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# THE SEVEN YEARS

OF THE

# MATERNITY AND INFANCY ACT

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# THE SEVEN YEARS OF THE MATERNITY AND INFANCY ACT

## SEVEN YEARS' WORK OF THE COOPERATING STATES UNDER THE ACT

### ACTIVITIES UNDERTAKEN

Though the details of the work under the maternity and infancy act have differed in the different States, the aim in all has been fundamentally educational; and, because the large cities already have hospitals, physicians, nurses, and health departments, the work has been primarily for mothers and babies living in the smaller cities and in rural areas. All the States have sought to teach the public how better care of mothers and babies will save lives and improve health and to stimulate such local and individual interest in the program that the work, once initiated, will be carried on by the local community itself.

The types of activities that the States have carried on were, in general, the following:

1. Instruction of the individual as to the care of the mother and child through—
   - (*a*) Health conferences conducted by physicians and nurses directly under State auspices.
   - (*b*) Permanent health centers offering the same kind of instruction but conducted under local auspices and financed at least in part by local funds.
   - (*c*) Visits to mothers in their homes by public-health nurses.
   - (*d*) Demonstrations in the home in infant and maternal care.
2. Instruction of groups through—
   - (*a*) Classes—
     - (1) In infant care for adolescent girls.
     - (2) In infant care and prenatal care for mothers.
     - (3) In infant care and prenatal care for teachers, to prepare them to include maternity and infancy instruction in their class work.
     - (4) For midwives.
   - (*b*) Graduate courses for nurses in maternity and infancy work through State or regional conferences or institutes.
   - (*c*) Graduate courses in pediatrics and obstetrics for physicians (usually conducted in conjunction with State or county medical societies).
   - (*d*) Lectures, motion pictures, slides, charts, and exhibits.
3. Instruction through distribution of literature prepared by the State or Federal Government on maternal and infant care and hygiene, child care and management, and other subjects.

It is not possible to give an exact numerical summary of the States' activities of these various types for the seven years in which the act was in operation. Only approximate results can be shown by figures reported by the States, as the figures available fall short of actual

accomplishments. A number of factors influencing the development and growth of the work in the States have contributed to the uneven character of reports in the earlier years as compared with those of later years. It was not until well into the year 1923 that the States were in a position to accept the full benefits of the maternity and infancy act through their legislatures. Four States created child-hygiene divisions or bureaus in 1921, the year of the passage of the act, and 10 States established such agencies after its passage. There was also an increase from year to year in the number of States cooperating under its provisions. It was not until 1927 that the last two States to cooperate accepted the benefits of the act. In each State some time necessarily was consumed in organizing the supervising bureau or division and in getting the field work under way. To the director the most important thing was to get the work started; a good system of record keeping was secondary and came later. Each State initiated its own program of work, and it was not until the first reports of the work were published and the first conference of directors of State bureaus was held in 1923 that more homogeneous State programs were inaugurated. It was not until the close of the fiscal year 1924 that comparable figures from the States were available to any extent, and data on a few points were not obtained until 1925 and 1926.

The total number of health conferences at which expectant mothers and children were examined by physicians, as reported by the cooperating States during the 7-year period, was 144,777. Additional conferences conducted by nurses and dentists in which general instruction was given on maternal and child care brought the total number of conferences conducted to 183,252. A total of 2,978 permanent centers consisting of child-health, prenatal, and combined prenatal and child-health centers were established. The number of classes organized for instruction, including classes for girls in infant care, classes for mothers in infant and maternal care, and classes for midwives, was 19,723 during the last five years of operation of the act. Visits to homes in the interest of mothers and babies made by public-health nurses during the last six years of the act reached a total of 3,131,996. Reports covering the last five years of the act showed 22,030,489 pieces of literature distributed. During the last four years of the act 176,733 sets of prenatal letters were distributed. The State reports for the last four years showed that more than 4,000,000 infants and preschool children and approximately 700,000 expectant mothers were reached by some form of the maternity and infancy work.

It should be noted that a decrease in numbers in an activity during a given year means a change in work rather than a diminution of the work. For example, when a State conducts itinerant demonstration conferences over the entire State it reports a much larger number of conferences held and numbers of mothers and children reached than when, after this general educational work is done, it assists in the development of permanent locally supported centers. When the responsibility for maintaining the centers has been assumed by the local community, the work is no longer reported as a State activity. On the other hand, an actual expansion of the work is indicated in some activities, as the increase in the distribution of prenatal letters in 1929 and the larger numbers of children and expectant mothers reached by the maternity and infancy activities in that year.

Table 6 summarizes the activities under the maternity and infancy act during the period 1924 to 1929, inclusive, as reported by the cooperating States and the Territory of Hawaii.

TABLE 6.—*Summary of activities under the maternity and infancy act during the last six years of its operation, as reported by the cooperating States and Territory of Hawaii, 1924–1929*

| Year | Conferences conducted by physicians | | | Conferences conducted by nurses | Dental conferences | Permanent centers established | | |
|---|---|---|---|---|---|---|---|---|
| | Combined prenatal and child health | Child health | Prenatal | | | Combined prenatal and child health | Child health | Prenatal |
| Total | 17,292 | 107,345 | 20,140 | 34,384 | 4,091 | 373 | 2,294 | 311 |
| 1924 | (1) | 15,547 | 6,088 | (1) | (1) | (1) | 1,084 | 188 |
| 1925 | (1) | 18,154 | 3,781 | (1) | 330 | (1) | 506 | 65 |
| 1926 | 1,945 | 15,524 | 2,686 | 6,407 | 652 | 135 | 140 | 8 |
| 1927 | 1,808 | 21,347 | 3,231 | 6,273 | 1,124 | 70 | 235 | 14 |
| 1928 | 7,341 | 19,840 | 2,002 | 11,580 | 851 | 103 | 202 | 17 |
| 1929 | 6,198 | 16,933 | 2,352 | 10,124 | 1,134 | 65 | 127 | 19 |

| Year | Classes conducted | | | Home visits made | Sets of prenatal letters distributed | Pieces of literature distributed |
|---|---|---|---|---|---|---|
| | For girls | For women | For midwives | | | |
| Total | 7,397 | 6,578 | 5,748 | 3,131,996 | 176,733 | 22,030,489 |
| 1924 | (1) | (1) | (1) | 149,000 | (1) | (1) |
| 1925 | 1,362 | 1,403 | 412 | 299,100 | (1) | 2,195,000 |
| 1926 | 1,365 | 1,560 | 1,446 | 587,673 | 44,655 | 3,192,919 |
| 1927 | 1,199 | 1,196 | 684 | 721,159 | 46,217 | 4,403,218 |
| 1928 | 1,286 | 1,318 | 1,653 | 700,981 | 35,721 | 6,176,232 |
| 1929 | 2,185 | 1,101 | 1,553 | 674,083 | 50,140 | 6,063,120 |

(1) Not reported.

