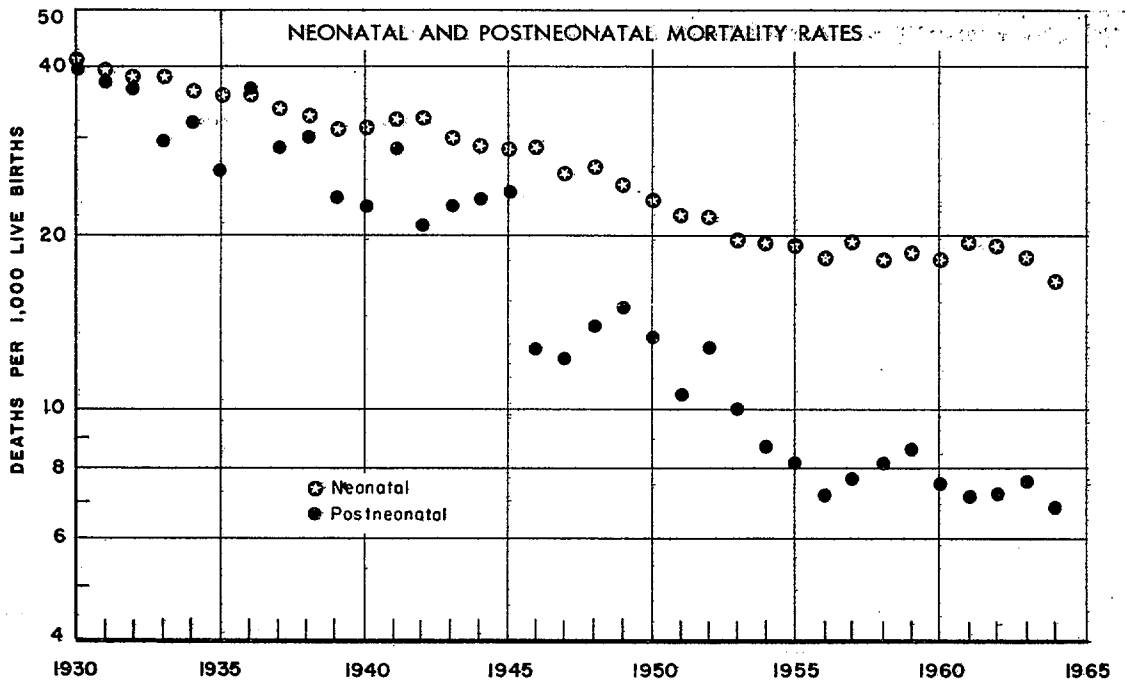
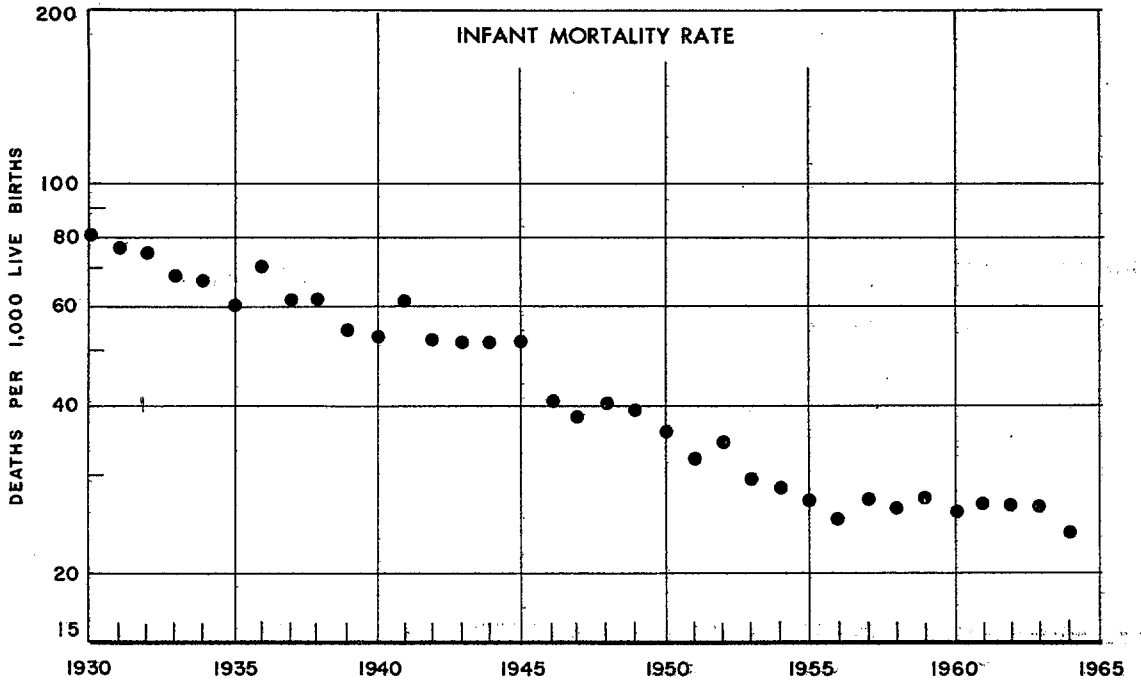


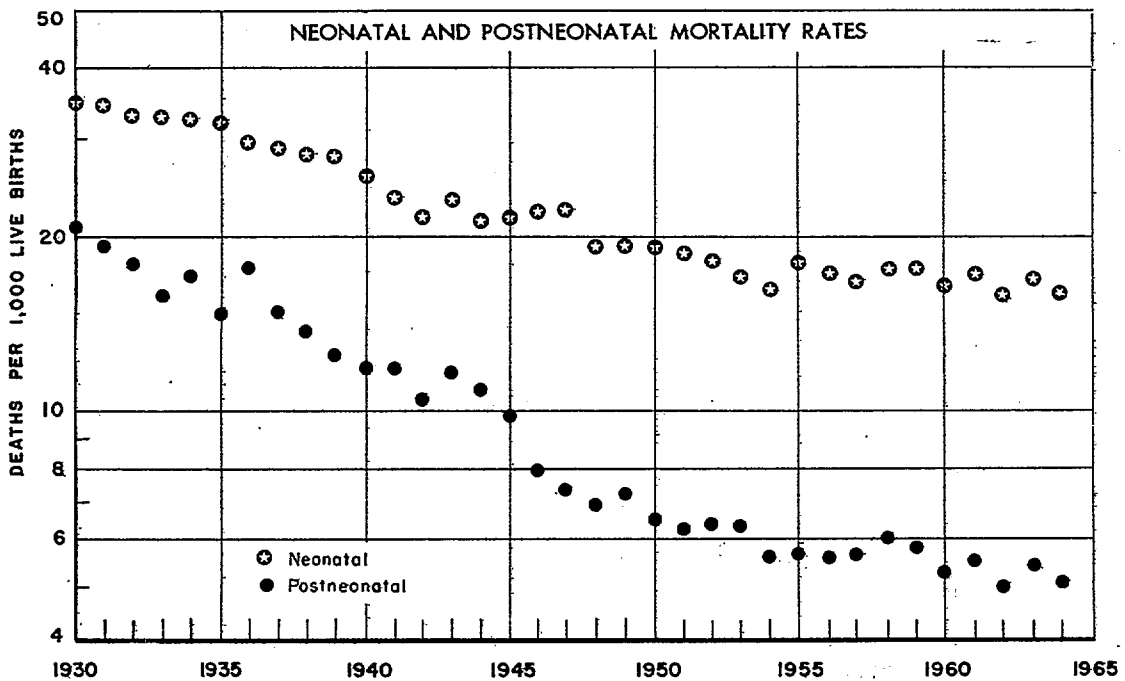
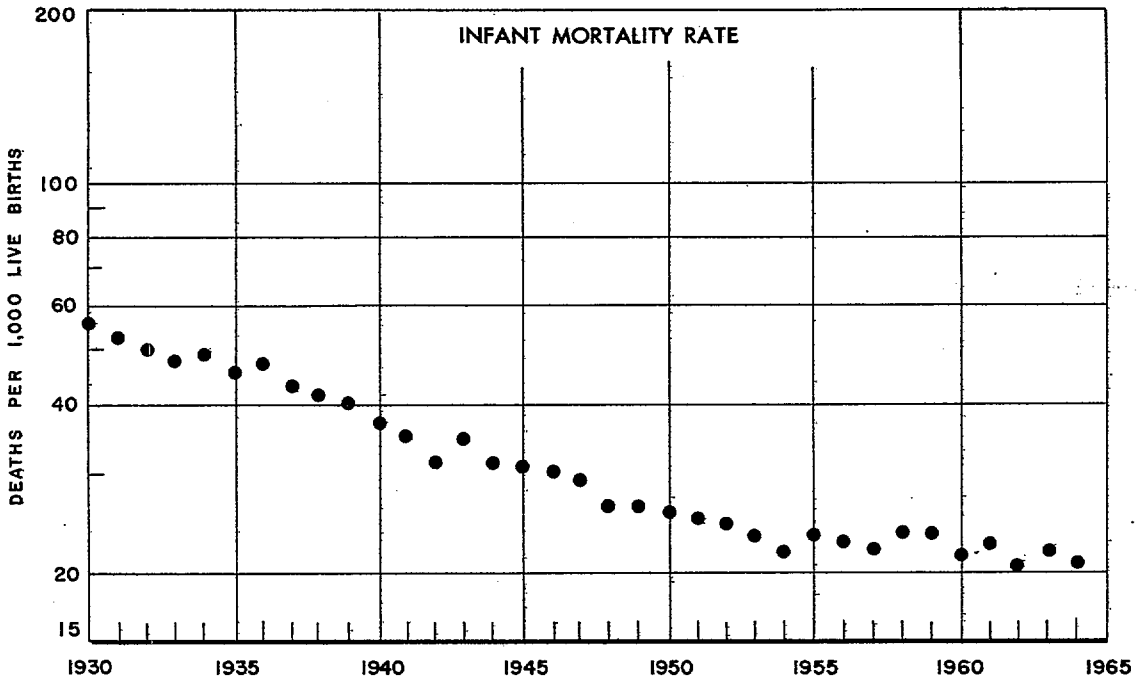


