U. S. DEPARTMENT OF LABOR
JAMES J. DAVIS, Secretary
CHILDREN'S BUREAU
GRACE ABBOTT, Chief

INFANT MORTALITY

RESULTS OF A FIELD STUDY IN GARY, IND., BASED ON BIRTHS IN ONE YEAR

By

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LETTER OF TRANSMITTAL.

U. S. Department of Labor,
Children's Bureau,
Washington, May 13, 1922.

Sir: There is transmitted herewith a report on infant mortality in the city of Gary, Ind., the ninth in the bureau's series of reports on infant mortality.

This study is part of a general investigation of the welfare of infants and children of preschool age made while Miss Julia C. Lathrop was chief of the Children's Bureau. Separate reports will present the findings with reference to the health of the children of preschool age, the conditions under which they live, and the general care they were receiving.

The investigation was directly in charge of Estelle B. Hunter; Dr. Robert M. Woodbury was responsible for the interpretation of the statistical findings, and has written the appendix on Method of Procedure; Elizabeth Hughes, who has written the main body of the report, was the supervisor of the local field work.

The bureau desires to acknowledge with thanks the assistance of its statistical committee—Professors Walter F. Willcox, Irving Fisher, Thomas S. Adams, Robert E. Chaddock, J. W. Glover, and Edith Abbott—in the planning of the inquiry; and the cooperation on the part of the mothers, public officials, and local organizations of Gary which made the carrying out of the plan possible.

Respectfully submitted.

Grace Abbott, *Chief.*

Hon. James J. Davis,
Secretary of Labor.

INFANT MORTALITY, GARY.

INTRODUCTION.

SELECTION OF GARY, IND.

In 1913 the Children's Bureau began the first of its field inquiries into the subject of infant mortality and the social and economic conditions surrounding infant life in typical American cities.[1] This report presents the findings of the ninth unit in the series. The studies preceding this were made during normal times of peace; the babies considered in this report, though born in 1916 before the United States became an active participant in the World War, completed their first year, or whatever part of it they survived, in a community which was devoting much of its energy toward furthering war-time production of steel.

In 1906 there appeared upon the southern shore of Lake Michigan the gigantic mills of the steel corporation and the nucleus of the town of Gary in which the men employed at the mills were to live. An unpeopled waste of shifting sand dunes and marshes in 1906, by 1910 its population was 16,802.[2] In 1917 the population was estimated by the Bureau of the Census at 56,000,[3] or practically the same as that returned in the census of 1920, 55,378.[4] The city is young, rapidly growing, and progressive. Ever since its inception, the city and its method of meeting civic responsibilities have continued to hold the interest of the public. Industrially, Gary is unusually homogeneous; the steel industry overshadows all other activities. In point of number of nationalities represented, its citizenship is exceedingly diverse. The foreign born constitute over one-half the entire population. The study of infant mortality under these conditions is therefore of especial interest in comparison with cities previously studied by the bureau.

In spite of Gary's rapid growth and progressive spirit the city possessed a high rate of infant mortality.[5] In 1917, for cities in the

[1] Between 1913 and 1918 studies were made in Johnstown, Pa.; Manchester, N. H.; Brockton, Mass.; Saginaw, Mich.; New Bedford, Mass.; Waterbury, Conn.; Akron, Ohio; and Baltimore, Md.

[2] Thirteenth Census of the United States, 1910, Vol. II, Population, p. 568.

[3] U. S. Bureau of the Census, Birth Statistics for the Birth-Registration Area of the United States, 1917, p. 24.

[4] Fourteenth Census of the United States, 1920, Vol. I, Population, p. 83.

[5] An infant mortality rate is the number of deaths under 1 year of age per 1,000 live births.

birth-registration area,[6] the infant mortality rate was 100,[7] while Gary's rate for the same period was 142.[8]

METHOD.

As in former studies of infant mortality the Gary study is based upon births that occurred in the city during a selected year, 1916, and upon the deaths under 1 year of age among this group of children. The year 1916 was chosen because by January 1, 1918, when the study was begun, all the children born in 1916 would have completed a full year of life if they had not died before reaching their first birthdays.

Three principal sources of information were used. The first was the birth and death records of infants born in Gary in 1916. The names, addresses, and facts about the parents and the children were transcribed to schedules to be used in home interviews. A second source of information was a house-to-house canvass of the city which was made prior to the interviews in the homes. In view of the fact that in 1916 Indiana had not been admitted to the birth-registration area, such a census was necessary in order to supplement the list of registered births. It yielded, furthermore, up-to-date addresses for the parents of children born in 1916 and also added a considerable number of new names to the list of births in the selected year. Finally the most important source of information was the home interviews. The mothers of children born in Gary in 1916 were interviewed by the women agents of the bureau, and information was secured in regard to infant feeding during the first year of life, the mother's maternity history, the mother's employment history, and the family income, and housing conditions.

Study of the registration records of Gary showed 1,499[8a] live births and 68 stillbirths that occurred in the city during 1916.

The house-to-house canvass of the city disclosed 183 unregistered live births and 3 unregistered stillbirths, making the total live births, both registered and unregistered, 1,682; the total stillbirths, 71; and the total number of births, both live and still, 1,753.

As in other studies of infant mortality, not all the births known to have occurred in the city during the period selected could be used in the detailed study.

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[6] In the birth-registration area are included only States in which, in the judgment of the Bureau of the Census, at least 90 per cent of the births are registered. In 1917 the birth-registration area comprised: Connecticut, District of Columbia, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, and Wisconsin. U. S. Bureau of the Census, Birth Statistics for the Birth-registration area of the United States, 1917, p. 7.

[7] Ibid., p. 23.

[8] Ibid., p. 24, Table I.

[8a] Includes 44 registered only as deaths.

For 290 infants, the information called for on the schedule could not be obtained because the families into which these children were born had moved away from the city before the date of the canvass. Twenty babies were born in Gary to mothers who resided outside the city but had come to Gary hospitals for confinement. In 40 cases the families could not be located. In 2 cases the data secured seemed too incomplete and unreliable to be included. Four stillbirths of less than seven months' gestation were excluded in order to conform to the definition of stillbirth adopted in all the bureau studies.[9] Four births out of wedlock were excluded on the ground that the conditions surrounding such births are not the same as in normal families.

Deduction of exclusions from the total number of births for the period, 1,753, leaves as a basis for study 1,353 live births and 40 stillbirths (of seven or more months' gestation). This number includes those born during the calendar year 1916 to married mothers in families which lived in Gary during the year following the birth, and which were living in Gary at the time of the canvass.[9a]

Before the canvass started in February, 1918, residents of Gary had been made familiar with the character and plan of the proposed inquiry through the newspapers, the schools, and the pulpit. Constant and intelligent cooperation on the part of the city, its officials, its organizations, institutions, and citizens attended every step of the inquiry. Individual mothers gave most generously of their time. Of all the mothers interviewed, none refused to answer the questions upon which this report is based. This widespread civic interest and ready individual contribution to a study of infant and child life in the community are unmistakable evidences of the high esteem in which the child and his welfare are held in Gary.

[9] A stillbirth, as defined by the Children's Bureau, is a dead-born issue resulting from seven or more months' gestation. If the period of gestation was reported as less than seven months, the birth, even though registered as a stillbirth, was classed as a miscarriage and, as such, excluded from the study.

[9a] For a more complete discussion of the exclusions, see Appendix, p. 85–89.

INFANT MORTALITY RATE.

Among the 1,353 infants born alive in Gary in 1916 who were included in the detailed study, 169 deaths under 1 year of age occurred, giving an infant mortality rate of 124.9.[10]

CAUSE OF DEATH.

The causes of these 169 deaths as stated on the death certificates show the diseases which were directly responsible for this loss of infant life. They suggest, furthermore, the economic and social factors responsible for the relative importance of the different diseases as causes of death in infancy. Such environmental influences as hot weather, unsupervised artificial feeding, poor sanitation, lack of medical and hospital care, improper housing, poverty, and ignorance are important factors governing the incidence of disease.

The group of diseases to which the largest number of infant deaths among babies born in Gary in 1916 was due, comprised the gastric and intestinal diseases.[11] To these diseases were attributed 68 of the total 169 deaths or 40.2 per cent. Next in rank were the causes of death connected with early infancy—premature birth, congenital debility, and injuries at birth—which were responsible for 34 deaths, or one-fifth the entire number. Respiratory diseases were third in order of importance and the cause of 27 deaths, or 16 per cent of the total. Other communicable diseases accounted for 15 deaths (8.9 per cent); malformations, for 11 (6.5 per cent); and all other causes, for 14 (8.3 per cent).