Public knowledge of the health problems of the infant and the child has increased, and those in immediate charge of children and their mothers are better informed about infant and maternal hygiene. The importance of adequate prenatal care is being gradually learned. The advantages of breast feeding have been stressed so frequently by infant-welfare workers that the slogan printed on the stationery of the bureau of child health of Virginia, "The best-fed baby is the breast-fed baby," has become an accepted standard for the State staffs and infant-welfare workers in general. Simpler and more scientific formulas for feeding the bottle-fed baby have contributed to his health and chance of living. A greater demand has developed for the supervision of infants by competent pediatricians and specialists in infant feeding.

Standards of prenatal care have been formulated with great care by a committee of leading obstetricians from various parts of the country, organized for that purpose at the request of the United States Children's Bureau in 1924.[1] These standards have reached other

[1] Standards of Prenatal Care; an outline for the use of physicians. U. S. Children's Bureau Publication No. 153. Washington, 1925.

obstetricians, have been incorporated in obstetrical courses in medical colleges, and are part of the general knowledge of maternal-welfare workers. Their effect seems to be reflected in the lower mortality rate from puerperal eclampsia and convulsions, although the maternal mortality rates from certain other puerperal conditions not so easily influenced by prenatal care have not declined. Expectant mothers demand and are receiving a higher type of prenatal care.

State programs for the prevention of diseases in children through vaccination and immunization against diseases for which preventive measures have been accepted and proved effective have been extended through the assistance of the maternity and infancy staffs. A lower incidence of such diseases has been shown in areas where intensive preventive work has been done.

The menace of the untrained, ignorant, and unclean midwife has been greatly lessened during the years between 1921 and 1929 through progress in their registration, regulation, supervision, and instruction.

Many States have used maternity and infancy funds to assist in the manufacture and distribution of ampules of nitrate of silver for use in the eyes of the newborn infant (to prevent ophthalmia neonatorum). These States reported in the last years of operation of the act an increase in the number of requests for the ampules from physicians and midwives—especially the latter. In several States no case of ophthalmia neonatorum was reported during the past year. That fewer babies are blind from this cause seemed to be the conclusion of other States in their reports submitted at the expiration of the maternity and infancy act.

The States and the United States Children's Bureau have made studies and surveys of factors contributing to the morbidity and mortality of mothers and babies. The necessity of obtaining fuller and more accurate figures and of collecting more uniform data showed the importance of completing the birth and death registration areas in the United States. In 1921 the District of Columbia and 27 States were in the United States birth-registration area. By the close of the fiscal year 1929, 45 States and the District of Columbia were in the birth-registration area. In 1921 the United States death-registration area contained 34 States, the District of Columbia, and the Territory of Hawaii. In 1929 the death-registration area included 45 States, the District of Columbia, and the Territory of Hawaii. Maternity and infancy workers have given considerable assistance in State campaigns for improved registration of births and deaths.

Greater attention to the health of the preschool child marked the closing years of the maternity and infancy act. Prevention of communicable diseases for which means of prevention are known, periodic examinations of preschool children, the "summer round-up" of preschool children who will enter school in the fall, and the correction during the summer of defects found in these children in health conferences in the spring or early summer have been developed in large measure since 1921 and have grown to larger proportions in 1929, with resulting better health for children at the beginning of their school life.

The increase in the trained personnel employed in the promotion of maternal and infant health in 1929 as compared with 1921 and the improvement in standards and methods of work also reflect the progress made during the operation of the maternity and infancy act.

## DEVELOPMENT OF ORGANIZED STATE AGENCIES FOR PROMOTING THE WELFARE OF MOTHERS AND CHILDREN

### ORGANIZED BUREAUS IN STATE DEPARTMENTS OF HEALTH

A number of States anticipated the passage of the maternity and infancy act while it was pending in Congress and created maternity and child-hygiene bureaus or divisions to administer the funds under the act if they should become available. Thirty-three such State agencies were in existence at the beginning of 1921. During 1921 and 1922, 14 more were created; and in 1925, after extension of the benefits of the act to Hawaii, that Territory established a division of maternity and infancy.

By June 30, 1929, maternity and child-hygiene bureaus or divisions had been created and were functioning in the Territory of Hawaii and in all the States except Vermont, which did not establish a separate division or bureau to administer the Federal funds but has carried on the work under the immediate direction of the State health officer. Not only were such new agencies created, but those already existing were able to expand through the granting of Federal funds to the States that accepted the provisions of the act. The States that did not accept the Federal funds secured larger appropriations for maternal and child hygiene from their legislatures and were stimulated to greater activities.

### PERMANENT LOCAL AGENCIES FOR EDUCATING PARENTS IN CHILD AND MATERNAL HEALTH

The directors of State divisions and bureaus of maternity and child hygiene had as an objective the development of permanent local interest in the care of mothers and children and the assumption of local responsibility for such care.

Even in the first years of operation of the act many directors regarded the itinerant health conferences that they conducted for the local communities as demonstrations which were to pave the way for the establishment of similar facilities for child care on a permanent basis and with local support. This policy resulted in the establishment of 2,294 permanent child-health centers from 1924 to 1929, inclusive, also 311 permanent prenatal centers, and 373 permanent combined prenatal and child-health centers—some supported from local funds, others so supported in part.

### THE MATERNITY AND INFANCY PROGRAM IN THE DEVELOPMENT OF COUNTY AND OTHER LOCAL HEALTH WORK

Nurses paid in full or in part from maternity and infancy funds have been detailed to counties, communities, or cities, sometimes to work with an established county health unit or other official health agency, sometimes to conduct nursing demonstrations for the purpose of developing public interest in a permanent local nursing or health service. Not infrequently a nurse working alone in a county afforded a starting point for the development of a full-time county health department.

The establishment and extension of local health work were promoted by the use of maternity and infancy funds to help pay for local maternity and infancy work in proportion to the amount of time spent by the nurses in such work. Since the beginning of the

operation of the act 161 counties and 13 communities have assumed entire responsibility for maternity and infancy work begun by the use of maternity and infancy funds. Other counties and communities have assumed partial responsibility for such work or were ready to assume it at the expiration of the maternity and infancy act.

## THE TREND IN INFANT MORTALITY

The value of maternity and infancy work is reflected in the decrease in infant and maternal death rates in 1928 as compared with those in 1921.

Although the general death rate for all ages for the expanding birth-registration area was slightly higher in 1928 than in 1921, the infant mortality rate was lower, according to figures of the Bureau of the Census. In 1921 in this area, consisting of 27 States and the District of Columbia, the general death rate was 11.7 per 1,000 population; in 1928, in the area consisting of 44 States and the District of Columbia, it was 12, an increase of nearly 3 per cent. The infant mortality rate (deaths of infants under 1 year of age per 1,000 live births) for the expanding area was 76 in 1921 and 69 in 1928, a decrease of 9 per cent. This decrease was obtained despite the fact that a number of States admitted to the area since 1921 had high infant mortality rates. The 1928 rate (67) for the States that have been in the birth-registration area during the entire period 1921 to 1928 is 11 per cent lower than the 1921 rate (75) for this area.

If the same infant mortality rates had prevailed through the seven years of operation of the maternity and infancy act as in 1921, more than 60,000 babies who survived would have died in their first year of life.