# WASHINGTON

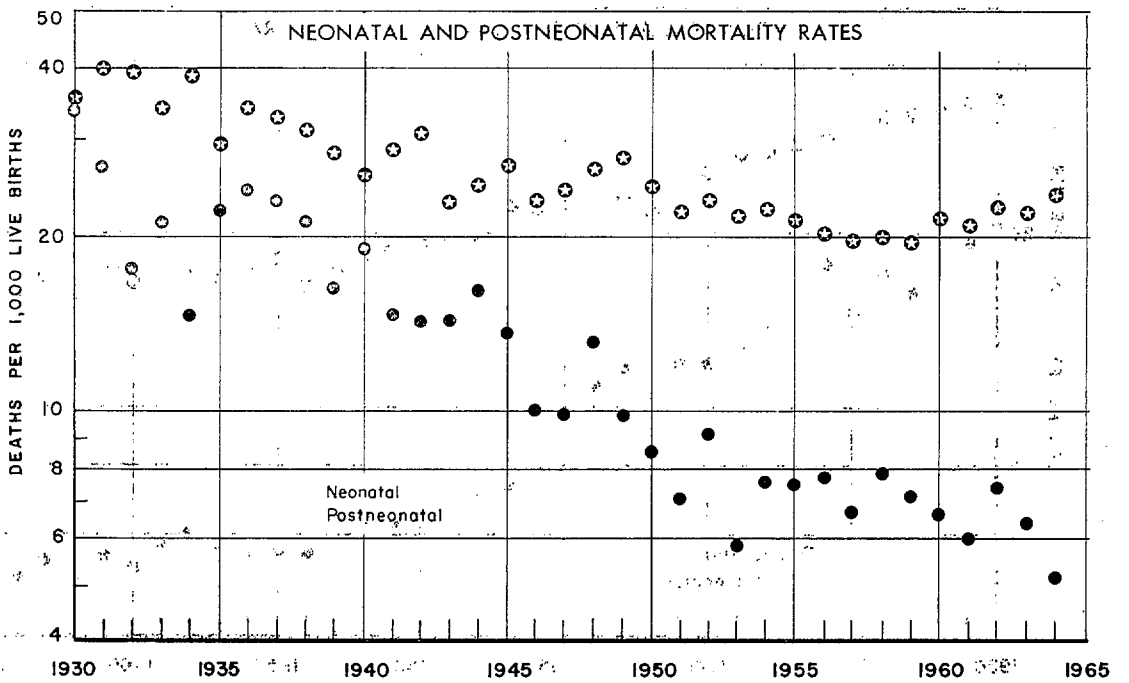
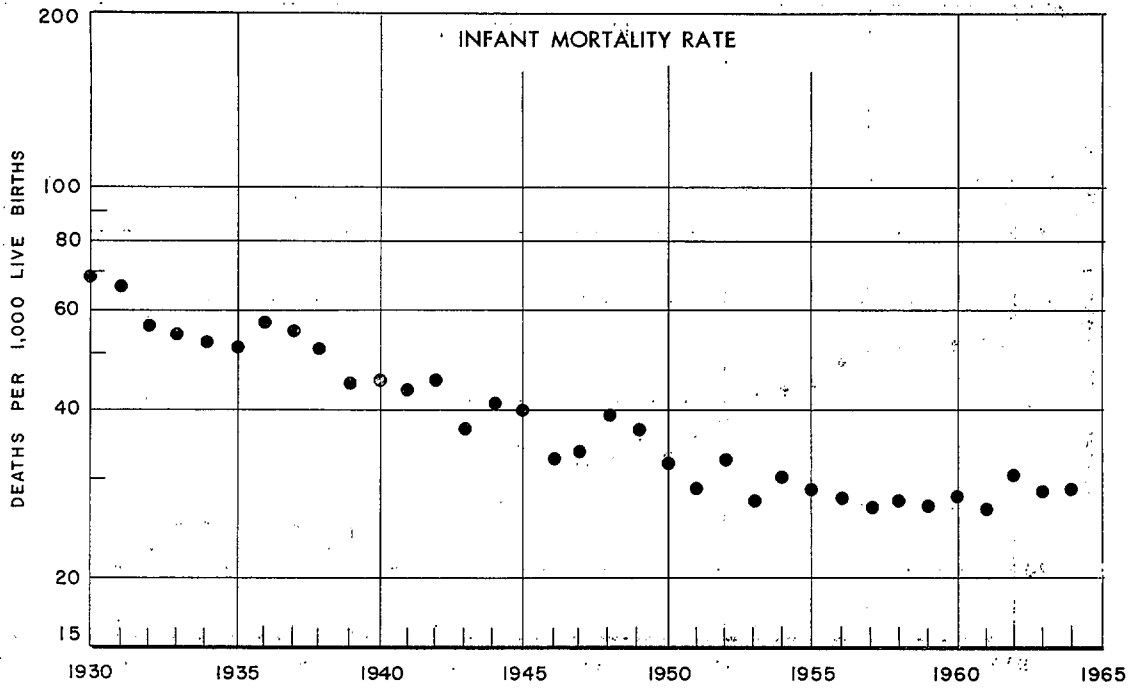


WEST VIRGINIA



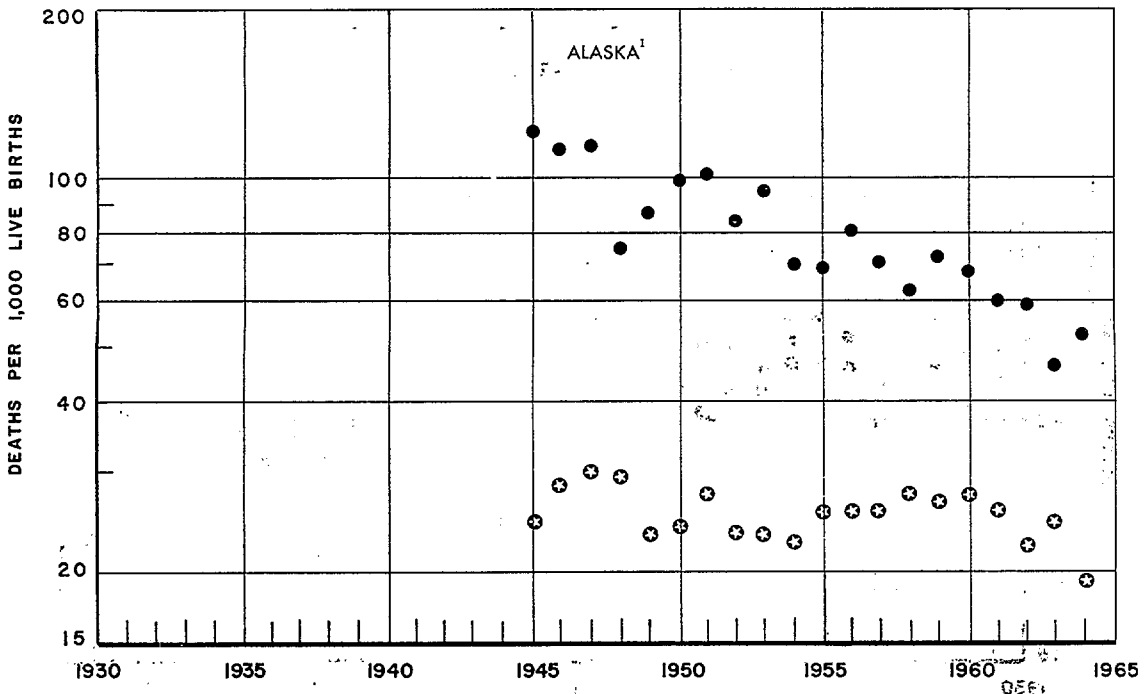
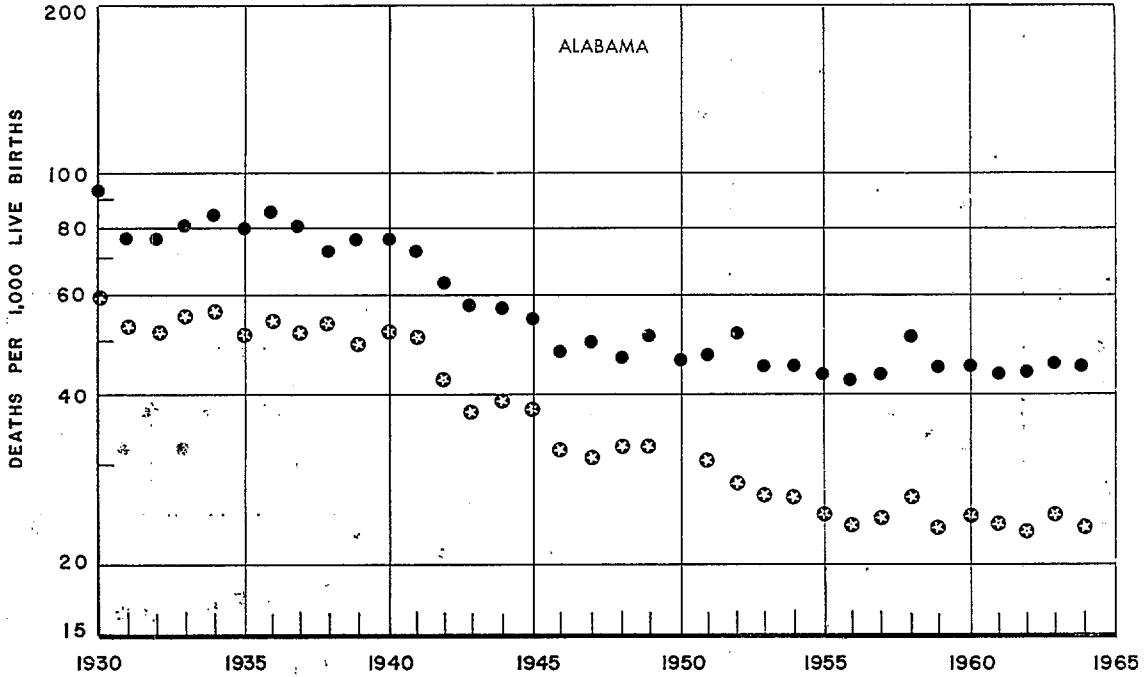