TABLE I.—*Infant mortality rates, by cause of death; live births in Gary in 1916.*

Cause of death.[a]	Infant deaths.		
	Number.	Per cent distribution.	Infant mortality rate.
All causes	169	100.0	124.9
Gastric and intestinal diseases	68	40.2	50.3
Respiratory diseases	27	15.9	19.9
Malformations	11	6.5	8.1
Early infancy	34	20.1	25.1
Epidemic and other communicable diseases	15	8.9	11.1
All other causes	14	8.3	10.4

[a] For classification according to detailed International List, see General Table 2, p. 93.

[10] For method of computing infant mortality rate, see p. 85.

[11] The classification of causes of death used here is that used by the U. S. Bureau of the Census (see Mortality Statistics, 1916, p. 483), and comprises the diseases most important in the first 12 months of life. The term "gastric and intestinal diseases" includes only the diseases of this type which are most important among infants; i. e., diseases of the stomach, diarrhea, and enteritis. It does not encompass all "diseases of the digestive system" as classified under this heading according to the detailed Internationa; List. So, too, "respiratory diseases" includes only those respiratory diseases most important among infants; i. e., acute bronchitis, broncho-pneumonia, and pneumonia. "Communicable diseases," similarly, is limited to those of this group which are most important among infants. See General Table 2, p. 93.

GASTRIC AND INTESTINAL DISEASES.

The infant mortality rate from gastric and intestinal diseases in Gary was 50.3, or almost exactly double that for the same group of diseases in the birth-registration area, 25.4, in 1916. In both birth- and death-registration areas the gastric and intestinal diseases occupied second place among the causes of death of babies. In Gary they held first rank. Gary's rate from this group of diseases alone was practically equivalent to New Zealand's rate, 51, from all causes for the same year.

An examination of the distribution of the 68 deaths in Gary from gastric and intestinal diseases, according to the calendar month in which death occurred, shows the mortality to have been greatest in July, August, and September, though no month was free of deaths from this cause. In these three months alone 41 of the 68 deaths took place, the highest number for any one month being reached in August (Chart I). Since deaths under 1 year of age of infants born in 1916 might have occurred in either 1916 or 1917, the mortality in this group from gastric and intestinal diseases may have been influenced by the temperature conditions of the summer months of these two years. Of the 50 babies dying in 1916 from gastric and intestinal diseases 32 died in these months; 9 of the 18 deaths in 1917 from the same causes occurred in the period, July through September. The concentration of deaths in these hot summer months shows the effect of hot weather in increasing the mortality from gastric and intestinal diseases.

The summer of 1916 showed for the vicinity of Gary unusually high temperatures, which were exceptionally prolonged. These, together with a lowered rainfall, were apparently favorable to the production of a high infant death rate from diarrhea and enteritis. On 25 [12] days in July, August, and September the temperature was 90° or over. Though 1917 did not equal 1916 in extremes of heat and deficiency of rainfall, it nevertheless produced 12 days when the temperature was 90° or over.

The accompanying tabular statement shows means of temperature and rainfall for 1916 and 1917.[13]

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[12] Figures are taken for the nearest station of the Weather Bureau, at Whiting, Ind., and may be considered representative for Gary also.

[13] U. S. Bureau of the Census, Mortality Statistics, 1917, p. 58: Death rate from diarrhea and enteritis under 2 years of age per 100,000 population. In Gary, Ind., in 1911 the death rate was 380.9; in 1915, 410.7; in 1916, 809.4; in 1917, 164.3. The difference in summer heat and rainfall in 1916 and 1917 apparently furnishes a partial explanation of the relative rates from diarrhea and enteritis in these two years.

Mean, maximum, and minimum monthly temperatures and monthly precipitation, at Whiting, Ind., in 1916 and 1917.

1916	Temperature (° F.).			Precipitation (inches).	1917	Temperature (° F.).			Precipitation (inches).
	Mean.	Maximum.	Minimum.			Mean.	Maximum.	Minimum.	
July	77.0	102	59	0.56	July	72.2	97	50	[1] 2.94
August	75.8	100	50	1.04	August	72.0	94	51	[1] 1.92
September	64.4	92	33	1.89	September	64.6	87	40	2.87
October	53.6	89	29	3.40	October	45.4	70	19	4.56
November	42.6	76	13	1.72	November	42.2	71	21	0.26
December	25.0	64	−10	3.33	December	21.5	50	−12	2.49
January	29.0	60	−7	5.01	January	23.0	45	−12	1.49
February	24.0	52	−5	1.01	February	20.2	48	−12	0.42
March	34.2	73	7	2.61	March	37.8	77	10	3.16
April	47.5	80	24	1.08	April	45.4	84	28	1.72
May	60.2	90	37	4.41	May	52.2	89	31	2.33
June	63.0	86	48	7.94	June	64.0	88	40	[1] 3.34

[1] Figures are for Hammond, Ind., those for Whiting for June, July, and August, 1917, being unobtainable.

In Table II the rates of mortality from the several causes of deaths are shown according to the nativity of the mother. A striking contrast is noted in the rates from gastric and intestinal diseases. Among infants of foreign-born mothers the mortality rate from these diseases was 61.5, or 2½ times the rate, 25.5, among infants of native white mothers.

The mortality from gastric and intestinal diseases is largely, if not wholly, preventable. This preventability is illustrated in part at least by the figures showing the reduction in the infant death rate from diarrhea and enteritis in the death-registration States from 37.7 in 1910 to 23.2 in 1917,[14] and again by the fall in the infant mortality rate from gastric and intestinal diseases in the birth-registration area as of 1915, exclusive of Rhode Island, from 24.6 in 1915, to only 19.0 in 1919.[15]

It is illustrated further in the wide variation in the mortality from these causes in different areas. Thus in the cities studied by the Children's Bureau, Saginaw, Mich., had an infant mortality rate from gastric and intestinal diseases of only 8.2, while at the other extreme, Manchester, N. H., had a rate of 63.3, higher even than that for Gary. New Zealand's rate of 2.7 in 1918 shows the possibilities of reduction in the mortality from gastric and intestinal diseases.

[14] The following table shows the death rate from diarrhea and enteritis per 1,000 estimated mid-year population under 1 year of age in the death-registration States of 1910 (exclusive of North Carolina), 1910 to 1917:

Cause of death.	Death rate per 1,000 infants under 1 year of age.							
	1917	1916	1915	1914	1913	1912	1911	1910
Diarrhea and enteritis	23.2	24.1	22.6	24.7	28.1	26.2	29.0	37.7

U. S. Bureau of the Census, Mortality Statistics, 1917, p. 64.

[15] Compiled from Birth Statistics, 1915, p. 21; 1919, pp. 24, 288; and Mortality Statistics, 1915, pp. 647–657.

The methods which have proved most effective in reducing the death rate of infants from gastric and intestinal diseases are education and instruction of mothers in the care of babies, with special attention to proper feeding and insistence upon medical supervision of babies who can not have the benefits of breast milk; provision of pure-milk supply and supervision to see that its excellence is maintained, and improvement of community sanitation and housing.

CAUSES OF DEATH PECULIAR TO EARLY INFANCY.

The infant mortality rate in Gary from causes of death peculiar to early infancy among babies born in 1916 was 25.1, half that from gastric and intestinal diseases. In the birth-registration area in 1916, premature birth, congenital debility, and injuries at birth—the three causes grouped together under early infancy—produced an infant mortality rate of 33.7. Contrary to what was true for gastric and intestinal diseases, comparison with the registration area is in this instance favorable to Gary.

Of the 34 deaths from causes connected with early infancy, 30 occurred before the end of the first month and 28 before the end of the first two weeks of life. Two-thirds of the deaths under 1 month of age from causes connected with early infancy were attributed to premature birth, which was the largest single cause of early death. Congenital debility, a term used to describe a baby's lack of vitality from birth, claimed 9 babies within the first 14 days of life, 2 in the second month, 1 in the fifth, and 1 in the seventh month. Injuries at birth caused the death of but 1 child, which occurred in the first few days after birth.

TABLE II.—*Infant mortality rates, by cause of death, and color and nativity of mother; live births in Gary in 1916.*

Cause of death.	Deaths among infants born in 1916 to—						
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.[1]
	Number.	Infant mortality rate.	Number.	Infant mortality rate.	Number.	Infant mortality rate.	
All causes	169	124.9	37	96.6	128	133.5	4
Gastric and intestinal diseases	68	50.3	9	23.5	59	61.5	.....
Respiratory diseases	27	19.9	6	15.7	19	19.8	2
Malformations	11	8.1	4	10.4	7	7.3	.....
Early infancy	34	25.1	13	33.9	20	20.9	1
Premature birth	20	14.8	9	23.5	11	11.5	.....
Congenital debility	13	9.6	3	7.8	9	9.4	1
Injuries at birth	1	0.7	1	2.6	.....	.....	.....
Epidemic and other communicable diseases	15	11.1	4	10.4	10	10.4	1
External causes	1	0.7	.....	.....	1	1.0	.....
Diseases ill defined or unknown	8	5.9	1	2.6	7	7.3	.....
All other causes	5	3.7	.....	.....	5	5.2	.....