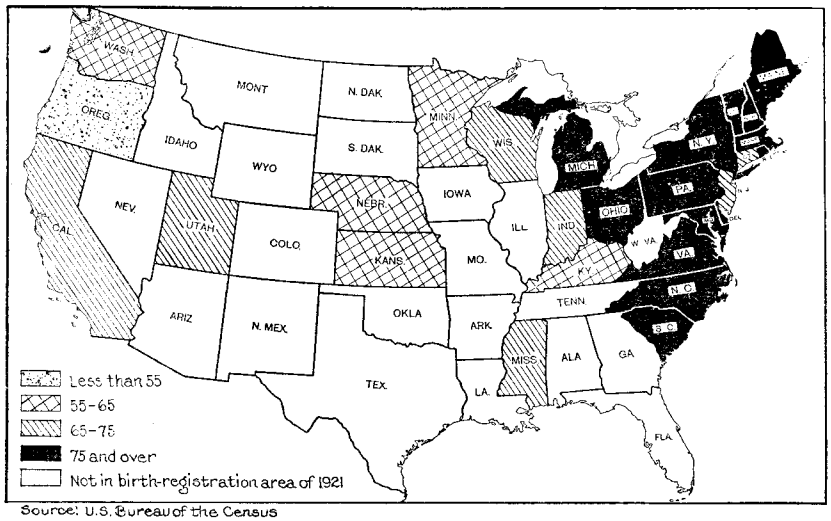
The mortality rate for white infants in 1921 was 72, as compared with 64 in 1928; for colored infants it was 108 in 1921 and 106 in 1928. In urban areas the mortality rate for infants was 78 in 1921 and 69 in 1928; in rural areas it was 74 in 1921 and 68 in 1928.

The maps on page 7 show the infant mortality rates for the States in the United States birth-registration area in 1921 and for these same States in 1928.

Infant mortality has shown a downward trend throughout the period of the cooperation of the States under the maternity and infancy act. In only one year was the rate higher than in 1921; that year was 1923, when the rate was 77, as compared with 76 in 1921. Slight fluctuations have occurred from year to year.

A comparison of infant mortality by causes for the States and the District of Columbia in the birth-registration area of 1921 (exclusive of South Carolina) shows that the rates from the important group causes were lower in 1928 than in 1921, with the exception of the rate from respiratory diseases, which was higher. The later months of 1928 were marked by a serious influenza epidemic, with its attendant respiratory complications. The increase in the infant mortality rate in the area of 1921 from 64 in 1927 to 67 in 1928 was undoubtedly due to the increase in the deaths from respiratory diseases, the mortality rate for the group being 25 per cent higher in 1928 (12.9) than in 1927 (10.3). (Table 7, p. 8.)

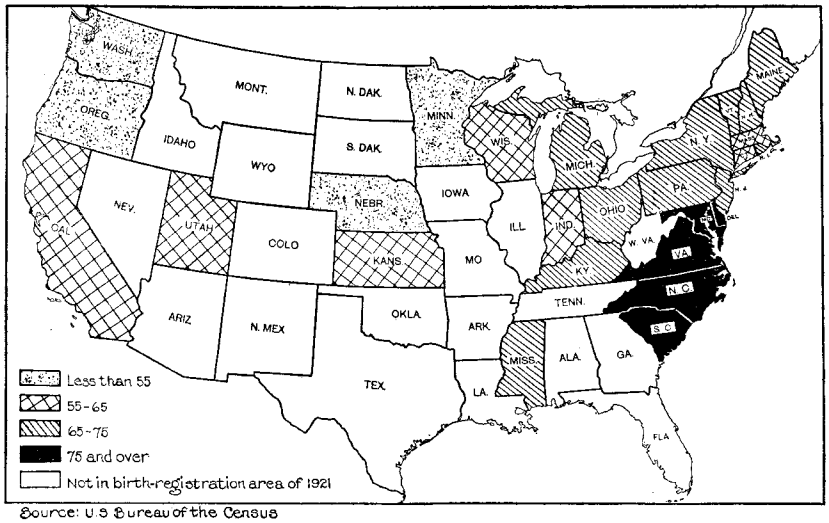
The rates from gastrointestinal diseases show a definite downward trend from 1921 to 1928. In 1928 the rate from these causes (7.9) was 47 per cent less than in 1921 (14.8). This group shows a greater




Source: U.S. Bureau of the Census

Infant mortality rates in 1921 in the birth-registration States of 1921 (deaths of infants under 1 year of age per 1,000 live births)

reduction than any other group of causes. Although the rates from natal and prenatal causes, which have their origin largely in the mother during pregnancy and confinement, do not show the definite downward




Source: U.S. Bureau of the Census

Infant mortality rates in 1928 in the birth-registration States of 1921 (deaths of infants under 1 year of age per 1,000 live births)

trend shown by the rates from gastrointestinal diseases, these rates have nevertheless decreased during the period. As Table 7 shows, the rate from natal and prenatal causes for the 1921 area was 33.9 in

1928 as compared with 36 in 1921. Reduction in infant mortality from gastrointestinal diseases reflects the work done in disseminating information on the importance of breast feeding and the proper preparation of simple formulas of cow's milk, the value of good routine in the care of the baby, sunshine, fresh air, and the introduction into the infant's dietary of the right foods at the right time. Reduction in mortality from natal and prenatal causes also reflects the wider knowledge of the care of the baby, the prenatal care the mother receives, and a greater attention to care at time of childbirth.

TABLE 7.—*Infant mortality rates, by specified groups of causes, in the United States birth-registration area as of 1921, exclusive of South Carolina; 1921–1928* [1]

[Source: United States Bureau of the Census]

| Cause of death | Deaths of infants under 1 year of age per 1,000 live births | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 |
| All causes | 75.0 | 75.7 | 76.2 | 70.3 | 71.8 | 73.6 | 64.0 | 67.0 |
| Natal and prenatal causes [2] | 36.0 | 35.9 | 35.6 | 35.0 | 34.9 | 34.9 | 33.5 | 33.9 |
| Gastrointestinal diseases [3] | 14.8 | 12.6 | 12.3 | 10.0 | 11.9 | 10.2 | 8.0 | 7.9 |
| Respiratory diseases [4] | 10.3 | 13.7 | 13.8 | 11.9 | 12.2 | 14.3 | 10.3 | 12.9 |
| Epidemic and communicable diseases [5] | 4.6 | 4.0 | 5.4 | 4.4 | 3.7 | 5.0 | 3.5 | 3.6 |
| External causes | 1.0 | 0.9 | 1.0 | 1.0 | 1.0 | 1.1 | 0.9 | 0.9 |
| All other causes [6] | 8.3 | 5.9 | 5.8 | 5.7 | 5.9 | 5.7 | 5.3 | 5.4 |
| Unknown or ill-defined diseases | ------ | 2.6 | 2.5 | 2.4 | 2.3 | 2.4 | 2.3 | 2.4 |

[1] Including California, Connecticut, Delaware, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia. These are the States that were in the birth-registration area every year from 1921 to 1928. South Carolina was dropped from the area in 1925 and reinstated in 1928. Rates are for the period 1921–1928 because 1921 immediately preceded the enactment of the maternity and infancy act and the 1928 figures are the latest available.