# WYOMING



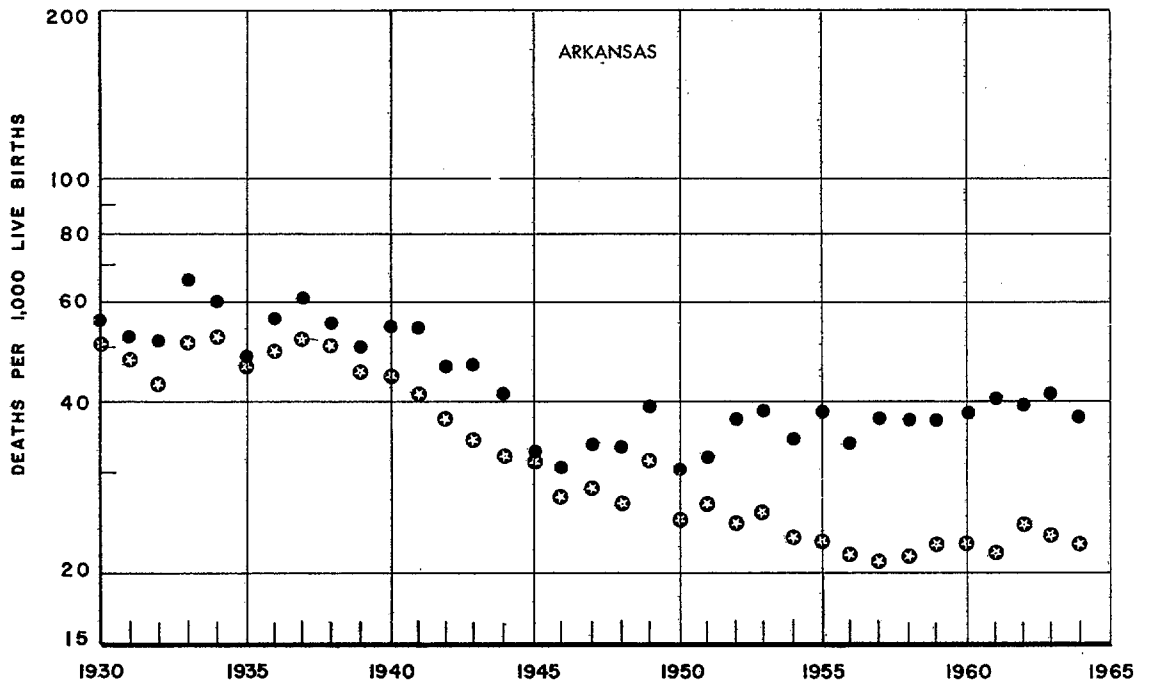
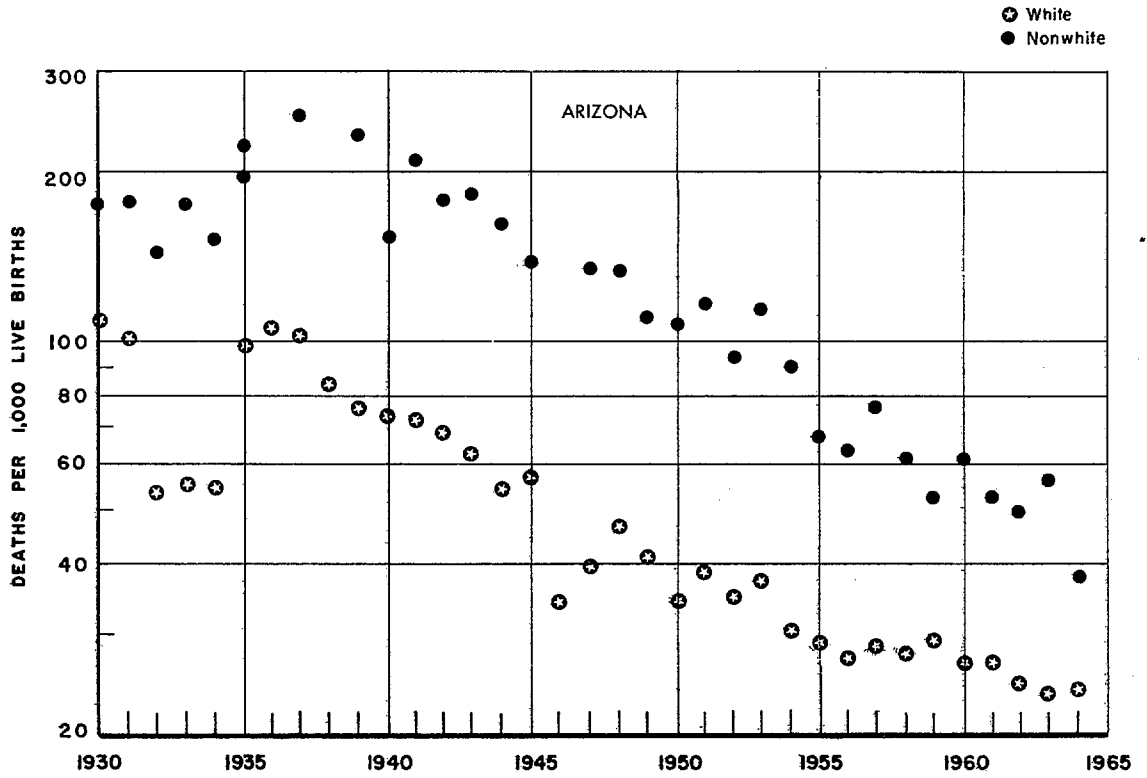
# INFANT MORTALITY RATES BY COLOR

⊗ White  
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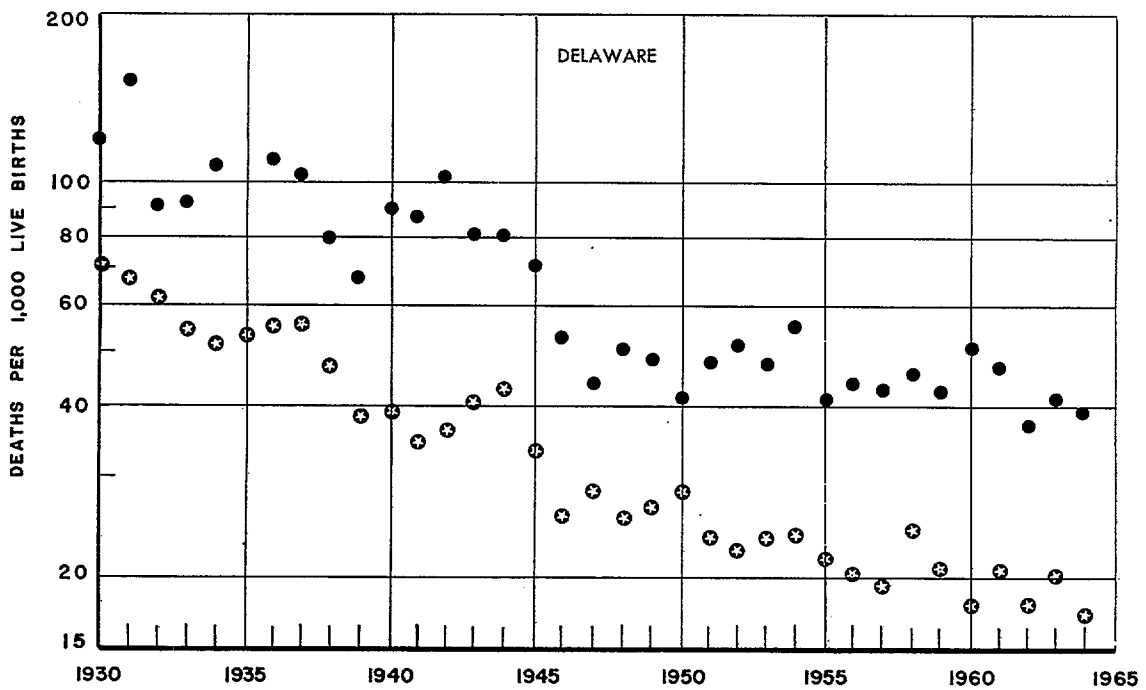
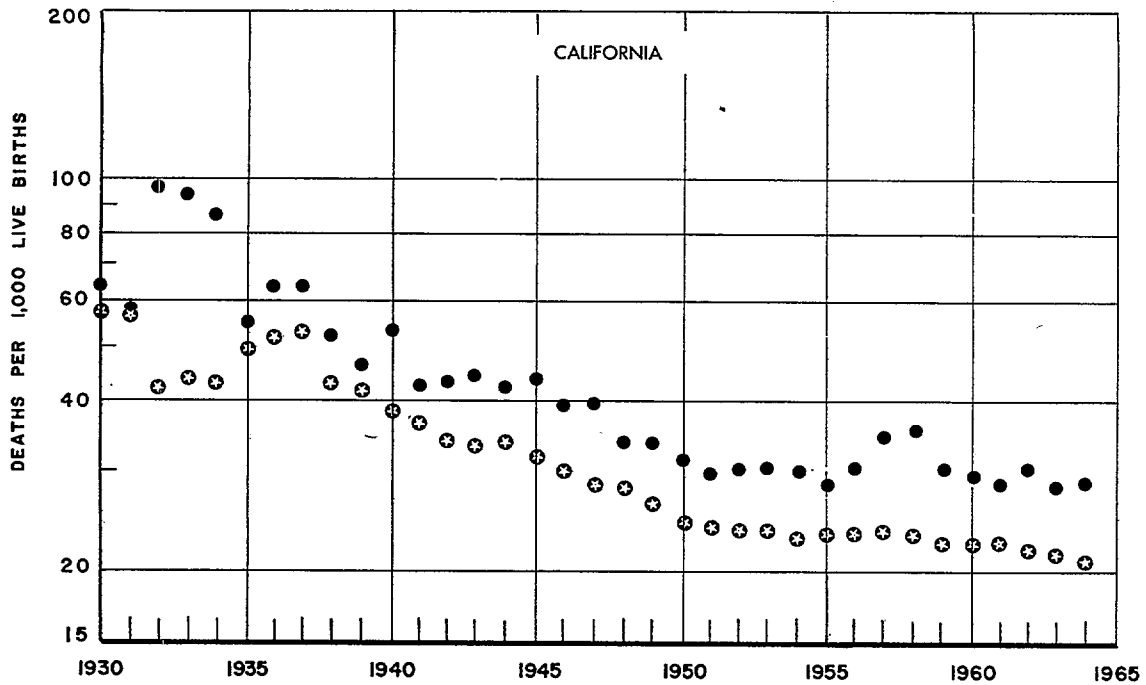
<sup>1</sup>Data not available prior to 1945.