[1] Rates not shown where base is less than 100.

If the infant mortality rate from causes connected with early infancy for babies of native white mothers is compared with that for the babies of mothers who were foreign born, an interesting and marked contrast is presented. The rate for infants of native white mothers was 33.9; for infants of foreign-born mothers, 20.9. The mortality rate from premature birth for babies of native white mothers was a trifle more than twice that for babies of foreign-born mothers. This excess may be due in part to a higher proportion of first births among those to native white mothers, since, as will be shown later, the proportion of premature births is especially high among first births. Variations in the mortality from causes peculiar to early infancy in the birth-registration area as a whole,[16] similar to those just discussed for Gary, raise the question whether these comparatively low rates in the first days of life among children of foreign-born mothers of certain race groups may not be explained in part by racial differences in the difficulty of labor or in the vitality of babies at birth.[17]

Since the causes of death peculiar to early infancy are chiefly prenatal or natal in their origin, it is evident that, to be successful, measures to control them must be initiated before the birth of the child. Experience has proved that both infant and maternal life are conserved by instruction of a mother in the care of herself prior to the birth of her child, by medical supervision during the prenatal period, and by skilled medical and nursing service at confinement. Only by such supervision during pregnancy and by skilled assistance during confinement is it possible to reduce to a minimum the danger of complications of pregnancy and confinement. With such skilled assistance and supervision, much of the mortality within the first month of life is preventable.[18]

In 1916 there was no provision by the city of Gary, and but little through private agencies, for prenatal clinics and instructive nursing service for pregnant women.[19] The city's infant mortality rate from

[16] See U. S. Bureau of Census, Birth Statistics: 1916, pp. 16, 17; 1917, pp. 15, 16; 1918, 24–26.

[17] Cf. Birth Statistics, 1918, p. 26.

[18] Carnegie United Kingdom Trust Report on the Physical Welfare of Mothers and Children (England and Wales), Vol. I, pp. VIII and IX. In a note on the report Sir Arthur Newsholme says: "Of the total deaths of infants during the first year of life one-fifth occur during the first week, and one-third occur during the first month after birth. Here again local variations show the extent to which preventable mortality prevails. For instance, in Workington, Dewsbury, Batley, Chesterfield, and Tynemouth, two to three times as large a proportion of the infants born die in the first week after birth as in Leyton, Heywood, or Hornsey. The conditions leading to this excessive maternal and early infantile mortality are complex; but two stand out as most important. These are the lack of skilled medical, nursing, and ancillary domestic assistance; and the fact that such assistance as is obtainable is given under unsatisfactory domiciliary conditions. * * * Maternity homes are urgently needed, and I know of no social work so likely as the provision of such maternity homes to give immediate results in saving maternal and child life, in diminishing chronic invalidism of mothers, and in enhancing the national welfare."

[19] See p. 28 ff. for discussion of the prevalence of prenatal care among the groups of mothers studied.

causes connected with early infancy (25.1) already lower than that for the birth-registration area, might be still further reduced through the establishment of organized help and prenatal and confinement care for mothers.

MALFORMATIONS.

The infant mortality rate among Gary babies from malformations was 8.1 as against a corresponding rate of 6.8 for the birth-registration area. Just as the mortality from causes peculiar to early infancy was higher for babies of native white mothers than for babies of foreign-born mothers, so here, too, the rate for babies of native mothers (10.4) was less favorable than that (7.3) for babies whose mothers were born outside the United States. A similar difference in rate of infant mortality in favor of the children of foreign-born mothers is shown in the birth-registration area when the rate from malformations among the white children of foreign-born mothers (5.6) is compared with the rate (7.7) for white children of native mothers.[20]

Of the infants who died because of malformations six died within the first two weeks after birth; three others failed to survive the second, one the fourth, and one the seventh month of life. As a cause of death, therefore, malformations swell the losses during the days immediately following birth. Of all causes of death, malformations are least controllable and least preventable by scientific effort.

RESPIRATORY DISEASES.

Acute bronchitis, broncho-pneumonia, and pneumonia were together responsible for the infant deaths of 27 babies born in Gary in 1916. The infant mortality rate from this group of diseases was 19.9; in the birth-registration area as a whole the infant mortality rate from similar causes in 1916 was 15.9. A glance at Chart I, shows that an increased number of deaths from respiratory diseases occurred during the months January, February, and March. This is in agreement with the findings of other studies, namely, a greater incidence of respiratory diseases in the late winter and early spring.

In the case of respiratory diseases, as in that of gastric and intestinal, the mortality rate for babies with foreign-born mothers (19.8) was higher than that for babies whose mothers were native white (15.7). The difference, however, was not so large as in the birth-registration area as a whole, where the figure for white infants of foreign-born mothers was 21 and for white infants of native mothers only 11.1.[21]

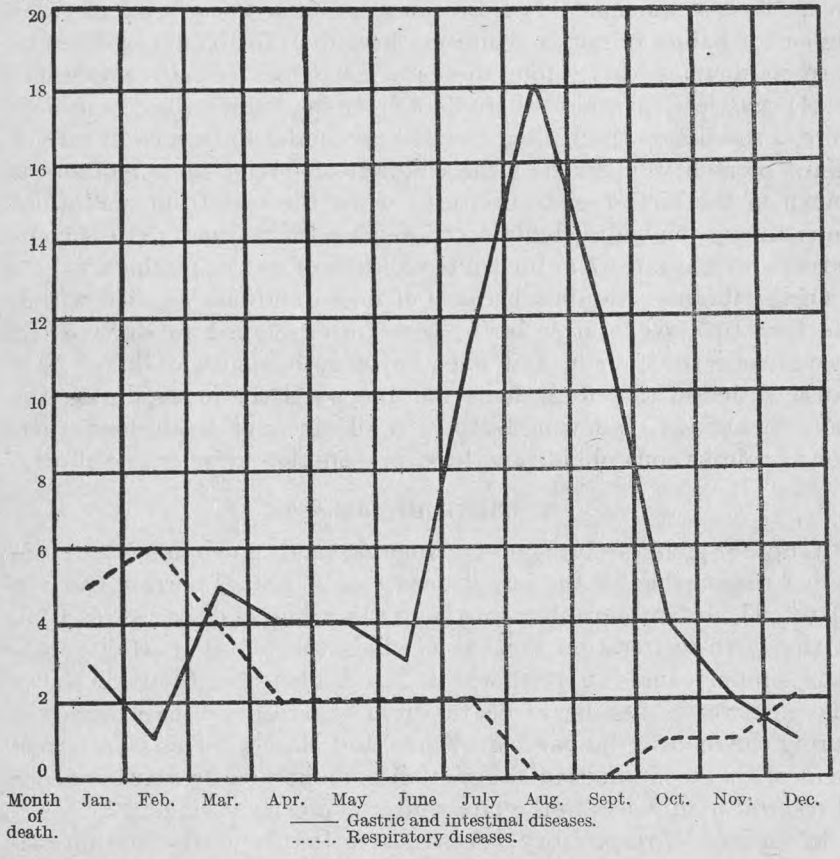
The infant death rate from the principal respiratory diseases in the death-registration States of 1910 decreased from 19.5 in 1910 to

[20] U. S. Bureau of the Census, Birth Statistics, 1916, p. 17.
[21] U. S. Bureau of the Census, Birth Statistics, 1916, p. 17.

16.2 in 1916;[22] while in the birth-registration area as of 1915, exclusive of Rhode Island, the infant mortality rate from these causes decreased from 16.6 in 1915 to only 14.5 in 1919.[23]

Whatever serves to increase the infant's power of resistance also serves to minimize the power of the respiratory diseases to fasten

CHART I.—Deaths from respiratory and from gastric and intestinal diseases, by month of death.



themselves upon him. The importance of educating mothers is again apparent, as well as the necessity for making each mother

[22] U. S. Bureau of the Census, Mortality Statistics, 1916, p. 57: Death rate per 1,000 estimated mid-year population under 1 year of age from acute bronchitis, pneumonia, and broncho-pneumonia in the death-registration States as of 1910 (exclusive of North Carolina): 1910 to 1916.

Cause of death.	1916	1915	1914	1913	1912	1911	1910
Acute bronchitis	2.4	2.5	2.6	2.9	3.1	3.0	3.7
Pneumonia	4.2	4.5	4.8	5.3	5.7	5.6	6.9
Broncho-pneumonia	9.6	10.1	9.9	9.9	9.3	8.6	8.9

[23] Compiled from Birth Statistics, 1915, p. 21; 1919, pp. 24, 288, and Mortality Statistics, 1915, pp. 647–657.

realize the value of breast milk and fresh air in developing and maintaining her child's ability to withstand disease, the danger of exposure to severe weather of an insufficiently clothed infant, and the danger in permitting a baby to come in contact with persons suffering from colds.