[2] Includes premature birth, congenital debility, injuries at birth, other diseases of early infancy, congenital malformations, syphilis, tetanus.

[3] Includes diseases of the stomach, diarrhea and enteritis, dysentery.

[4] Includes bronchitis, bronchopneumonia, pneumonia, influenza.

[5] Includes measles, scarlet fever, whooping cough, diphtheria, erysipelas, meningococcus meningitis, tuberculosis of the respiratory system, tuberculosis of the meninges, other forms of tuberculosis.

[6] Includes convulsions and other causes of death.

Infant mortality rates for the year 1927 are available for 29 foreign countries and for the year 1928 for 13 foreign countries. In 1927 six countries (Australia, the Netherlands, New Zealand, Norway, Santo Domingo, and Switzerland) had lower rates than the United States birth-registration area. Five of the 13 countries whose rates are available for 1928 (England and Wales, Irish Free State, the Netherlands, New Zealand, and Switzerland) had lower rates than the United States birth-registration area. New Zealand, which for many years has had a lower infant mortality rate than any other country, had in 1928 a rate of 36. The States in the United States birth-registration area most nearly approaching this rate are Oregon with a rate of 47, Washington with a rate of 48, Iowa and Nebraska with rates of 53.

The infant mortality rate of 1928 was lower than that of 1921 in the United States and in each of the 12 foreign countries for which rates for both 1921 and 1928 are available. These countries are Austria, Chile, England and Wales, Germany, Irish Free State, Japan, the Netherlands, New Zealand, Northern Ireland, Scotland, Switzerland, and Uruguay.

## THE TREND IN MATERNAL MORTALITY

During the period of the operation of the maternity and infancy act slight fluctuations in the maternal mortality rates have occurred from year to year, according to the figures reported by the United States Bureau of the Census, but no material decrease has been effected, except for certain causes. The rate for the birth-registration area of 1921, which consisted of 27 States and the District of Columbia, was 68 deaths from causes associated with pregnancy and childbirth per 10,000 live births as compared with 69 in 1928 in the area, which consisted of 44 States and the District of Columbia. This increase in the expanding area is due primarily to admission of States that have large negro populations and high maternal mortality. It is noteworthy that a decrease occurred in the area as of 1921, exclusive of South Carolina, the 1921 rate being 67 and the 1928 rate 64.

Under the maternity and infancy act the contacts with expectant mothers have usually been outside the large urban centers. The effect of this work, therefore, should be reflected in lowered maternal mortality rates in the rural areas. The rural rate for the 27 States and the District of Columbia in the registration area of 1921 was 59 per 10,000 live births. The rate in 1928 was 56 for the same area.

The maternal death rates for the 26 States and the District of Columbia in the birth-registration area from 1921 through 1928 show a downward trend throughout the period. In 1928 the rate from all puerperal causes was 64 per 10,000 live births as compared with 67 in 1921. The rates from puerperal hemorrhage, puerperal septicemia, and puerperal albuminuria and convulsions were lower in 1928 than in 1921. (Table 8.) It may be reasonably concluded that although the maternal mortality rates show no substantial decreases during the period of the maternity and infancy act, the lives of many mothers have been saved in rural areas as a result of the educational programs in regard to the need of prenatal care.

The maps on pages 10 and 11 show the maternal mortality rates in the States in the United States birth-registration area in 1921 and in the rural areas of these States, also the rates in these same States in 1928.

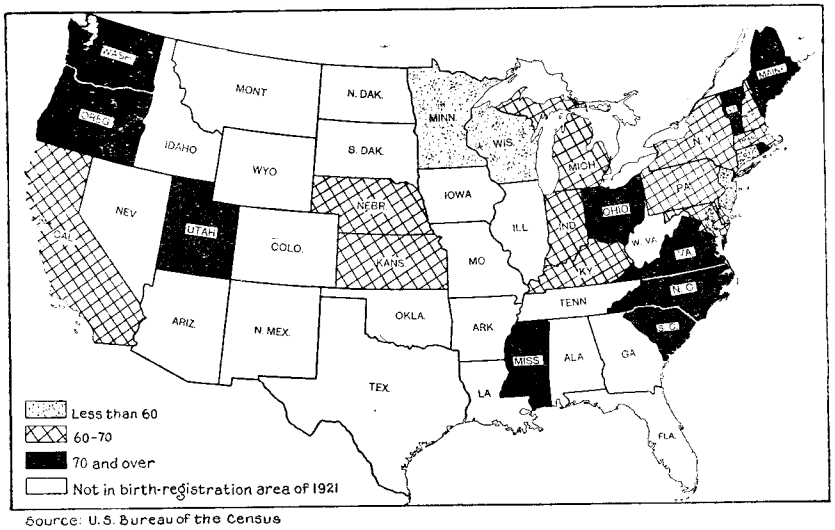
TABLE 8.—*Maternal mortality rates, by cause of death, in the United States birth-registration area as of 1921, exclusive of South Carolina; 1921–1928* [1]

[Source: United States Bureau of the Census]

| Cause of death | Deaths of mothers from causes associated with pregnancy and childbirth per 10,000 live births | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 |
| All causes | 67.3 | 65.4 | 65.8 | 64.0 | 64.3 | 64.6 | 62.3 | 64.2 |
| Accidents of pregnancy | 5.7 | 6.5 | 6.8 | 6.0 | 5.9 | 7.0 | 5.9 | 6.9 |
| Puerperal hemorrhage | 7.2 | 6.5 | 6.6 | 6.6 | 6.6 | 7.0 | 6.9 | 7.0 |
| Other accidents of labor | 6.7 | 7.6 | 7.6 | 6.7 | 7.1 | 7.5 | 7.0 | 7.8 |
| Puerperal septicemia | 27.1 | 23.6 | 25.0 | 24.0 | 24.2 | 23.6 | 24.1 | 23.5 |
| Puerperal albuminuria and convulsions | 17.4 | 17.8 | 16.1 | 17.0 | 17.1 | 16.2 | 15.1 | 15.8 |
| All other causes | 3.2 | 3.4 | 3.6 | 3.8 | 3.5 | 3.3 | 3.4 | 3.3 |

[1] Including California, Connecticut, Delaware, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia. These are the States that were in the birth-registration area every year from 1921 to 1928. South Carolina was dropped from the area in 1925 and reinstated in 1928. Rates are for the period 1921–1928 because 1921 immediately preceded the enactment of the maternity and infancy act and the 1928 figures are the latest available.