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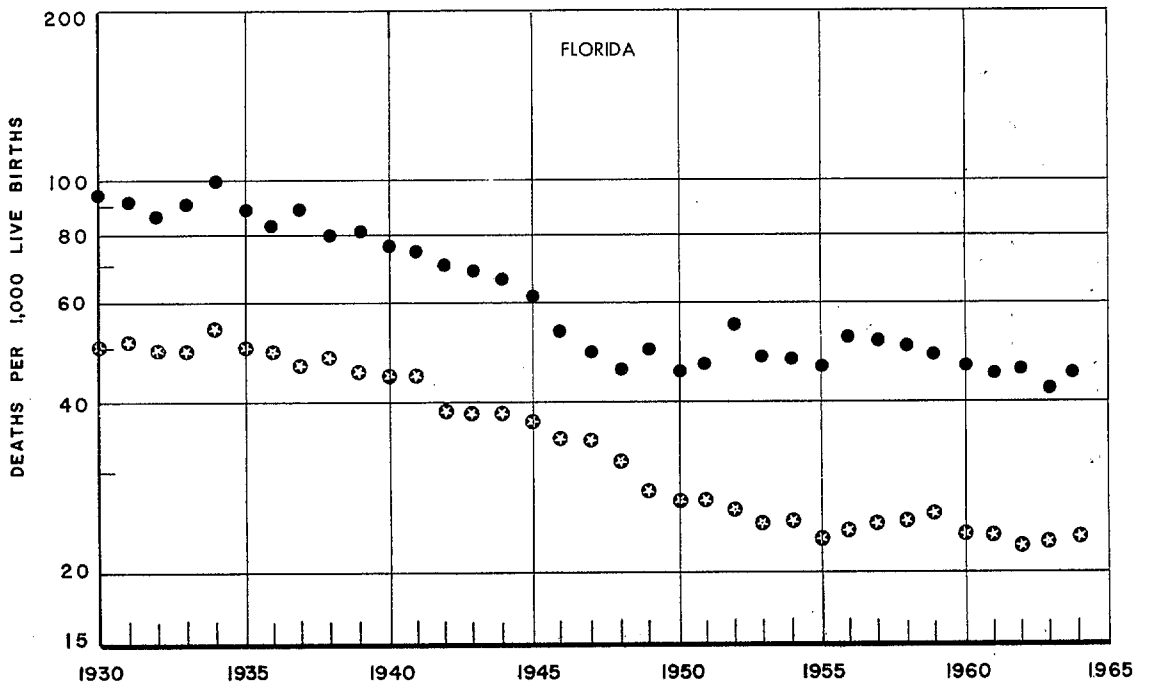
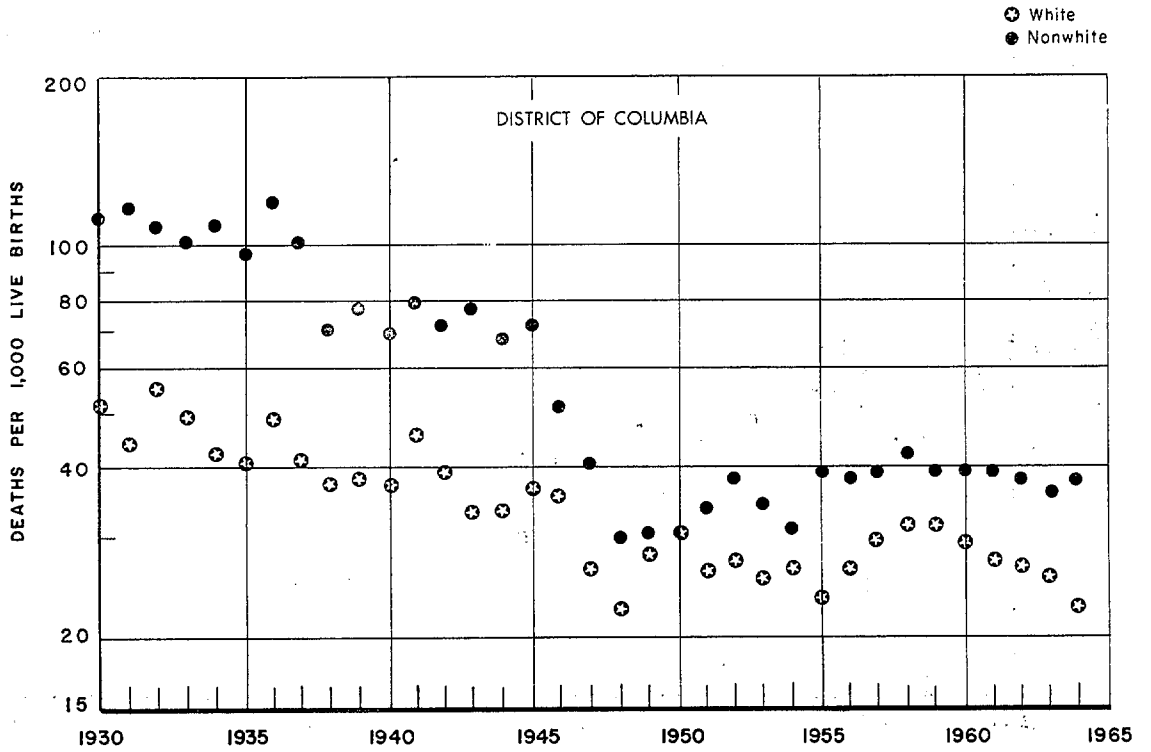
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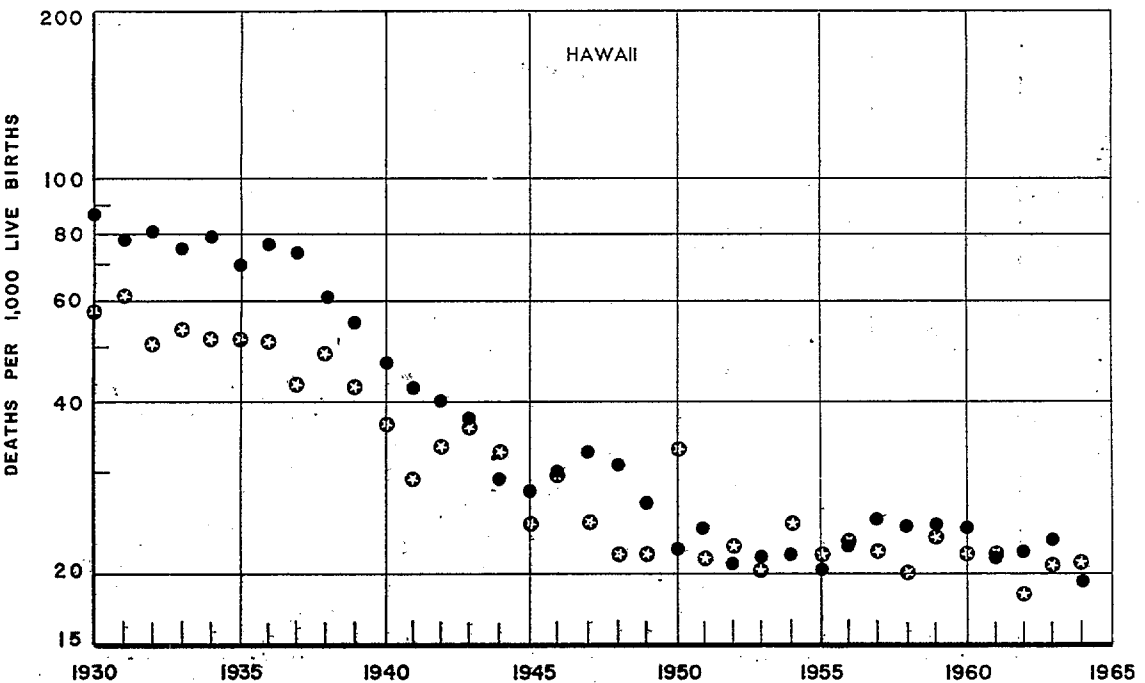
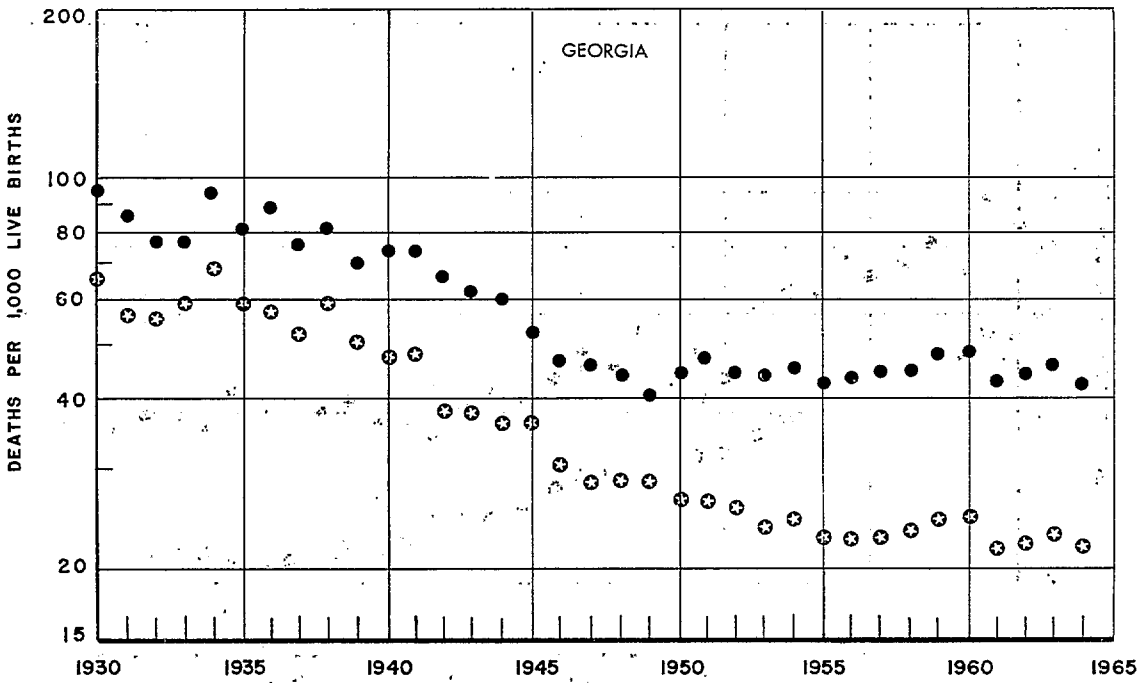


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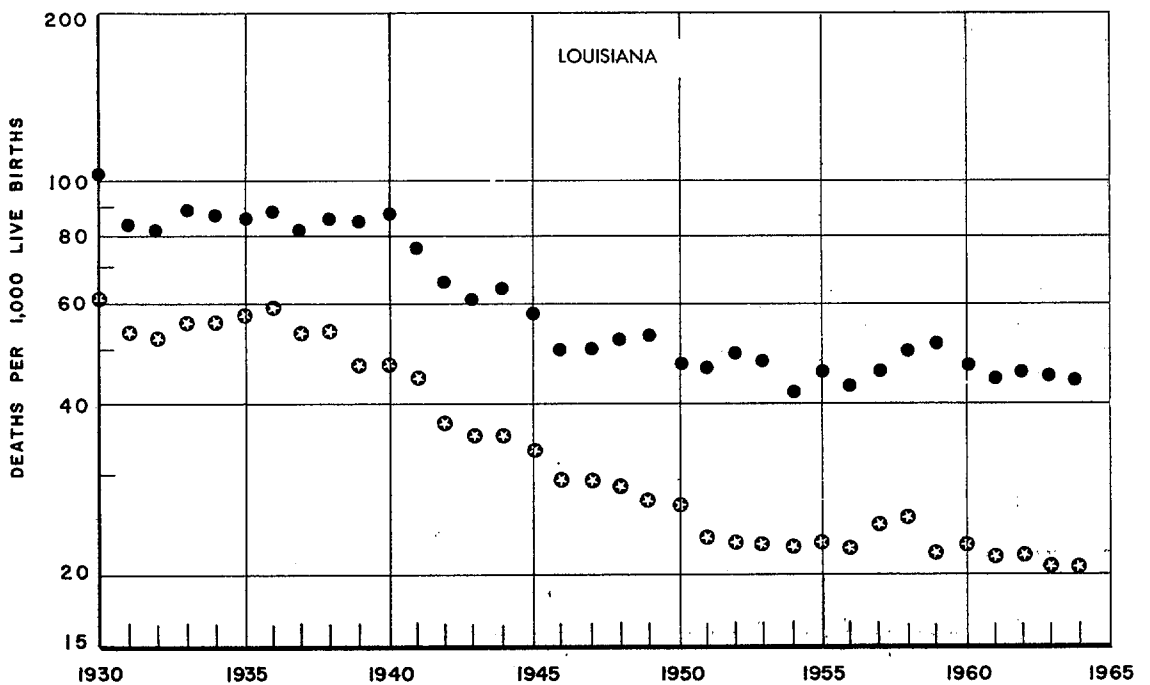
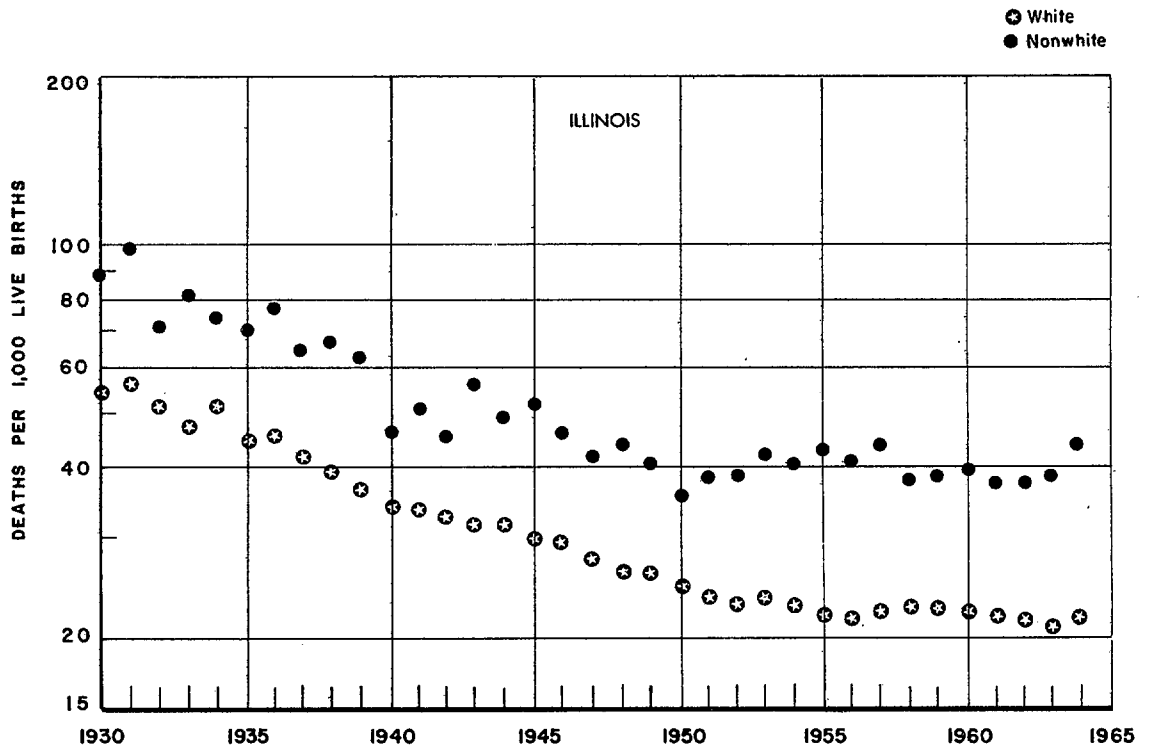