OTHER COMMUNICABLE DISEASES.

Of the 169 deaths among infants born in Gary in 1916 about 1 death in 11 was attributed to other communicable diseases.[24] The infant mortality rate was 11.1 in Gary and 8.9 in the birth-registration area, a comparison again unfavorable to Gary. Measles and whooping cough were responsible for 8 of the 15 infant deaths in Gary from this group of diseases. A fatalistic attitude is still prevalent with reference to these children's diseases and the necessity for each child to undergo both illnesses sooner or later. The real menace which both diseases offer to the life of a baby is not yet sufficiently appreciated by the majority of mothers, consequently too small an effort is made to protect babies from exposure to measles and whooping cough.

OTHER CAUSES OF DEATH.

Other causes of death besides the ones already discussed, produced an infant mortality rate of 10.3 in Gary and practically the same rate (10.1) in the birth-registration area in 1916.[25]

The preceding discussion has shown how the excess of the infant mortality rate among infants born in Gary in 1916 (124.9) over the infant mortality rate in the birth-registration area in the same year (101.0) was distributed among the different groups of diseases militating against infant life. The heaviest contributor to this excess was the largely governable and preventable gastric and intestinal diseases.

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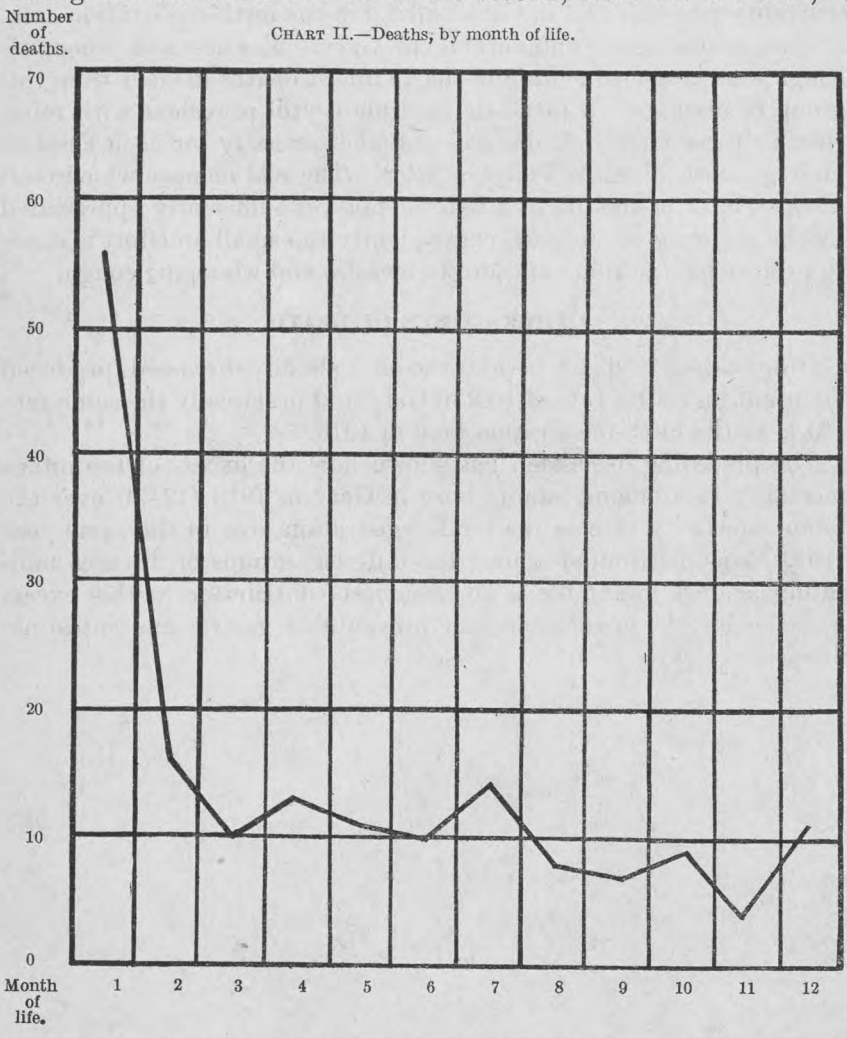
[24] See Table 2, p. 93. [25] Idem.

AGE AT DEATH.

Chart II shows that the first weeks of life are the ones fraught with the greatest peril. The curve indicating the number of infant deaths in Gary begins with a precipitous descent and drops from 56 deaths during the first month to 16 in the second; from the third on, it

CHART II.—Deaths, by month of life.



hovers near an average of 10 deaths per month, save in the eleventh month, when it sinks to its lowest number, 4. Had the high loss during the first four weeks been maintained for each succeeding month of the first year, but half the babies born in Gary in 1916

would have survived 12 months. Fortunately, no other period of infancy makes such severe demands upon the human organism to adjust itself to so new and different an environment as do the weeks immediately following birth. The lessening in number of deaths was marked between the first and the second three months of the first year and the fall in the remaining half of the year was steady. In Gary 82 babies (48.5 per cent of the entire number dying) perished before the end of the first quarter of the first year of life; 34 more (20.1 per cent) succumbed before six months had passed; 29 (17.2 per cent) died in the third, and 24 (14.2 per cent) in the fourth quarter. If these percentages are compared with corresponding percentages for the birth-registration area, a larger proportionate loss in the first three months (59.8 per cent) is disclosed in the registration area.

TABLE III.—*Age at death; deaths among infants born in Gary in 1916 and infant deaths in the birth-registration area in 1916.*

Age at death.	Infant deaths.					
	Gary.			Birth-registration area.[1]		
	Number.	Per cent distribution.	Per 1,000 live births.	Number.	Per cent distribution.	Per 1,000 live births.
Total	169	100.0	124.9	82,734	100.0	101.0
Under 1 month	56	33.1	41.4	36,111	43.6	44.1
Under 1 day	24	14.2	17.7	12.133	14.7	14.8
1 day, under 2	3	1.8	2.2	3,997	4.8	4.9
2 days, under 3	2	1.2	1.5	2.989	3.6	3.6
3 days, under 7	8	4.7	5.9	5,657	6.8	6.9
1 week, under 2	8	4.7	5.9	4,766	5.8	5.8
2 weeks, under 1 month	11	6.5	8.1	6,569	7.9	8.0
1 month, under 2	16	9.5	11.8	7,425	9.0	9.1
2 months, under 3	10	5.9	7.4	5,968	7.2	7.3
3 months, under 6	34	20.1	25.1	13,837	16.7	16.9
6 months, under 9	29	17.2	21.4	10,679	12.9	13.0
9 months, under 12	24	14.2	17.7	8,714	10.5	10.6

[1] Figures derived from U. S. Bureau of the Census, Mortality Statistics, 1916, Table II, pp. 483–525, and Birth Statistics, 1916, p. 4.

This larger proportionate loss in the first three months in the birth-registration area merely reflects the differences already noted in the relative rates from the several causes of death. The rate from causes peculiar to early infancy in Gary was lower than in the birth-registration area and practically all the deaths from these causes occur within one month of birth. The rate from gastric and intestinal diseases, on the other hand, was nearly twice as high in Gary as in the registration area, and about two-thirds of the deaths from these causes in Gary occurred during the last nine months of the first year of life. The mortality rates in Gary and in the birth-registration area for the first three months of life were practically identical, 60.6 and 60.5. The excess of the mortality rate for the first year in Gary, 124.9, over that in the birth-registration area, 101.0, was brought about by an

excess of the rate in Gary among babies who had successfully come through their first three months.

TABLE IV.—*Age at death, by color and nativity of mother; deaths among infants born in Gary in 1916.*

Age at death.	Deaths among infants born in 1916—						
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.[1]
	Number.	Per 1,000 live births.	Number.	Per 1,000 live births.	Number.	Per 1,000 live births.	Number.
Total	169	124.9	37	96.6	128	133.5	4
Under 3 months	82	60.6	23	60.1	57	59.4	2
3 months, under 12	87	64.3	14	36.6	71	74.0	2

[1] Rate not shown where base is less than 100.

Within the city itself a contrast similar to the one just noted between Gary and the birth-registration area was found in connection with the mortality rates for infants of native white and for infants of foreign-born mothers. During the first three months of life the mortality rate among babies of native white mothers was 60.1 and among infants of foreign-born mothers, 59.4. During the first year of life the mortality rate among babies born in 1916 to native white mothers was 96.6 and to foreign-born mothers, 133.5. The difference in the rates for the first year of life is evidently due entirely to a difference in the rates in the two groups between 3 and 12 months of age. Reference to Table IV shows that the excess in the rate between 3 and 12 months of age among infants of foreign-born mothers is largely accounted for by the very heavy mortality from gastric and intestinal diseases, the rate in this group being over 2½ times that among babies of native white mothers.

STILLBIRTHS.