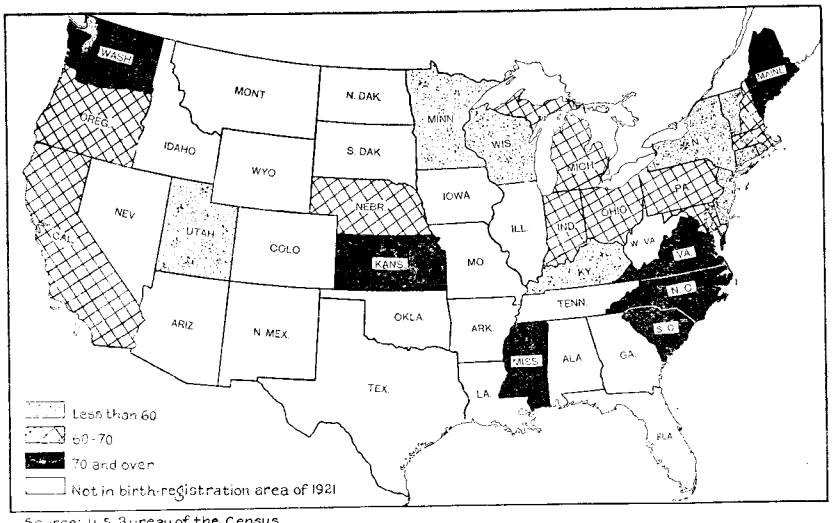
Comparison of maternal mortality rates of the United States birth-registration area with those of foreign countries gives the United States a less favorable position than the comparison of infant mor-




Source: U.S. Bureau of the Census

Maternal mortality rates in 1921 in the birth-registration States of 1921 (deaths of mothers from causes associated with pregnancy and childbirth per 10,000 live births)

tality rates. The maternal mortality rate for the United States in 1927 (65 per 10,000 live births) was higher than that of any of the 20 other countries for which rates are available; in 1928 the rate (69)

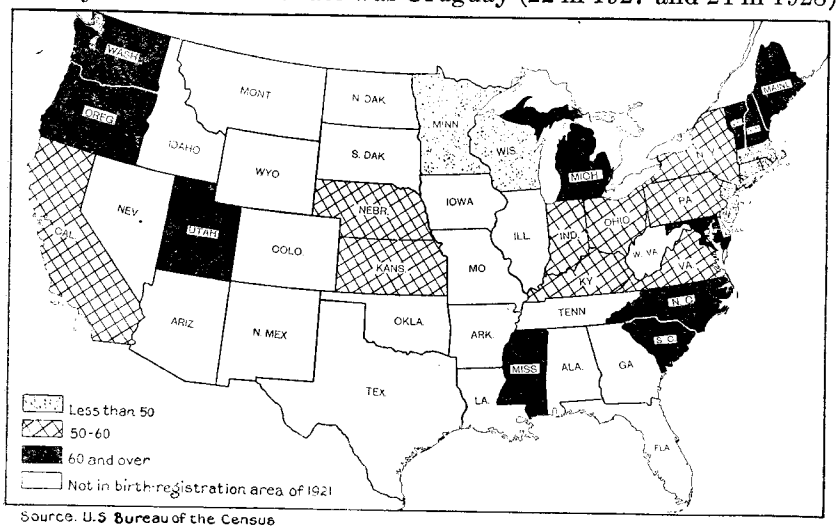



Source: U.S. Bureau of the Census

Maternal mortality rates in 1928 in the birth-registration States of 1921 (deaths of mothers from causes associated with pregnancy and childbirth per 10,000 live births)

exceeded all but one of the 9 other countries reporting figures at this time. The country with a rate most nearly approximating that of the United States was Scotland, which had a rate of 64 in 1927 and 70 in

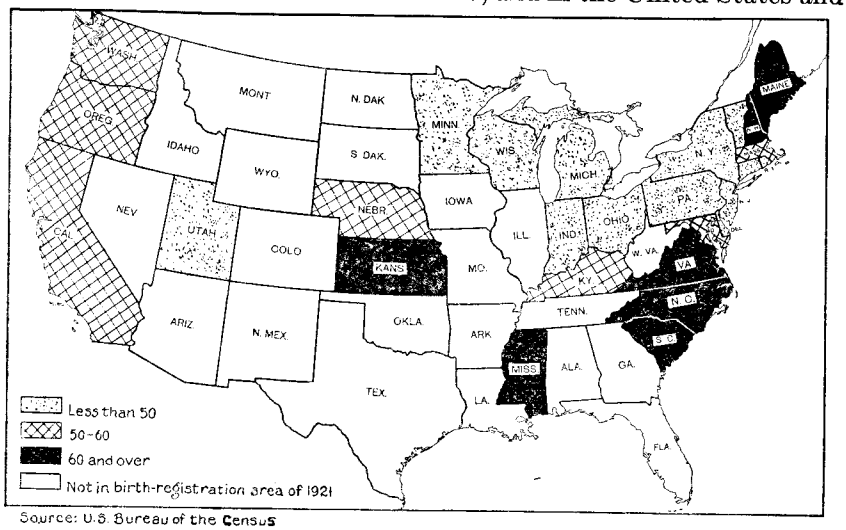
1928. Most of the other countries had rates considerably lower. The country with the lowest rate was Uruguay (22 in 1927 and 24 in 1928).




Source: U.S Bureau of the Census

Maternal mortality rates in 1921 in rural areas of the birth-registration States of 1921 (deaths of mothers from causes associated with pregnancy and childbirth per 10,000 live births)

Figures for both 1921 and 1927 are available for 18 foreign countries. In 7 the rate for 1927 was higher than that for 1921; in 2 the 1927 rate was the same as the 1921 rate; and in the United States and




Source: U.S. Bureau of the Census

Maternal mortality rates in 1928 in rural areas of the birth-registration States of 1921 (deaths of mothers from causes associated with pregnancy and childbirth per 10,000 live births)

9 other countries the rate was lower. The foreign countries showing 1927 rates lower than those of 1921 were Chile, Czechoslovakia, Finland, Irish Free State, Japan, New Zealand, Northern Ireland, Switzerland, and Uruguay.

In the expanding United States birth-registration area the 1928 maternal mortality rate was 69 as compared with 68 in 1921. The rates of a constant area (such as that of the States in the United States birth-registration area from 1921 to 1928) are, however, more comparable with those of foreign countries, which are generally constant in size, than the rate of the expanding United States birth-registration area. The rate for such an area composed of the States in the United States birth-registration area during the entire period from 1921 to 1928 shows a decrease from 67 in 1921 to 64 in 1928. The 1927 rate for this area was 62. The tendency toward higher rates in 1928 is also apparent in foreign countries, as 6 of the 9 foreign countries for which 1928 rates are available (England and Wales, Irish Free State, the Netherlands, Northern Ireland, Scotland, and Uruguay) had higher rates in 1928 than in 1927. The rates for Japan and New Zealand were the same for both years, and that for Chile was lower.

The phase of the work dealing with the importance of prenatal care for both mother and child has been well begun. Good prenatal care is a factor in preventing puerperal albuminuria and convulsions; and the downward trend in the rate of deaths from this cause of maternal mortality during the operation of the maternity and infancy act has been noted. The number of women seeking such care is still relatively small, and much more education of the public as to the importance of early and regular medical supervision of the expectant mother is needed. Encouraging features are the increased interest shown by women in seeking and by physicians in giving such care and the recognition of the services of the maternity and infancy nurse as the most effective means of reaching expectant mothers.