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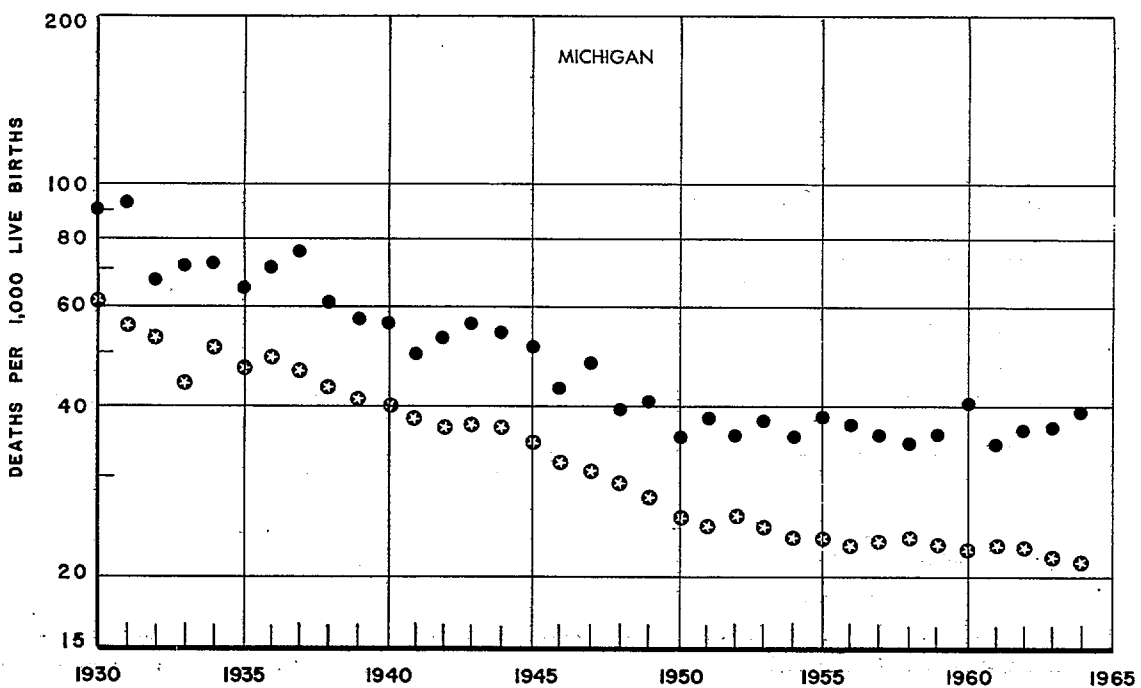
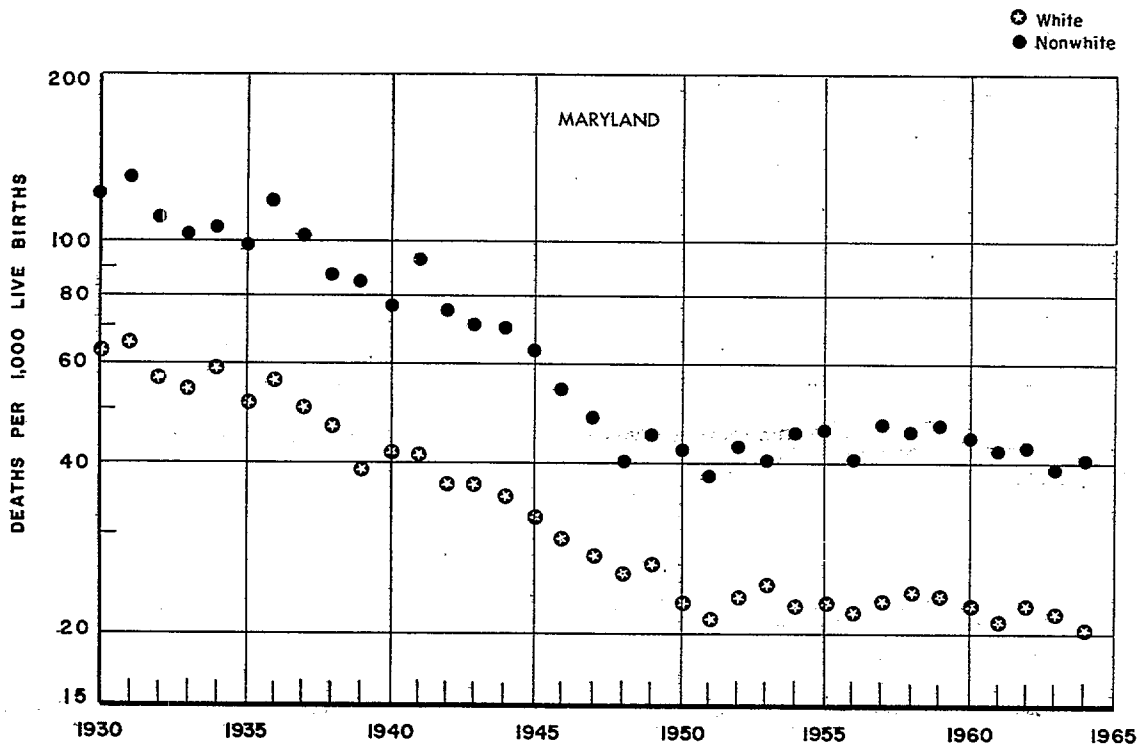
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 ● Nonwhite



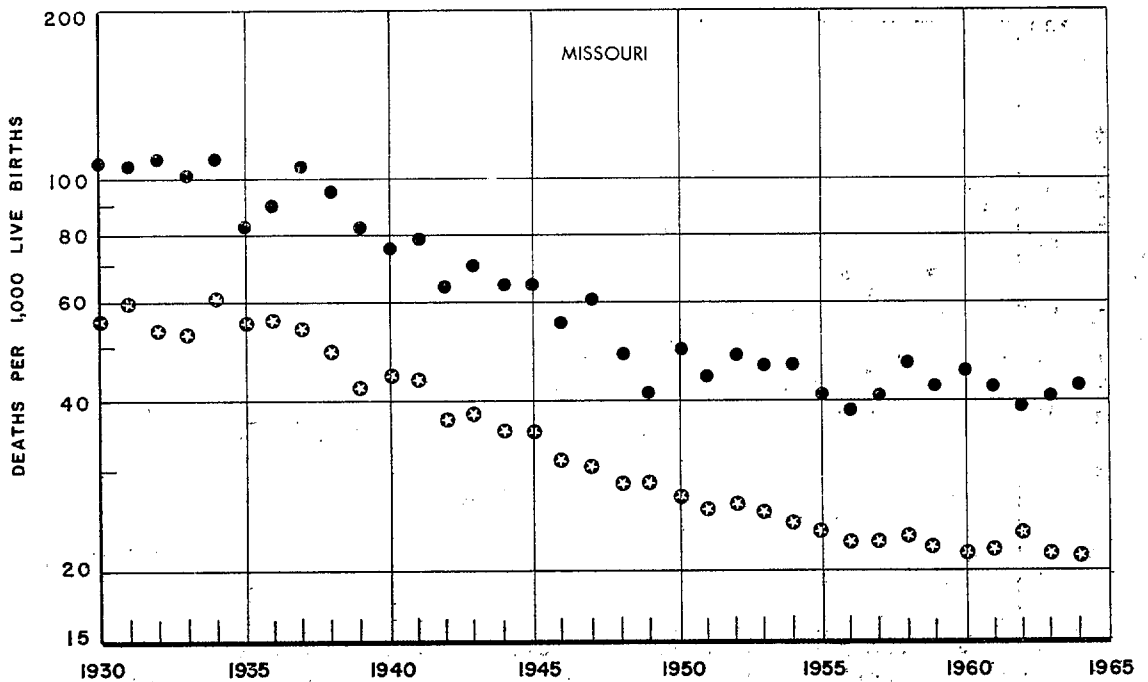
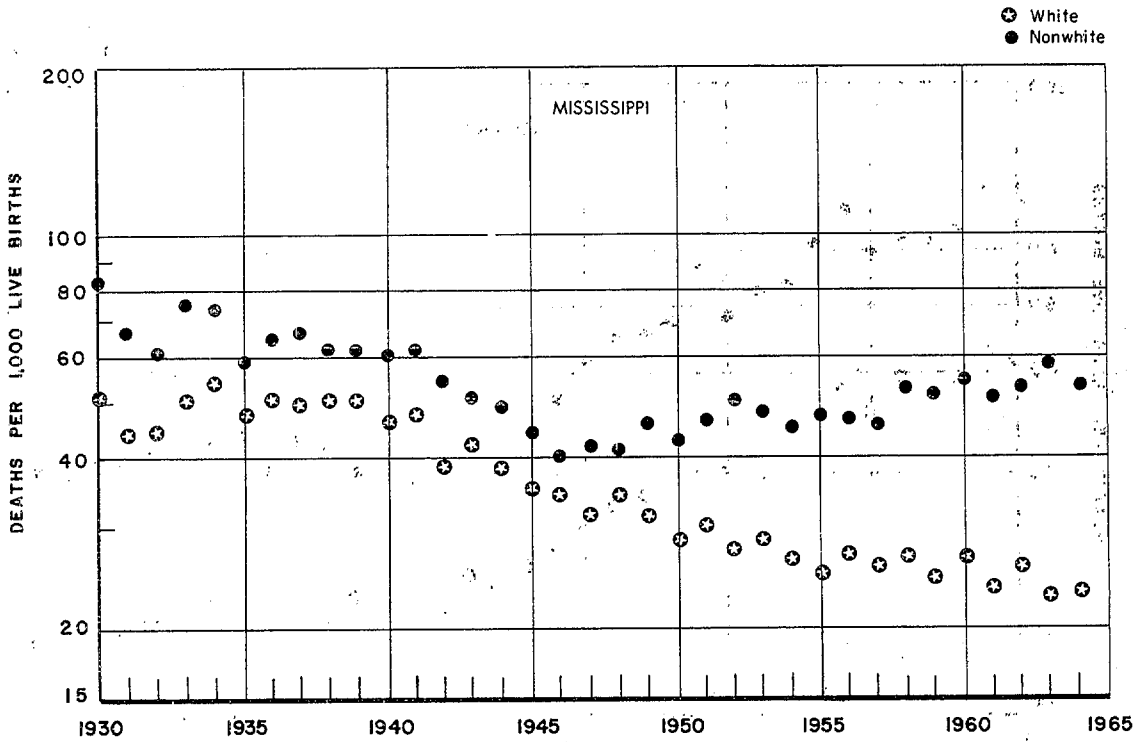
# INFANT MORTALITY RATES BY COLOR