The causes underlying deaths prior to or at birth are closely analogous to many of those responsible for the death of live-born babies within the first two weeks after birth, a fact which gives pertinence to a discussion of stillbirths in connection with a study of infant mortality.

An appreciation of the importance of prenatal and natal conditions in relation to loss of infant life may be gained from consideration of all infant losses due to conditions existing before the birth of the child rather than to adverse postnatal environment, feeding, or care. For Gary this group is composed of 40 stillbirths and 38 of the deaths of infants under 2 weeks of age; and constitutes well over a third (37.3 per cent) of the total loss (209) of infant life. If the total deaths from causes peculiar to early infancy (34) and from malformations (11) are grouped with the stillbirths (40) the proportionate loss clearly ascribable to prenatal and natal conditions is 40.7 per cent.

Stillbirths formed 2.9 per cent of the total births in Gary in 1916. The stillbirth rate did not vary for births to native white and to foreign-born mothers, being in both cases 2.8. It is interesting to note that the highest stillbirth rate (4.4) was found among babies to Polish mothers, the same nationality group in which the highest infant mortality rate (148.3) obtained. If, however, births from all pregnancies to the entire group of mothers are considered the stillbirth rate is 3.0; for babies of native white mothers, it is 3.4; for those of foreign-born mothers 2.9; and the rate for babies of Polish mothers (3.3), though higher than the rates for the babies of Serbian and Croatian and of Slovak mothers, was lower than those for babies of German (4.7), Italian (3.9), or Lithuanian (3.4) mothers. (Table VI.)

TABLE V.—*Stillbirth rates, by color and nationality of mother; births in Gary in 1916.*

Color and nationality of mother.	Total births.	Stillbirths.	
		Number.	Per cent.[1]
Total	1,393	40	2.9
Native white	394	11	2.8
Foreign-born white	987	28	2.8
Polish	275	12	4.4
Serbian and Croatian	162	4	2.5
Slovak	135	3	2.2
All other	415	9	2.2
Negro[2]	12	1	.....

[1] Not shown where base is less than 100.
[2] The negro mothers were all native.

TABLE VI.—*Stillbirth rates, by color and nationality of mother; births from all pregnancies.*

Color and nationality of mother.	Births, all pregnancies.		
	Total.	Stillbirths.	
		Number.	Per cent.[1]
Total	4,714	142	3.0
Native white	1,054	36	3.4
Foreign-born white	3,632	105	2.9
Polish	1,023	34	3.3
Serbian and Croatian	605	17	2.8
Slovak	515	12	2.3
Italian	254	10	3.9
Magyar	243	2	0.8
Lithuanian and Lettish	232	8	3.4
German	150	7	4.7
All other	610	15	2.5
Negro	28	1	.....

[1] Not shown where base is less than 100.

A partial indication of the extent of loss of life before birth is afforded by these data relating to stillbirths. It must be remembered, however, that they give no gauge of the number of losses due to miscarriage at less than seven months' gestation. Moreover, the registration of stillbirths is imperfect and the methods employed to discover unregistered live births are found to be less effective in tracing stillbirths.

FEEDING.

Among the factors inimical to infant life, improper feeding is of great importance. Breast milk, because of its cleanliness, purity, composition, and adaptability to the changing needs of the growing organism of the baby, is superior to any other form of infant food, and medical authorities agree that the use of any substitute is attended by risk to the infant's health. The danger to which the very young child may be exposed through insanitary surroundings, or through the mother's poverty, carelessness, or ignorance, will be minimized if the child is breast-fed and aggravated if artificial feeding is adopted.

Of the 1,353 babies born alive in Gary in 1916, 31 died before they could be fed. The discussion of feeding as affecting infant life is, therefore, limited to examination of the methods used among the 1,322 babies surviving long enough to receive food. Classification has been made on the basis of those breast fed exclusively; those in part artificially fed, i. e., the babies receiving some other food in addition to mother's milk; and those artificially fed, i. e., infants receiving no breast milk. The difficulty of presenting such a subject as infant feeding by means of tabular analysis is ever present because feeding is so eminently a changing process. When one or more types of feeding were employed during a given month, that type which predominated the greater part of the month was chosen as representative. Because there is general agreement that after the ninth month of life exclusive breast feeding is not only no longer necessary but not even advisable, the analysis in the tables has been largely limited to the first nine months of the first year of life.

EXTENT OF DIFFERENT TYPES OF FEEDING.

All but 91 (7 per cent) of these 1,322 babies are known to have been wholly breast fed during the first month of life, while 58 (4.4 per cent) were artificially fed during this period. More than three-fourths of the infant survivors in each of the first four months were exclusively breast fed. The decrease in breast feeding from month to month was steady except during the seventh month, when the percentage of breast-fed infants was reduced by over 15 per cent from the percentage in the preceding month.

In the majority of cases where the feeding was changed from exclusive breast feeding, the babies became part of the group having breast milk supplemented by artificial food. By the end of the first three-quarters of the year slightly over one-third (35 per cent) of the babies surviving were still exclusively breast fed; less than one-fourth (23 per cent) were receiving no breast milk; and 42 per cent, a little over two-fifths of the entire number alive, were having

mother's milk supplemented by some other form of food. (Table VII).

TABLE VII.—*Type of feeding, by month of life; infants born in Gary in 1916.*

Month of life.	Infants born in 1916 surviving at beginning of month.								
	Total.	Exclusively breast fed.		Partially breast fed.		Artificially fed.		Feeding not reported.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
First	[1] 1,322	1,231	93.1	26	2.0	58	4.4	7	0.5
Second	1,297	1,152	88.8	48	3.7	91	7.0	6	.5
Third	1,281	1,080	84.3	68	5.3	128	10.0	5	.4
Fourth	1,271	987	77.7	114	9.0	164	12.9	6	.5
Fifth	1,258	910	72.3	154	12.2	188	14.9	6	.5
Sixth	1,247	836	67.0	210	16.8	195	15.6	6	.5
Seventh	1,237	636	51.4	368	29.7	227	18.4	6	.5
Eighth	1,223	542	44.3	428	35.0	248	20.3	5	.4
Ninth	1,215	430	35.4	507	41.7	273	22.5	5	.4

[1] Excludes 31 infants who died not fed.

DEATH RATES AND TYPE OF FEEDING.

The relative advantage which the breast-fed infant has over the infant artificially fed is brought out strikingly in Table VIII, which presents the monthly death rates per 1,000 for infants exclusively breast fed, in part artifically fed, or wholly artificially fed in the different months of life.

Up to the ninth month the death rate in every month among the artificially-fed infants at least quadrupled that among those exclusively breast fed. The rates for the infants receiving partial breast feeding occupied a mid-position and for the most part exceeded the monthly rates for the purely breast fed and fell short of those for the infants receiving no breast milk. From this it may be argued that even partial breast feeding affords an appreciable protection to the infant.

TABLE VIII.—*Monthly death rates, by type of feeding; infants born in Gary in 1916.*

Month of life.	Deaths in month per 1,000 survivors at beginning of month.	Deaths in month per 1,000 infants.		
		Exclusively breast fed.	Partially breast fed.	Artificially fed
First	[1] 18.9	15.4	38.5	69.0
Second	12.3	7.8	20.8	54.9
Third	7.8	5.6	14.7	23.4
Fourth	10.2	5.1	8.8	42.7
Fifth	8.7	5.5	.....	31.9
Sixth	8.0	2.4	4.8	35.9
Seventh	11.3	4.7	5.4	39.6
Eighth	6.5	3.7	2.3	20.2
Ninth	5.8	4.7	.....	18.3
Tenth to twelfth (average)	6.7	3.5	6.3	9.5

[1] The rate is per 1,000 infants who lived long enough to be fed. The rate per 1,000 live births is 41.4; 31 infants died not fed.

COMPUTED ANNUAL DEATH RATE AND TYPE OF FEEDING.

It will be recalled (see p. 4) that among the 1,353 live births in 1916 there were 169 infant deaths, making the infant mortality rate for the city 124.9. In other words, of 1,000 infants born alive, 125 died before the first birthday. If the monthly death rates for all infants (Table VIII) are applied to 1,000 infants who lived long enough to be fed and the losses in each month subtracted successively to learn the number of survivors at the beginning of the next month, the end of the twelfth month will show 896 of the 1,000 infants alive and 104 dead. In a similar manner the number of deaths in the first year of life among 1,000 infants breast fed or among 1,000 infants artificially fed can be computed from the monthly death rates for the respective types of feeding. Such a computation serves to bring out in a striking manner the comparative merits of breast, partially artificial, and wholly artificial feeding. Had the group of 1,000 been breast fed the entire first year of life only 64 would have died; if partially breast fed, 109 would have died before the end of a year; while if the entire 1,000 had been subjected to the hazards of purely artificial feeding 310 deaths would have resulted. In other words the mortality rate for exclusively artificially-fed babies in Gary averaged 5 times that for exclusively breast-fed babies and almost 3 times that for partially breast-fed infants.