## PUBLIC INTEREST IN THE PROMOTION OF THE WELFARE AND HYGIENE OF MATERNITY AND INFANCY

Great interest on the part of the public was aroused in the welfare and hygiene of maternity and infancy as a result of the passage of the maternity and infancy act. The regular work of the State agencies and the United States Children's Bureau in the administration of the act has provided additional stimulation of this interest, which has developed quite outside of the actual information disseminated concerning maternal and infant care. Newspapers and magazines have carried columns on the care of mothers and babies. The public has been informed about the essentials of proper care for mothers and babies by material from these unofficial sources, which have been based largely on official information. Editorials have been written, both pro and con, on the Sheppard-Towner Act. In 1921 it was still a moot question whether child hygiene and maternal hygiene were necessary divisions in a good State public-health program and whether they belonged in a disease-prevention program. Now, however, the general public, as well as official State agencies, recognize the necessity of including in public-health programs the prevention of morbidity and mortality of mothers and babies.

Obstetrical procedures and the feeding and care of babies are topics on medical-society programs much more frequently than before the passage of the maternity and infancy act, and sections on infant and child hygiene contribute to the growing interest of public-health programs and meetings. The welfare of the child and the mother is a

topic of increasing interest at conferences of public-health nurses and social workers also. The active support of the great organizations of lay groups that have sponsored the maternity and infancy act from its inception continues and is not confined solely to women's organizations. Some loss of public interest may be expected, however, as a result of the curtailment of the work through the lack of appropriation of Federal funds.

### CONTINUATION OF MATERNITY AND INFANCY WORK

Will the States carry on this joint work unaided by the Federal Government so that there will be no loss to the mothers and babies? Can we expect the expansion of programs on the basis of the demonstrated successes of the last few years without Federal assistance?

Nation-wide interest in this problem of the health of mothers and babies has been almost as important in promoting the work as the money contribution, but funds are essential if gains that have been made are to be conserved and extended. When the Federal maternity and infancy act came to an end every effort was made by its supporters to secure State appropriations equaling at least the combined Federal and State funds that were expended in the fiscal year ended June 30, 1929. This effort for increased appropriations was made in order to continue the work that was being done and also because in the event of the enactment of a law continuing Federal cooperation the increased appropriation would make possible an expansion of activities along the lines that experience had indicated were desirable.

At the expiration of the maternity and infancy act 16 States and the Territory of Hawaii reported that their legislatures had appropriated an amount equaling or exceeding the combined Federal and State funds available for the previous year. These States are: Delaware, Maine, Maryland, Michigan, Missouri, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Pennsylvania, South Dakota, Tennessee, Vermont, and Wisconsin. In some of these the appropriation was made because the women of the State requested it in such overwhelming numbers that refusal seemed impossible. In Florida the support for the work comes from a millage tax for the health department, and the State reported that it expected the returns to enable it to expend an amount equal to the State and Federal funds for maternity and infancy work of 1929.

In five States—California, Indiana, Minnesota, Montana, and Texas—the legislatures had made appropriations that represented large increases over those for the previous year but did not quite equal the amount of combined State and Federal funds which the States had under the maternity and infancy act. The legislatures of seven States—Georgia, Kansas, Ohio, Oklahoma, Rhode Island,[2] West Virginia, and Wyoming—had made appropriations that represented increases over State appropriations for 1929 but were considerably less than the combined State and Federal funds for 1929. In six States—Arkansas, Colorado, Iowa, Nebraska, Oregon, and South Carolina—the appropriations made were the same or less than the State appropriations for 1929, so that the work had to be greatly curtailed. In Arizona, where the legislature made an increased State

[2] In Rhode Island the 1930 legislature appropriated an amount equaling the combined Federal and State funds that the State had under the maternity and infancy act.

appropriation, and in Utah, where the appropriation was the same as in the previous year, the State funds might be spent only if Federal funds were available. In Idaho no State funds might be spent after December 31, 1929, unless Federal funds should be available.

Two States—Nevada and Washington—made no appropriations for carrying on the work. The legislatures of Alabama, Kentucky, Louisiana, Mississippi, and Virginia did not meet in 1929.[3]

The threat of withdrawal clearly acted as a two-edged sword, stimulating some States to greater expenditures and influencing others to reduce the work if the Federal Government withdrew. In a third of the cooperating States the money appropriated was sufficient to continue the present activities; in the others physicians and nurses had to be dismissed and cooperative arrangements with counties and local communities curtailed when the Federal Government failed to continue promoting the health of mothers and babies through some sharing of the expense involved. Even the States securing an appropriation equaling the combined State and Federal funds reported a drop in the interest in the program since July 1, 1929. In other words, the participation of the Federal Government contributed something else as important as money.

[3] In Alabama the State board of health allotted from its appropriation the sum of $74,173 for "child hygiene and public-health nursing" in 1929. In Kentucky and Virginia the 1930 legislatures made appropriations equaling the combined Federal and State funds the States had under the maternity and infancy act. In the interim the work in Kentucky has been carried on with funds raised by private subscription. In Mississippi the 1930 legislature appropriated a sum equal to the State appropriation for the previous biennium. In Louisiana the 1930 legislature made no appropriation for maternity and infancy work.

## SERVICES OF THE CHILDREN'S BUREAU UNDER THE ACT

A maternity and infant-hygiene division of the Children's Bureau was organized in 1922 to administer the maternity and infancy act. The existing child-hygiene division of the bureau continued its research in the general field of child health but had no responsibility for the administration of the act. To the maternity and infancy division, after approval of the State plans and budgets submitted to the Federal Board of Maternity and Infant Hygiene[1] were intrusted the details of the Federal administration of the act. Its work included auditing annually the State accounts covering the Federal and matched funds allotted to the States under the act, checking financial reports and reports of work submitted by the States with their plans and budgets, compiling annual reports of the joint work of the State and the Federal Governments in this field, establishing contacts with the States through advisory visits made by the administrative and field staffs of the division, and conducting surveys designed to promote the purposes of the act.

The visits to the States by the director, the other physicians, and the consulting nurse kept the bureau informed of the types, amount, and character of the work in the States. To the States these specialists brought an outside point of view of the work they were doing and accounts of what other States were finding helpful. Sometimes an obvious need for special personnel was noted, and this resulted in the lending of personnel from the Children's Bureau for demonstration or some other special work in the States. In addition to its administrative work the maternity and infant-hygiene division served as a clearing house for information on maternal and infant care for the public—which included mothers, authors, scientists, social workers, nurses, and other groups.

Through this division field studies relating to maternity and infancy were directed. The child-hygiene division also conducted studies and research relating to the infant and the child, and both divisions assisted in the preparation of publications, films, and other educational material relating to maternal and child welfare issued by the bureau.

### THE STAFF OF THE MATERNITY AND INFANT-HYGIENE DIVISION

For the purposes of administration $50,000 was allotted annually to the Children's Bureau from the maternity and infancy fund for 1923 and 1924 and $50,354 from 1925 to 1929.[2] The headquarters staff of the maternity and infant-hygiene division and the number of other persons regularly employed were kept at a minimum. This policy left available sufficient funds for certain studies and demonstrations and for the lending of specially trained personnel to do special field work for short periods. The headquarters staff was a fairly constant group consisting of the director (a physician), an assistant director or a specialist in child hygiene (also a physician), the accountant,

[1] See maternity and infancy act, secs. 3 and 8 (Appendix A, pp. 127, 128).
[2] See the maternity and infancy act, sec. 5 (Appendix A, p. 128).

who in addition to auditing the expenditures of maternity and infancy funds in the States also acted as accountant at headquarters, a secretary, and two clerks. The field staff changed in type and number of workers and in the services rendered as occasion demanded and as new types of work developed. In 1929 this staff included 12 physicians, 2 nurses, and 1 other worker.