# INFANT MORTALITY RATES BY COLOR

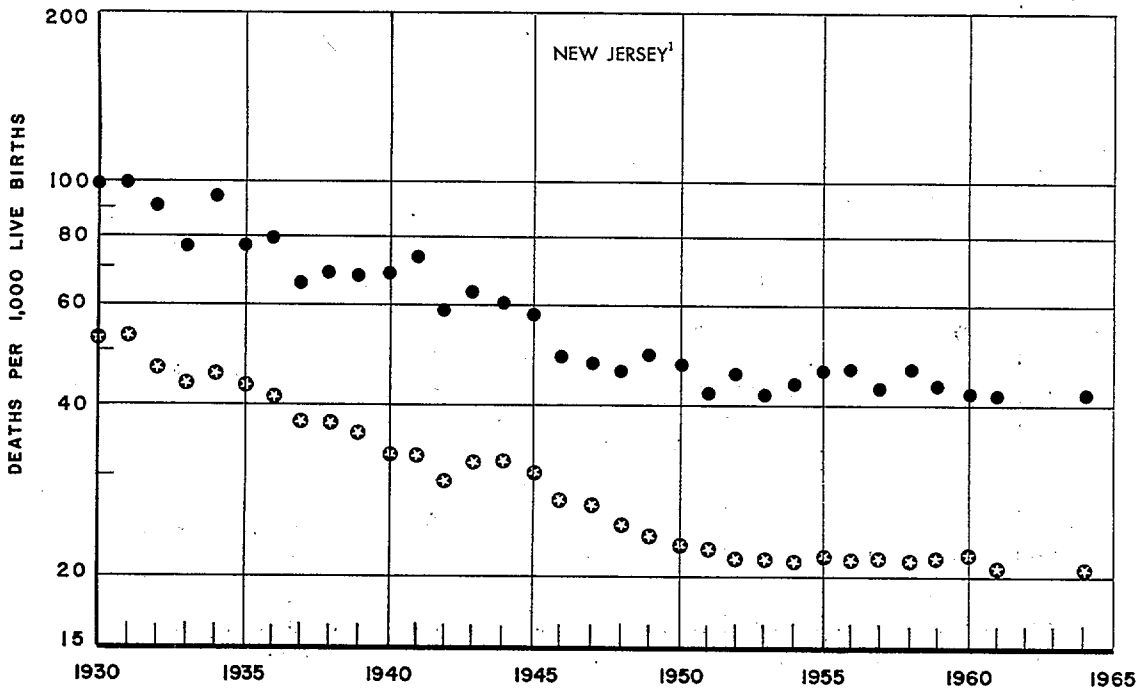
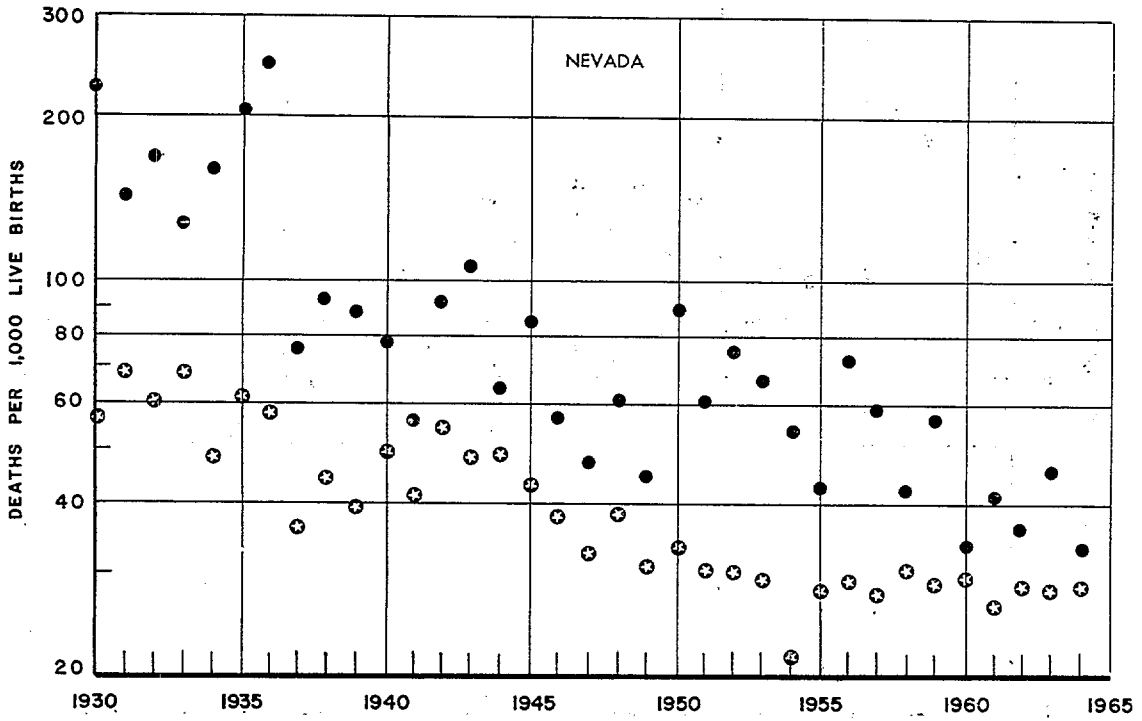