TYPE OF FEEDING AND CAUSE OF DEATH.

As would be expected, the greatest excess in mortality among infants artificially fed is caused by gastric and intestinal diseases. The mortality rates from these diseases varied from 2 to over 12 times as high among infants artificially fed as among infants breast fed. Artificially-fed infants are subjected to increased hazard from ill adapted and improperly prepared food. Another measure of this extra hazard is offered in a comparison of the actual deaths among the exclusively artificially-fed babies with the number of deaths that would have occurred if they had been breast fed. If the rates of mortality from gastric and intestinal diseases that prevailed among breast-fed infants had prevailed also among the artificially fed, only 4 deaths instead of 32 would have occurred in this group. The mortality rate from these diseases among the artificially fed was therefore on an average 8 times as high as among breast-fed infants.

Not only was the mortality from gastric and intestinal diseases among artificially-fed babies greater than among breast-fed babies, but the mortality from all other causes of death, including respiratory and other communicable diseases, was also markedly greater among the artificially fed. A computation similar to that given above shows that if the rates of mortality from all causes except gastric

and intestinal diseases prevailing among breast-fed infants had prevailed also among the artificially fed, only 7 instead of 30 deaths would have occurred among them. The mortality from these causes among the artificially-fed infants was thus about 4 times as high as among breast-fed infants. This bears out the statement made in the discussion of the mortality from respiratory diseases that breast feeding affords a definite protection against respiratory and other infections.[26]

SUPERVISION OF AND REASONS FOR WEANING.

Since breast feeding tends markedly to increase and artificial feeding to lessen the infant's chance of survival, as the rates just cited so clearly demonstrate, the reasons why 58 babies were artificially fed in the first month of life are of interest, although it must be remembered that the reasons given are the mothers' statements which might not always correspond with physicians' diagnosis even in cases where physicians were consulted. Ten mothers stated that they were ill and unable to nurse their babies; 10 more reported breast infections or other reasons connected with their health. In 30 cases the mothers reported that the milk ceased or was insufficient; in 3 cases that it disagreed with the child; in 1 case that the infant was ill, and in another that the infant refused to nurse.

Of the 58 infants, 32 were never breast fed or were weaned within the first 15 days after birth by advice of physician; for 26, or 45 per cent, the action was taken without physician's counsel.

Of the 384 infants weaned before the end of the ninth month, 148, or 39 per cent, were weaned on the advice of a physician, while 236, or nearly two-thirds, were weaned without such advice.

For infants weaned before the end of the ninth month the inadequacy or the complete cessation of the supply of breast milk was the reason far more frequently reported than any other. Of these 384 infants, 155, or two-fifths, according to the mothers' statements, were no longer nursed because of failure or insufficiency of mother's milk. In over two-thirds of these cases the infants had been deprived of breast milk even before they entered upon their fourth month.[27] Doubtless wider dissemination of knowledge of the importance of breast feeding and of the factors which promote it would serve to lower the proportion of mothers whose supply of breast milk shrinks prematurely or disappears.

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[26] The computations in this section are based on figures given in Tables 5 and 30, pp. 95–96, 116.

[27] About three-fifths of the babies weaned at or before the end of three months were weaned because the mother's milk ceased or became insufficient.

TABLE IX.—*Prevalence of artificial feeding, by color and nativity of mother; infants born in Gary in 1916.*

Color and nativity of mother.	Infants born in 1916 surviving at end of—								
	Three months.			Six months.			Nine months.		
	Total.	Artificially fed.		Total.	Artificially fed.		Total.	Artificially fed.	
		Number.	Per cent.[1]		Number.	Per cent.[1]		Number.	Per cent.[1]
Total	1,271	125	9.8	1,237	188	15.2	1,208	268	22.2
Native white	360	54	15.0	355	78	21.9	348	98	28.2
Foreign-born white	902	70	7.8	873	107	12.3	851	167	19.6
Negro	9	1	.....	9	3	.....	9	3	.....

[1] Not shown where base is less than 100.

NATIVITY OF MOTHER AND FEEDING CUSTOMS.

Only about one-half as large a proportion of babies of foreign-born mothers as of babies of native mothers were artificially fed at 3 months of age, the proportions being 7.8 per cent and 15 per cent respectively (Table IX); at 6 months the proportion was one-eighth for foreign born to about one-fifth for native; through the ninth month the ratio between the groups remained practically the same. Other things being equal, therefore, it would be expected that the mortality among infants of foreign-born mothers would be less than among infants of native white mothers, since a larger proportion of the infants of foreign-born mothers were breast fed.

A study of General Table 5, however, reveals that the death rates of infants of foreign-born mothers were higher each month than those for children of native mothers. If annual rates are computed as described previously for the breast fed and for the exclusively artificially fed in each nativity group, then of 1,000 breast-fed infants of native mothers 39 would have died before the end of the first year, while a similar group of infants of foreign-born mothers 71 would have died during the same period. Of 1,000 artificially-fed babies of native mothers 265 would have died before the end of the first year, while of the same number of artificially-fed babies of foreign-born mothers 333 would have died. In other words, whether breast fed or artificially fed, the children of the foreign-born mothers faced a greater hazard than the children of the native white mothers, when children receiving the same type of feeding are compared; but whether of native or of foreign-born mothers the babies artificially fed had a markedly higher rate of mortality than breast-fed babies

The feeding customs of the native and the foreign-born mother were no doubt different in many respects. Some of these differences, like the greater prevalence of breast feeding among infants of foreign-

born mothers, tended to lessen while others contributed to increase the mortality rates among these infants as compared with those among infants of native mothers. Probably one such influence tending to make artificial feeding less fatal to the infants of native mothers was the accessibility and use of helpful supervision and advice. Of the babies either partially or wholly artificially fed, 313 were children of native and 729 were children of foreign-born mothers. Of the children of native mothers 63 per cent were receiving some supervision, while only 30 per cent of children of the foreign-born mothers received this care. As might have been expected, the foreign-born mother either could not or did not avail herself of advice on infant feeding through consulting books, pamphlets, or magazines to the same extent as did the native mother. Over one-fourth of the native mothers who artificially fed their babies read literature on infant feeding while only slightly more than one-twentieth of the foreign-born mothers reported that they received guidance from this source.[28]

The substitutes for breast milk in common use are fresh milk, condensed milk, or some one of the patent infant foods which in this report are designated proprietary foods. The most widely used substitute in Gary among native and foreign-born alike was fresh milk. Of the babies of foreign-born mothers one-fourth had received no fresh milk under 15 months of age; a somewhat larger proportion of the babies of native white mothers (31 per cent) were given no fresh milk during this period.[29] Apparently the foreign-born mothers tended more toward feeding their children fresh milk before weaning them than did the native mothers, who seemed rather to make relatively greater use of fresh milk as infant food at or after weaning their babies.

Condensed milk and proprietary foods were used less by foreign-born than by native mothers (General Table 8, p. 99), proprietary foods were less popular than condensed milk, which in turn was much less used than fresh milk.

Greater similarity of custom in infant feeding according to nativity of mother is shown in the giving of solid food than in the use of any of the liquid foods. Of the infants of native white mothers 16 per cent and of the infants of foreign-born mothers 19 per cent received no solid food under 15 months of age. Under 9 months of age 40 per cent of the infants of the foreign-born and 32 per cent of the infants of native white mothers had received some solid food. This indicates a tendency among foreign-born mothers to give their babies solid food earlier than native mothers,[30] but many native as well as

[28] See General Table 7, p. 99.

[29] General Table 8, p. 99.

[30] Solid food has been considered any food other than breast milk, fresh cow's milk, condensed or evaporated milk, proprietary foods, and orange or fruit juice.

foreign-born mothers seemed to believe it necessary to accustom the baby to take solid food at an early age. One native mother began to feed her 3-months-old boy a mixture of molasses and butter, and gravy and bread "to get him used to eating." Another gave her child, 3 months old, "chewed rations" of whatever she herself ate, including meat, potatoes, gravy, bread, cake, and eggs. In general, such soft foods as oatmeal, farina, cornflakes, mush, soup, eggs, soaked crackers, and gravy on mashed potatoes or bread constituted the solid food diet. Having secured softness for the baby's diet, some mothers recognized little further cause for exclusion of an article as unfit. There were, for example, the Italian mother who gave her 6-months-old baby ginger snaps soaked in milk; the native mother who gave her 5-months-old child cornflakes, oatmeal, potatoes, bread and butter and tea; the Polish mother who gave oatmeal with bacon grease to her 8-months-old baby and cut off his supply of cow's milk; the Croatian woman who began to give her child coffee, bread, and soup when he was 7 months old; and the Slovak mother who gave her infant coffee and cereals from 4 months on.