## ASSISTANCE TO STATES

From 1922 to 1929 the director of the maternity and infant hygiene division visited each of the cooperating States and the Territory of Hawaii. Many of the States received several of these advisory visits. The consulting nurse made advisory visits to approximately all the cooperating States, and the accountant made annual visits to the States to audit accounts.

The passage of the maternity and infancy act produced an immediate demand for trained workers, which was in excess of the supply. At the request of the States the consulting staff nurse of the bureau arranged a course of instruction in maternal and child care for nurses, which she gave before groups of nurses. Between December 1, 1922, and June 30, 1923, such institutes for nurses were held in 16 States.

Many States requested the services of physicians from the Children's Bureau to conduct demonstration child-health or prenatal conferences. Physicians were secured for such work and served for varying periods in Kentucky, Montana, North Carolina, North Dakota, Oregon, and South Carolina.

Racial groups presented needs for special workers for improvement of midwives. The negro midwives of the South offered a special problem in connection with the lowering of the death rate in the Southern States. At the request of the State health officers of Delaware, Georgia, Tennessee, Texas, and Virginia, the negro woman physician on the staff of the maternity and infant-hygiene division served as instructor of negro midwives and promoted birth registration for five years. She also held conferences in connection with health week at the hospital of the State normal and industrial institute at Tuskegee, Ala. The Spanish-speaking public-health nurse on the staff aided in instructing midwives in New Mexico. Demonstrations of maternity and infancy work were conducted in several States at their request. For several months one of the public-health nurses on the Federal staff conducted a demonstration nursing program in maternal and child care in four counties of Utah: following this she gave a demonstration program in care of the preschool child in Nebraska, then a demonstration of a public health nursing program in the interest of mothers and babies in Wyoming. Each of these demonstrations awakened local interest and stimulated local activities for improving maternal and child hygiene.

Considerable assistance was given to State campaigns for improvement of birth and death registration. Good vital statistics are the foundation for good public-health programs. They furnish the compass by which public-health work is guided. Without them any public-health program is more or less uncertain. Realizing this, the Children's Bureau was eager to assist States that were conducting campaigns to bring themselves into the United States birth and death registration areas.

To 10 States the bureau gave special assistance in their campaigns to secure more complete registration: Arkansas, Colorado, Georgia. Idaho, Louisiana, Nevada, New Mexico, Oklahoma, South Carolina. and Texas. The director of the maternity and infant-hygiene division also served as a member of the National Committee to Aid Completion of the Registration Area before 1930. Both the birth and death registration areas are now complete for continental United States with the exception of South Dakota and Texas.

The specialists in child hygiene and obstetrics who were on the the staff as special consultants gave part-time services on request in 11 States. One specialist in child hygiene gave educational talks in California, Colorado, Louisiana, Michigan, and West Virginia; another was lent to give courses in child hygiene to physicians in Montana. Nevada, and Oklahoma. A specialist who was consultant in obstetrics conducted courses in obstetrics for physicians in Kentucky and Oklahoma and gave some educational talks in Alabama. A member of the obstetrical advisory committee conducted such courses in Georgia and Florida. The bureau gave special statistical assistance in the analysis of maternal and infant mortality data in Delaware, Indiana, Kentucky, Maryland, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Virginia, and Wisconsin. An analysis of infant and maternal morbidity and mortality in Idaho was requested by the Idaho Department of Public Welfare, and a statistician from the bureau was assigned to the State for the study. At the request of Tennessee a statistician was assigned to that State to make a study of neonatal and maternal mortality in relation to the attendant at birth, in six counties.

## CONFERENCES OF STATE DIRECTORS

Five annual conferences of directors of State bureaus and divisions administering the Federal maternity and infancy act were held in the Children's Bureau in Washington during the seven years of the operation of the act. (No conference was held in 1922, the first year of the operation of the act, and none in 1929, the last year of its operation.) The attendance included not only the directors from practically all the cooperating States, a number of associate directors, supervising nurses, and other members of the child-hygiene or child-welfare bureaus and divisions but also State health officers from several of the States. Representatives from the three noncooperating States also attended some of the conferences. The directors decided upon the time for holding the conferences and the topics to be discussed. The Children's Bureau arranged for transportation and details in relation to the program, including securing of speakers. Representatives from private organizations whose direct or indirect purpose is the furtherance of maternal or child welfare or hygiene, as well as specialists in pediatrics, obstetrics, nutrition, and related subjects, were among those who appeared on the conference programs. These conferences made possible the exchange of experiences by the State directors and proved of great practical value to them.

## ADVISORY COMMITTEES

Two advisory committees, one of pediatricians and one of obstetricians, rendered valuable services to the bureau. The members of these committees are distinguished in their special fields. The pediatric advisory committee consists of three members, one named by each of the following organizations: The American Pediatric Society, the pediatric section of the American Medical Association, and the American Child Health Association. The director of the child-hygiene division of the Children's Bureau meets with this committee. Standards for conducting child-health conferences were formulated by the pediatric advisory committee, with the assistance of two university professors of pediatrics and a State director of maternity and infancy work. All educational material on infant care and child care issued by the bureau is submitted to this committee for approval or revision.

The obstetrical advisory committee was organized at the request of the 1924 conference of State directors of bureaus of child hygiene, the suggestion being made that a committee be appointed to draw up standards of prenatal care for the use of physicians at clinics and also in private work. The Children's Bureau accepted the suggestion, and the chief of the bureau requested an obstetrician who is also a member of the faculty of the Harvard Medical School to form such a committee. The members, who represent different geographical sections of the country, include instructors in obstetrics from several medical schools. The director of the maternity and infant-hygiene division of the Children's Bureau meets with this committee. This committee formulated standards of prenatal care for physicians, which were published by the Children's Bureau in 1925 as one of its bulletins and which have been adopted by several medical schools for use in their courses of instruction. The committee continued to serve the bureau in an advisory capacity, and its chairman also has rewritten the bureau's bulletin Prenatal Care, which like all the bureau's publications on this subject was approved by the committee before it was issued. The scope and character of the maternal-mortality study made by 15 States in cooperation with the bureau were determined largely by this committee.

These two committees are not merely nominal; they render great service to the bureau and to parents and State directors who look to the bureau for material on the subject of adequate maternal, infant, and child care.

## SURVEYS AND STUDIES

The Children's Bureau cooperated in surveys and studies in a number of States. Usually the cooperation included the assignment of bureau personnel for the purpose of collecting data in the States, the information obtained to be compiled, edited, and published later by the bureau.