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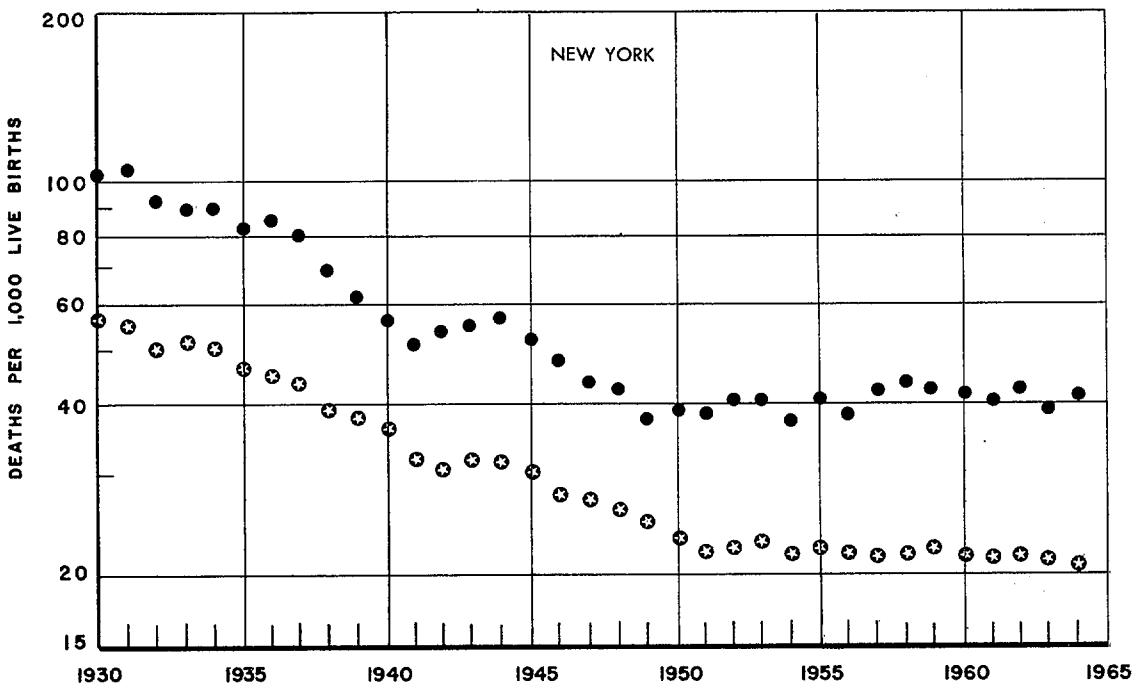
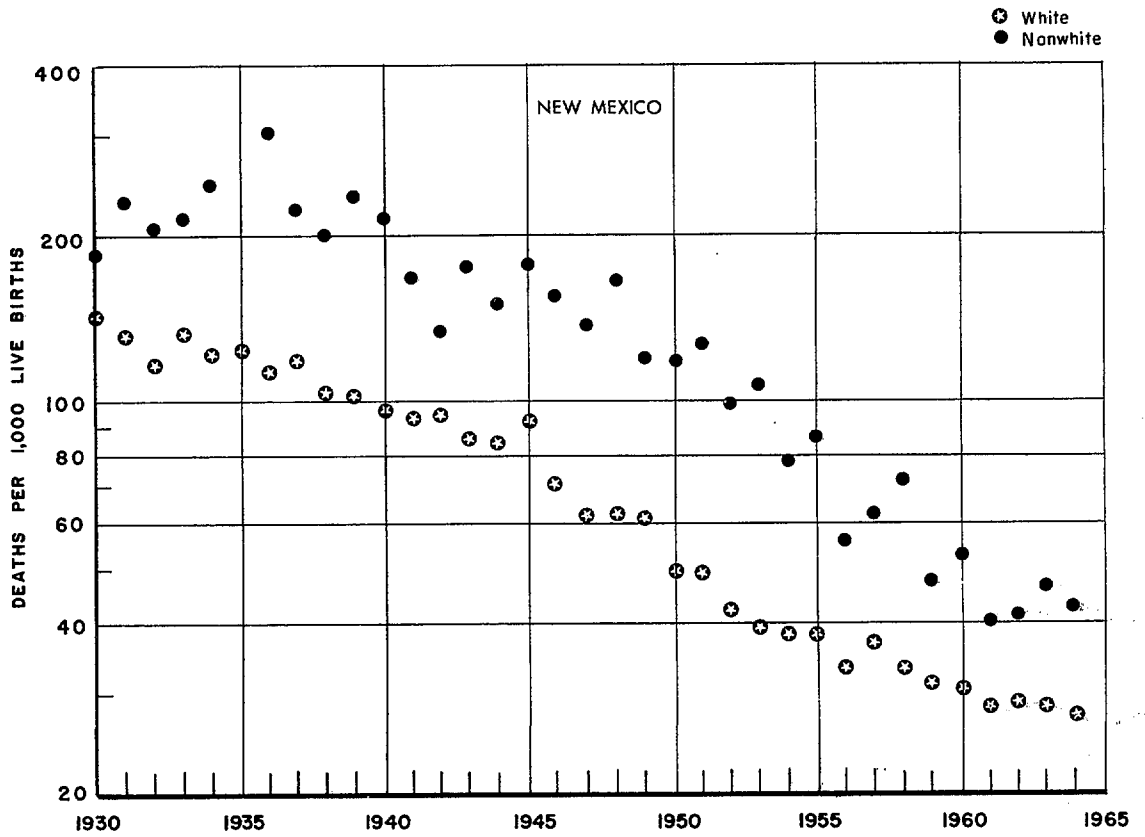
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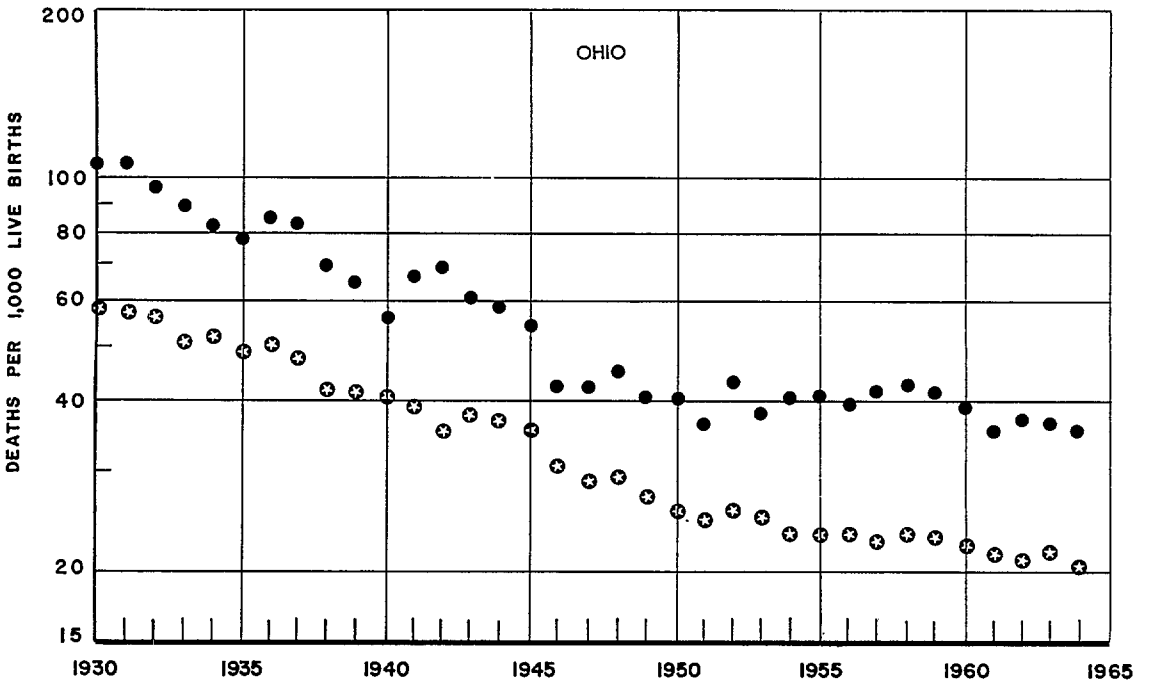
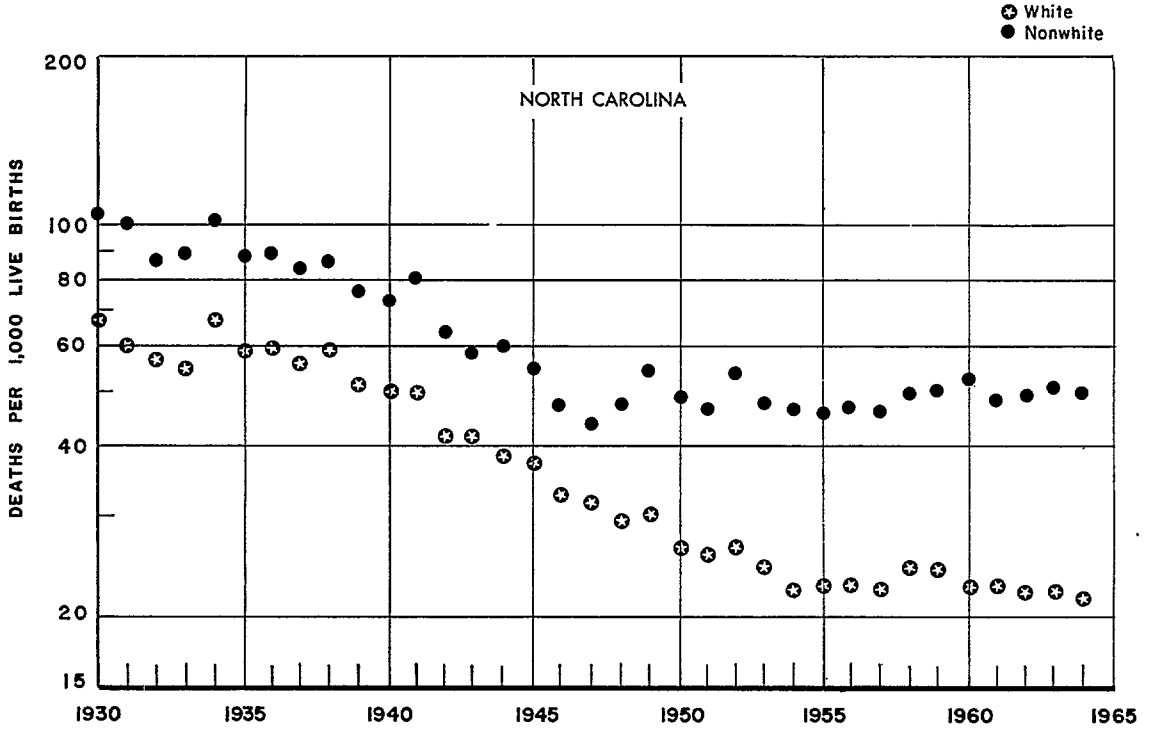


<sup>1</sup>Data not available for 1962-63.

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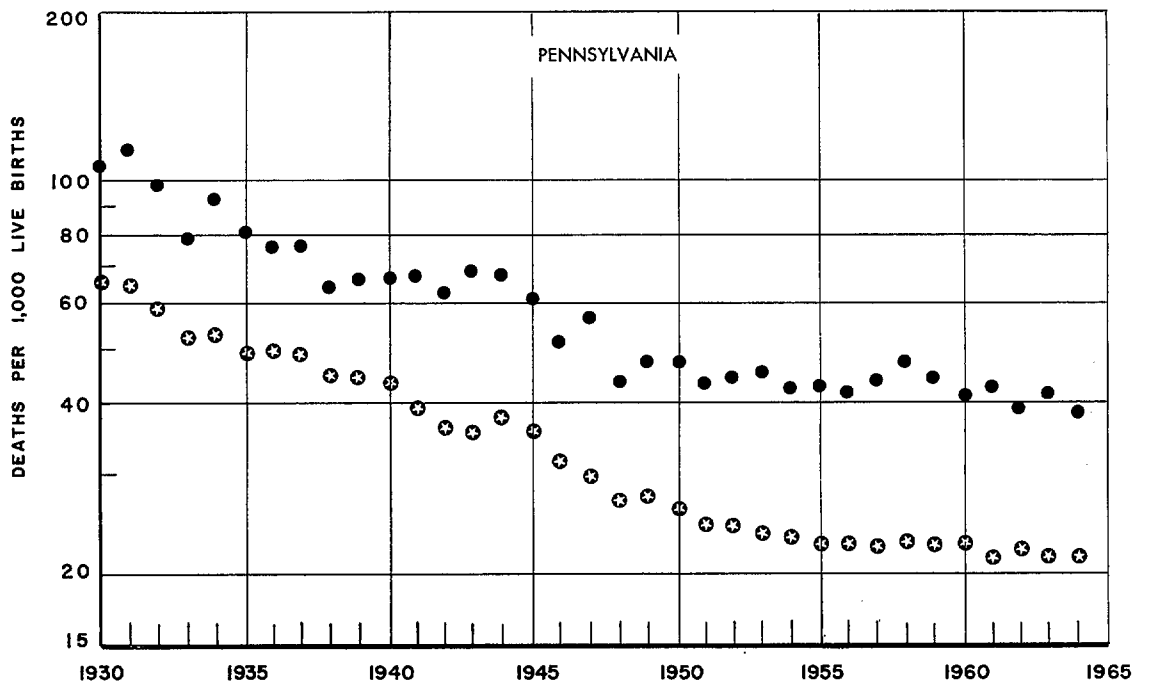
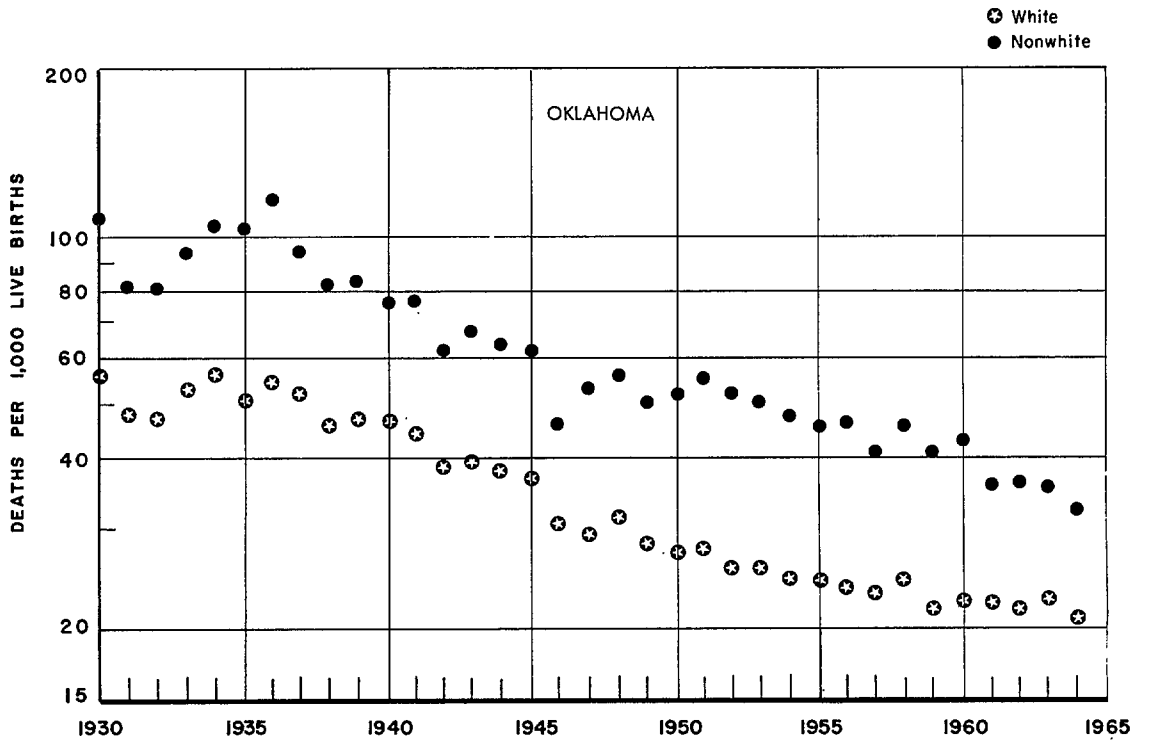