TABLE X.—*Age at which solid food was first given, by color and nativity of mother; infants born in Gary in 1916.*

Age at which solid food first given.	Infants born in 1916 to—						
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.[1]
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	[2] 1,322	100.0	371	100.0	940	100.0	11
Not given under 15 months	245	18.5	61	16.4	181	19.3	3
Not reported, if given	10	0.8	2	0.5	8	0.9	.....
Given under 15 months	1,067	80.7	308	83.0	751	79.9	8
Under 1 month	6	0.5	2	0.5	4	0.4	.....
1 month, under 3	16	1.2	1	0.3	15	1.6	.....
3 months, under 6	105	7.9	24	6.5	80	8.5	1
6 months, under 9	375	28.4	93	25.1	278	29.6	4
9 months, under 12	272	20.6	86	23.2	185	19.7	1
12 months, under 15	287	21.7	100	27.0	186	19.8	1
Age not reported	6	0.5	2	0.5	3	0.3	1

[1] Per cent not shown where base is less than 100.
[2] Excludes 31 infants who died not fed.

INCOME, AND FEEDING METHODS.

In regard to the age at which infants were weaned slight differences of custom were observable among the various earnings groups.[31]

[31] The earnings of the chief breadwinner in the family during the calendar year 1917 were taken as basis for division of families into income or earnings groups, in the belief that these earnings formed as good and dependable a means of determining economic status of families as could be secured in an investigation of this sort. A threefold classification has been made into families where the annual earnings of the chief breadwinner fell below $1,050; those where he earned $1,050, but less than $1,850 in a year; and those where his earnings reached $1,850 or over.

At the end of the first three months a slightly smaller proportion 8.3 per cent, of the infants belonging to the lowest income group had been weaned than in either the middle or the highest group, 10.2 and 12.2 per cent, respectively. At the end of the first nine months about two-tenths of the infants in each of the lower earnings groups had been weaned, as compared with slightly over three-tenths of those in the highest earnings group.[32]

In all income groups fresh milk was the prevailing type of artificial feeding, condensed milk ranked second, and proprietary foods were least commonly used. The proportion of infants receiving each form of artificial food was greater in the highest income group than in the lowest.[33]

TABLE XI.—*Supervision of feeding, by annual earnings of chief breadwinner; infants partially or exclusively artificially fed.*

Annual earnings of chief breadwinner.	Infants born in 1916 artificially or partially artificially fed during first year.						
	Total.	Feeding supervised.		Feeding not supervised.		Supervision not reported.	
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	1,053	421	40.0	631	59.9	1	0.1
Under $1,050	304	93	30.6	210	69.1	1	0.3
$1,050, under $1,850	539	233	43.2	306	56.8	.....	.....
$1,850 and over	153	76	49.7	77	50.3	.....	.....
No earnings, no chief breadwinner, and not reported	57	19	.....	38	.....	.....	.....

[1] Not shown where base is less than 100.

As might be expected, the artificially-fed babies in the lowest income group received the least feeding supervision. For 69 per cent of the infants artificially fed in the group whose breadwinners' annual earnings were under $1,050 the feeding was not supervised; when the annual earnings were $1,850 or over, only 50 per cent of the babies artificially fed were not supervised. With increase of income, therefore, the added supervision of feeding doubtless tended to offset the ills accompanying the greater use of artificial feeding, an important consideration in view of the much higher death rates which obtained among artificially-fed babies.

[32] General Table 9, p. 100.
[33] General Table 10, p. 100.

MATERNAL MORTALITY AND MATERNITY CARE.

MATERNAL MORTALITY.

Seven mothers of babies included in this study died within 1 year after confinement in 1916, 3 of them from causes connected with childbirth. Of the 7 children born to these mothers only 2 survived 12 months, though 3 of the 5 who died were outlived by their mothers. One mother who developed active tuberculosis, following upon the birth of her child, was forced to wean her baby in the fifth or sixth week because of her own ill health. The baby died when a little over 9 weeks old and the mother's death occurred about a fortnight later. Another mother who had convulsions at the time of confinement was ill and bedridden until her death about 4 months afterwards. The baby, born prematurely, lived only 4 weeks. Another infant whose mother died of tuberculosis 9 months after the baby was born lived but a month; the cause of this infant's death was given on the death certificate as gastroenteritis. The mother of the fourth baby died of puerperal septicemia 16 days after full-term delivery. The baby, a healthy child at birth, was breast fed at home 9 days, spent the next week in the hospital to which the mother had been removed, and was then placed by the father in an infant asylum where he died at the age of 4½ months. The fifth child and the mother both died less than a day after the baby's premature birth.

The close interrelation between maternal welfare and infant welfare, between maternal mortality and infant death, requires no elaboration. The practically stationary death rate of mothers in this country from causes connected with childbearing serves, however, to indicate the need of giving further consideration to the causes of maternal mortality.[34]

Table XII presents what it cost in mothers' lives to give birth to the children born in the registration area in 1916, in Indiana in 1917, and in the city of Gary in 1916. In the registration area one mother died for every 161 babies born alive as compared with one for every 138 in Indiana and one for every 140 in Gary. The proportion of

[34] Figures published by the Census Bureau for the years 1900 to 1919 (17.0 per 100,000 population) show steady maintenance of the maternal death rate since 1900. "And physicians remind us that the women who die in childbirth are few beside those who suffer preventable illness or a lifelong impairment of health. The loss involved is immeasurable. It does not stop with the loss of vigor and efficiency to the mother. It extends, in general, to the well-being of her home and her children; and, in particular, to the motherless infant who faces a peculiarly hazardous existence." Sixth Annual Report of Chief, U. S. Children's Bureau, p. 12.

this loss due to puerperal infections is also brought out in Table XII. The death rate from puerperal septicemia, like the rate from all causes connected with pregnancy or childbirth, shows little reduction from year to year,[35] yet puerperal sepsis as a cause of death is very largely preventable.[36] Gary's maternal mortality rate (5.9) from childbed fever in 1916 was more than twice that in the registration area, though the city's rate from all other puerperal causes compared favorably with that for the registration area.

CARE DURING PREGNANCY.

The care, supervision, and assistance given mothers during pregnancy and confinement are important both because of their connection with the questions of maternal mortality and well-being and on account of their inseparability from the problems of infant mortality.

TABLE XII.—*Maternal mortality rates, by cause of death, for the birth-registration area, 1916, Indiana 1917, and Gary, 1916.*

Area.	Population as of July 1, 1916.	Live births, 1916.	Deaths from diseases of pregnancy and confinement.								
			Total.			Puerperal septicemia.			All other.		
			Number.	Per 100,000 population.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 live births.
Birth-registration area [1]	33,013,280	818,983	5,091	15.4	6.2	2,066	6.2	2.5	3,025	9.2	3.7
Indiana [2]	[2] 2,835,492	[2] 63,144	458	16.2	7.3	226	8.0	3.6	232	8.2	3.7
Gary [3]	[3] 40,548	1,682	12	29.6	7.1	10	24.7	5.9	2	4.9	1.2

[1] U. S. Bureau of the Census, Birth Statistics, 1916, p. 4; Mortality Statistics, 1916, Tables 8 and 9.
[2] Figures for 1917. U. S. Bureau of the Census, Birth Statistics, 1917, p. 23; Mortality Statistics, 1917, p. 334.
[3] Population estimated: U. S. Bureau of the Census, Mortality Statistics, 1916, p. 215.

Household help and work.

Somewhat over half the births in Gary in 1916 (51.5 per cent) were to mothers who reported no help with their housework during pregnancy. Only 12, less than 1 per cent, had no household duties for that period. Native white mothers received help with household duties to a much greater extent than did foreign-born mothers.[37] Fifty-eight per cent of the native white mothers and 32 per cent of the foreign born had household help for at least a month.

[35] U. S. Bureau of the Census, Mortality Statistics, 1917, Table II, p. 96: Death rate from puerperal septicemia per 100,000 population: Annual average 1901 to 1905, 6.3; annual average 1906–1910, 6.8; 1914, 7.1; 1915, 6.3; 1916, 6.7; 1917, 6.9.

[36] U. S. Bureau of the Census, Birth Statistics, 1917, Table I, p. 24; Mortality Statistics, 1917: Table 5, p. 239. In Indiana cities in 1917 maternal mortality from puerperal septicemia ranged from 1.9 to 12.8 per 1,000 live births, a variation indicative in a measure of the degree of possible preventability and the extent of needless and prodigal loss existing.

[37] General Table 11, p. 102.

Mother's gainful employment during pregnancy.

It happens not infrequently that the duties of the mother in a small household are not arduous, even though they include cooking, cleaning, washing, and ironing, as well as general care. If, however, a mother undertakes gainful work in addition to her usual home duties and the care of her family, the sum total of strain and effort entailed may become so great as to be harmful.