### SURVEY OF MATERNITY HOMES

Soon after the passage of the maternity and infancy act a survey of maternity homes was made in cooperation with the State of Pennsylvania. Both health and social aspects were investigated, a physician

and a social worker being assigned from the bureau for the study. Later the investigation was extended to Minnesota, and still later Montana requested a survey of maternity homes and a physician was assigned to make the survey in that State.

### STUDY OF STILLBIRTHS AND NEONATAL DEATHS

An investigation of stillbirths and neonatal deaths was begun at the University of Minnesota in 1923 for the maternity and infant-hygiene division of the Children's Bureau. The study related to factors responsible for the deaths before, during, and after birth and included a study of etiology, pathology, and prevention, based on about 1,000 stillbirths and deaths of infants under 2 weeks of age. The tabulations are in process of analysis by bureau statisticians.

### STUDY OF NEONATAL MORBIDITY AND MORTALITY

In 1928 the child-hygiene division of the bureau began a study of the causes of neonatal morbidity and mortality, in cooperation with the Yale University School of Medicine. Infants were examined on the first, third, tenth, fourteenth, and forty-second days of life, and a pathological study was made of any who died before the forty-second day. The information regarding 1,001 cases to be included in the report of the study will follow certain general lines relating the natal and neonatal history of the child to the prenatal and natal history of the mother. Special analysis will be made of the history of the premature infants; and the history of those who were stillborn or who died within the first month after birth will be given special attention to determine so far as possible the cause of death. The findings in these special studies and in the autopsies made will be considered in connection with the information available for the whole group.

### STUDY OF MATERNAL MORTALITY

A maternal-mortality study was discussed by the chairman of the bureau's obstetrical advisory committee at the 1926 conference of State directors of maternity and infancy work, and such a study was approved by the conference. A plan of work, schedules, and instructions covering details of the work were prepared with the assistance of the bureau's obstetrical advisory committee. Every maternal death registered within the calendar years 1927 and 1928 was investigated in 13 States and every such death registered in 1928 in these States and two additional States. These 15 States were the following: Alabama, California, Kentucky, Maryland, Michigan, Minnesota, Nebraska, New Hampshire, North Dakota, Oklahoma, Oregon, Rhode Island, Virginia, Washington, and Wisconsin.

The investigations made by the physicians included the selection of data from birth and death certificates, and visits to attendants, physicians, midwives, or others who attended the woman who died. The hospital record was obtained for all of these women who had had hospital care. The Children's Bureau lent physicians to nine States to make the investigations. Six States supplied physicians from their own staffs to make the visits to attendants, only advisory and other occasional service being rendered these six States by the bureau. Facts in the birth and death certificates filed in the State bureaus of vital statistics afforded the preliminary data. Further information was obtained by the medical investigators in their interviews with the physician, midwife, or other attendant at birth for every woman who

died in childbirth within the period of the study. The data from the 7,537 schedules obtained in the 15 States came to the Children's Bureau to be tabulated and analyzed.

In the 13 States in which all maternal deaths of 1927 (3,234) were investigated 797 of these deaths were due to albuminuria and convulsions. Reports on the prenatal care received were obtained for 728 of these deaths. More than half the women (375) received no prenatal care. Of the 355 who had some prenatal care, 192 had wholly inadequate care. Sixty-four had fair care beginning somewhat late in pregnancy, and 76 received care that was regarded as good though below the requirements in the bulletin, Standards of Prenatal Care, prepared by the obstetrical advisory committee of the Children's Bureau and issued by the bureau. Only 20 mothers had the grade of care "excellent" recommended in this bulletin. In 3 cases the care could not be graded.

It should be borne in mind that the statement of the amount and kind of prenatal care given relates only to a group of women who died from albuminuria and convulsions; a survey of care given mothers surviving childbirth might show a larger proportion of women receiving proper prenatal care.

Of the 3,234 puerperal deaths in 1927 in 13 States, 1,278 (40 per cent) were due to puerperal septicemia. One of the objects of the study has been to determine the underlying causes of the deaths from sepsis, which form a large proportion of the puerperal losses. It was found that abortions preceded 45 per cent of the deaths from septicemia. Of a total of 570 abortions 309 were induced, 154 were spontaneous, 19 were therapeutic, and for 88 the type was unknown. Thus abortions known to be induced were responsible for about one-fourth of the deaths from sepsis.

A study of 796 cases in the sepsis group for which prenatal care was reported showed that nine-tenths of the women had had inadequate care or no care.

### STUDY OF RICKETS

Some of the work of the child-hygiene division of the bureau was of direct value in promoting the purposes of the maternity and infancy act—in particular a study of rickets made by that division in cooperation with the Yale University School of Medicine and the New Haven Department of Health. A district consisting of three wards of New Haven was selected for the demonstrati n part of the study, which covered approximately three years. During this period clinical and X-ray examinations were made of the children receiving treatment and of a control group. Social and economic data having a bearing on the development of rickets in New Haven also were collected. Tabulations were made showing the relation of the New Haven rickets diagnoses in each 3-month period to the amount of cod-liver oil taken, the diet, the presence of tanning of the skin, the rate of growth, and the deviation from average weight for height and age, not only in the period under consideration but also in contiguous periods.

A study of approximately 600 Porto Rican infants also was made to furnish further standards for interpreting the New Haven findings. The study covered, in addition to data on rickets, not only certain aspects of health but also material on social and economic conditions in the families of the children, diets, and such local conditions as were

pertinent to the study. The health of the children as indicated by morbidity and mortality statistics was considered, their growth, and their general physical condition. The report of this study will include a detailed discussion of the incidence of rickets, evidences of the disease found in röntgenograms of the arm bones and at physical examination, and the relation of these evidences to various other factors.

In addition to the rickets studies in New Haven and Porto Rico a study was made of rickets in children in the District of Columbia. Both clinical and X-ray data were collected in this investigation, and attention was given also to the nutrition of the children.

### PREPARATION OF MATERIAL FOR DISTRIBUTION

Although the States themselves prepare popular publications on child care and maternal care for distribution to the public, most of them also receive regular quotas of certain popular bulletins on child and maternal care issued by the Children's Bureau, which they distribute to their public. Several new folders were prepared during the period when the bureau and the States were conducting this cooperative program and were widely distributed by State directors.

A number of bureau publications have been prepared for the information of physicians and nurses conducting child-health work, for scientists, and for research workers. Included in this group of publications are Standards for Physicians Conducting Conferences at Child-Health Centers, Standards of Prenatal Care—an outline for the use of physicians, Prenatal Letters (prepared for the use of State bureaus or divisions of child hygiene), References on the Physical Growth and Development of the Normal Child, Posture Clinics, Posture Exercises, Habit Clinics for the Child of Preschool Age, Milk—the Indispensable Food for Children, and What Is Malnutrition?

In the grant of funds to the States the maternity and infancy act assisted directly in the promotion of the welfare and hygiene of maternity and infancy. The surveys and studies of the Children's Bureau, the lending of members of the Federal staff who are specialists in child hygiene and obstetrics, the conferences of State directors, the assistance given by national advisory committees of pediatricians and obstetricians, and the popular bulletins published by the bureau also played an important part in this joint undertaking of the State and Federal Governments.

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