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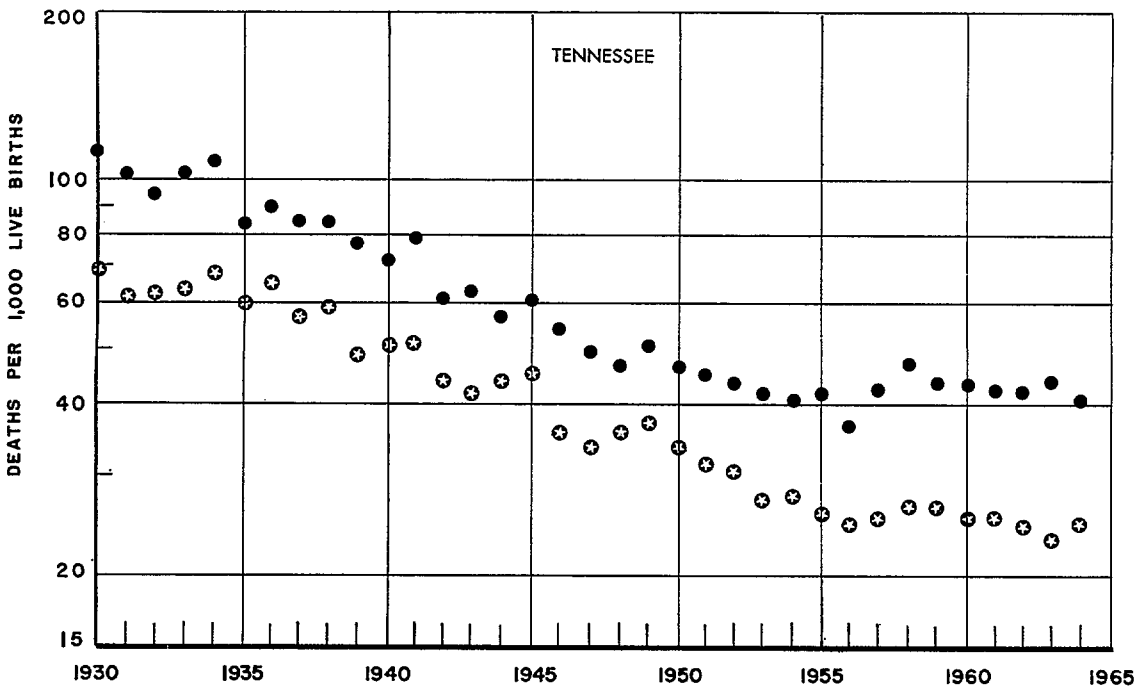
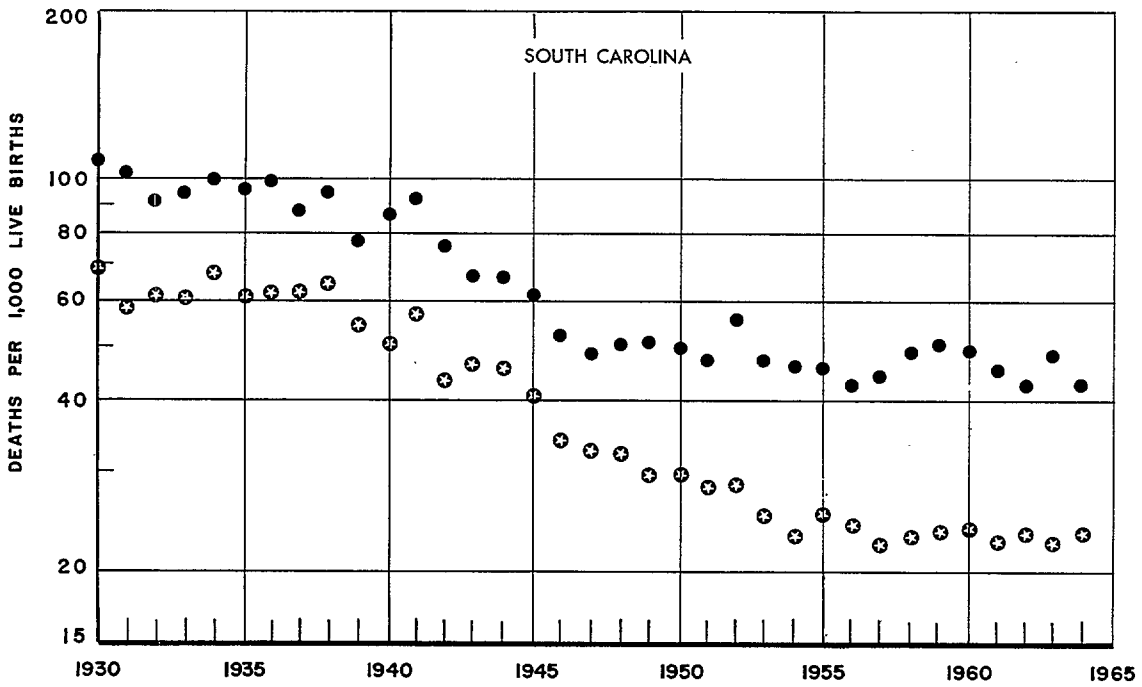


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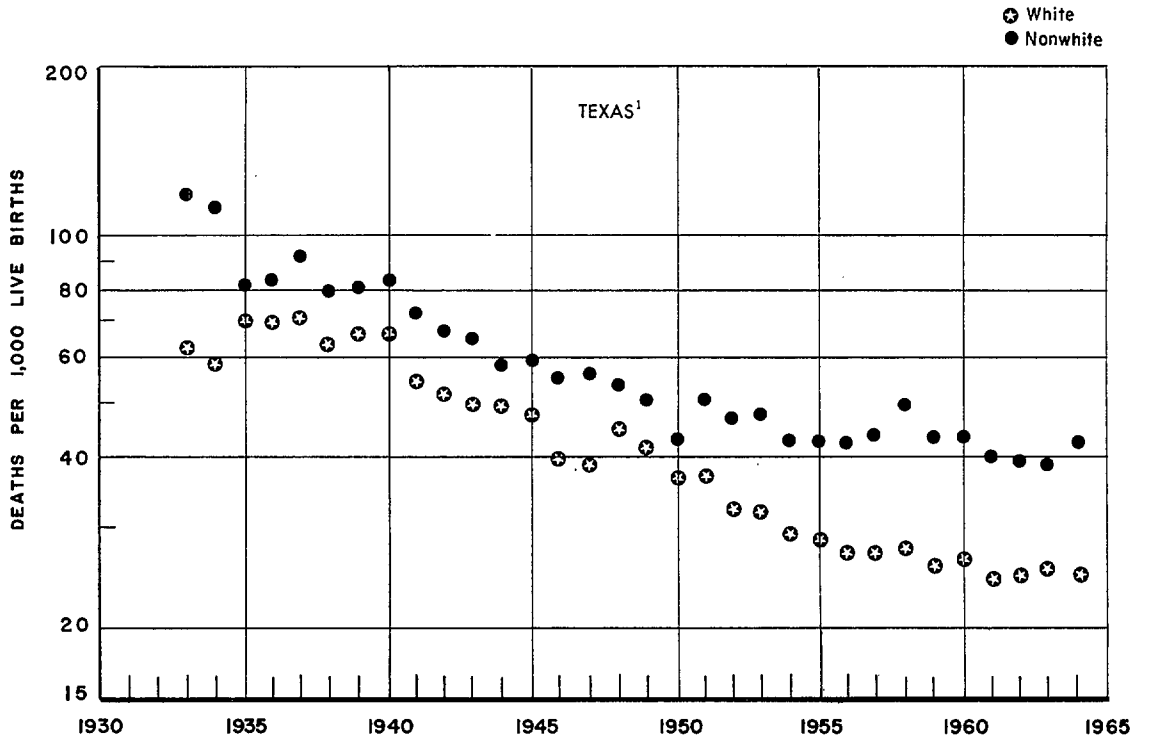


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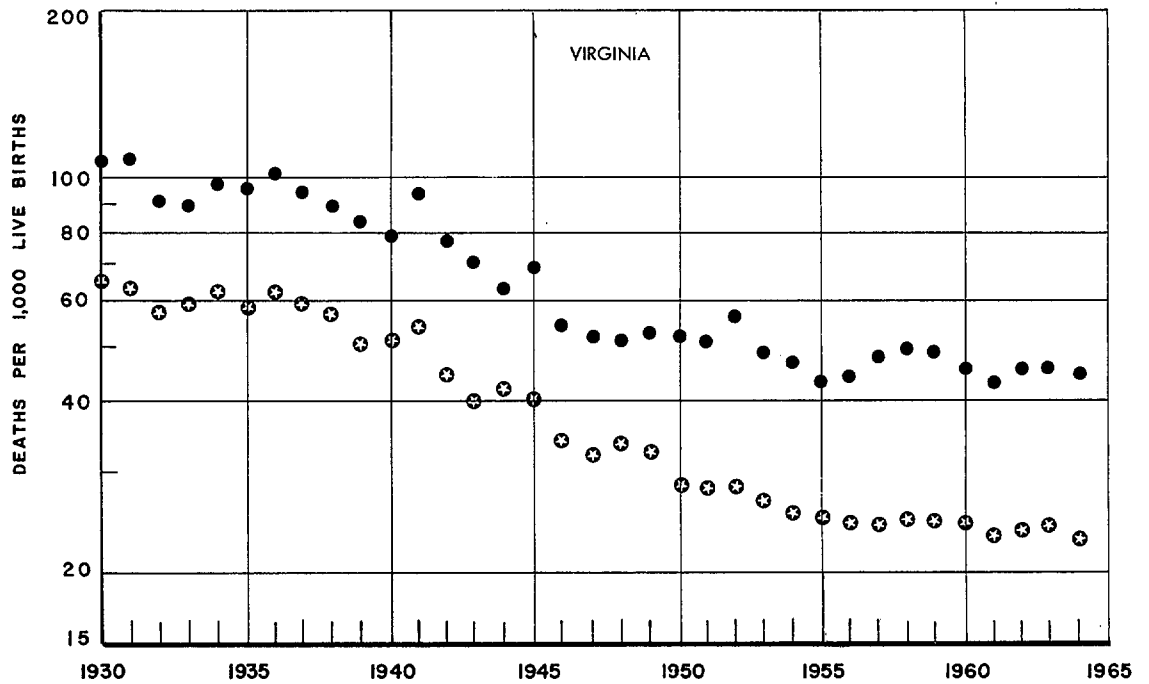
⊕ White  
 ● Nonwhite



# INFANT MORTALITY RATES BY COLOR



<sup>1</sup>Data not available prior to 1933.



# OUTLINE OF REPORT SERIES FOR VITAL AND HEALTH STATISTICS

Public Health Service Publication No. 1000

- Series 1. Programs and collection procedures.*—Reports which describe the general programs of the National Center for Health Statistics and its offices and divisions, data collection methods used, definitions, and other material necessary for understanding the data.  
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- Series 2. Data evaluation and methods research.*—Studies of new statistical methodology including: experimental tests of new survey methods, studies of vital statistics collection methods, new analytical techniques, objective evaluations of reliability of collected data, contributions to statistical theory.  
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Reports number 1-4
- Series 4. Documents and committee reports.*—Final reports of major committees concerned with vital and health statistics, and documents such as recommended model vital registration laws and revised birth and death certificates.  
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Reports number 1 and 2
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