TABLE XIII.—*Employment of mother during pregnancy, and kind of work; births in Gary in 1916.*

Mother's place of employment during pregnancy and kind of work	Total births.	
	Number.	Per cent distribution.
All mothers	1,393	100.0
Mother not employed during pregnancy	984	70.6
Mother employed during pregnancy	409	29.4
Away from home	50	3.6
At home only	359	25.8
Keeping lodgers	344	24.7
Other	65	4.7

Of the births in Gary, 409 (29 per cent) were to mothers gainfully employed during pregnancy and only 50 (3.6 per cent) were to mothers employed outside their own homes. All but 65 of the mothers gainfully employed during pregnancy kept lodgers. Foreign-born mothers, who, as already pointed out, had less household help than the native white mothers, had the larger proportion gainfully employed in any way. They, too, were the ones most frequently keeping lodgers. Lodger keeping among the foreign born usually increased greatly the amount of work for the housewife. The "lodger" might be simply a "roomer," but he was more often a man for whom the mother cooked as well. Not uncommonly, in addition to preparation of the lodger's food and care of his room, his laundry and mending were done by the mother. Sometimes each man bought his own food and the mother cooked it, the number of articles prepared by her being limited only by the individual tastes and demands of her lodgers. Where all these functions were performed by one mother for several persons there can be no question that the amount of physical energy demanded of her for the tasks of lodger-keeping was large and in many cases it was excessive. The mothers of 279 infants (68 per cent of the total whose mothers were gainfully employed) did not cease work even within two weeks of confinement, and the mothers of 256 infants continued gainful work up to the very day or hour of confinement.

TABLE XIV.—*Infant mortality and stillbirth rates, by interval between mother's ceasing gainful work and confinement and color and nativity of mother; births in Gary in 1916.*

Interval between cessation of gainful work and confinement and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent[1]			
All mothers	1,393	40	2.9	1,353	169	124.9
Not employed	984	25	2.5	959	116	120.9
Employed	409	15	3.7	394	53	134.5
Interval:						
Under 1 day	256	8	3.1	248	34	137.1
1 day, under two weeks	23	.....	.....	23	3	.....
2 weeks, under 1 month	11	1	.....	10	3	.....
1 month, under 2	20	1	.....	19	5	.....
2 months and over	90	5	.....	85	8	.....
Not reported	9	.....	.....	9	.....	.....
Native white mothers	394	11	2.8	383	37	96.6
Not employed	315	8	2.5	307	29	94.5
Employed	79	3	.....	76	8	.....
Interval:						
Under 1 day	36	1	.....	35	3	.....
1 day, under two weeks	6	.....	.....	6	.....	.....
2 weeks, under 1 month	5	1	.....	4	2	.....
1 month, under 2	7	.....	.....	7	1	.....
2 months and over	22	1	.....	21	2	.....
Not reported	3	.....	.....	3	.....	.....
Foreign-born white mothers	987	28	2.8	959	128	133.5
Not employed	658	16	2.4	642	84	130.8
Employed	329	12	3.6	317	44	138.8
Interval:						
Under 1 day	219	7	3.2	212	30	141.5
1 day, under 2 weeks	17	.....	.....	17	3	.....
2 weeks, under 1 month	6	.....	.....	6	1	.....
1 month, under 2	13	1	.....	12	4	.....
2 months and over	68	4	.....	64	6	.....
Not reported	6	.....	.....	6	.....	.....
Negro mothers	12	1	.....	11	4	.....
Not employed	11	1	.....	10	3	.....
Employed	1	.....	.....	1	1	.....

[1] Not shown where base is less than 100.

That gainful employment of mothers during pregnancy, a higher stillbirth rate, and an increased infant mortality rate were coincident is demonstrated in Table XIV, which shows that the infant mortality rate was highest among babies whose mothers ceased gainful work less than a day before their babies were born.

Prenatal care and instruction.

The importance of prenatal care receives lamentably little recognition from mothers, who fail to be impressed by the pregnancies and confinements presenting serious difficulties because the greater number of pregnancies terminate favorably. Realization that expert medical supervision is not only wise but necessary for all pregnant women if the possible complications of pregnancy are to be combatted and those of confinement foreseen and guarded against has come slowly, and as yet but partially, to mothers and fathers even in our most enlightened communities. Yet, skilled prenatal and confinement care is admittedly a prerequisite to an attack upon the maternal mortality rate and the death rate of babies from causes connected with early infancy.

The prenatal care received by mothers in Gary in 1916 has been classified into three grades, designated A, B, and C. For the purpose

of the study, to be classified as Grade A the prenatal care given a mother must fulfill all four of the following requirements:

1. Monthly urinalysis at least from the fifth through the ninth month of pregnancy.
2. Medical supervision at least for the last five months.
3. Physical examination, preferably including examination of the heart, the lungs, and the abdomen, but at least providing examination of the abdomen.
4. Measurement of the pelvis in a woman bearing her first child in order to discover the existence of any malformation which might make birth difficult or impossible normally.

If the prenatal care given a mother failed to meet all these requirements it was classified as Grade B if it fulfilled all four of the following less stringent tests:

1. At least one urinalysis.
2. Some medical supervision.
3. An abdominal examination.
4. Pelvic measurements if the mother was a primipara.

Mothers who had had urinalysis or had made visits to physicians or clinics were classified as having had prenatal care of Grade C if the care failed in one or more particulars to satisfy the requirements of the higher grades.

Seven-tenths of the mothers had no prenatal care whatever; of the remaining three-tenths, 33 (2 per cent of the entire number of mothers) had care of Grade A; 54 (4 per cent) had Grade B care; and 318, almost one-fourth (23 per cent), received care which failed in some essential and could only be classed as Grade C.

TABLE XV.—*Grade of prenatal care, by source of instruction in prenatal care; confinements in Gary in 1916.*

Source of instruction in prenatal care.	Confinements in 1916 of mothers—															
	Total.	Receiving no prenatal care.		Receiving prenatal care of specified grade.										Not reported whether care received.	
				Total.		A.		B.		C.		Grade unknown.			
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	[2] 1,376	966	70.2	406	29.5	33	2.4	54	3.9	318	23.1	1	0.1	4	0.3
No prenatal instruction	924	924	100.0	....	....	....	....	....	....	....	....	....	....	....	....
Prenatal instruction	451	42	9.3	406	90.0	33	7.3	54	12.0	318	70.5	1	0.2	3	0.7
Physician only	283	1	0.4	281	99.3	20	7.1	29	10.2	231	81.6	1	0.4	1	0.4
Physician and nurse	6	....	....	6	....	1	....	1	....	4	....	....	....	....	....
Physician, nurse, literature	10	....	....	10	....	2	....	3	....	5	....	....	....	....	....
Physician and literature	94	....	....	93	....	10	....	21	....	62	....	....	....	1	....
Nurse only	24	10	....	14	....	....	....	....	....	14	....	....	....	....	....
Nurse and literature	3	1	....	2	....	....	....	....	....	2	....	....	....	....	....
Literature only	31	30	....	....	....	....	....	....	....	....	....	....	....	1	....
Not reported whether prenatal instruction received	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....

[1] Not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

No one of the three mothers who died from causes connected with childbirth had even a modicum of prenatal care. The mother who died of "septicemia following Cæsarian section" had had two children still-born because, as the father said, she was "built too little." Yet recourse was not had to a physician until after serious trouble had developed. The death certificate stated as contributory cause of death "septic before operation, three days." Another mother died of "acute dilatation of the heart following delivery of child." The delivery was instrumental as well as premature. There had been absolutely no consultation of a physician earlier in pregnancy. The third mother was delivered by a midwife. Septicemia developed; physicians were then summoned, and the mother removed to a hospital. In two of these instances the baby as well as the mother died.

Two hundred and fifty-seven confinements, somewhat less than a fifth (19 per cent) of the entire number, were at the termination of first pregnancies. Of these mothers, 129 (50 per cent) had some prenatal care, a proportion noticeably above that for the whole group (30 per cent). Among mothers bearing their first child, however, the percentage receiving Grade A care was no greater than among the group as a whole, while that for mothers receiving Grade B care was smaller, and the proportion with Grade C care was twice as high as for the entire group. Probably failure to take pelvic measurements was responsible for placing relatively more of the first pregnancy mothers in the lowest grade of prenatal care.

TABLE XVI.—*Grade of prenatal care, by order of pregnancy; confinements in Gary in 1916.*

Order of pregnancy	Confinements in 1916 of mothers—															
	Total.	Receiving no prenatal care.		Receiving prenatal care of specified grade.										Not reported whether care received.	
				Total.		A.		B.		C.		Grade unknown.			
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	[2] 1,376	966	70.2	406	29.5	33	2.4	54	3.9	318	23.1	1	0.1	4	0.3
First	257	128	49.8	129	50.2	6	2.3	6	2.3	117	45.5	....	....	....	....
Second	283	176	62.2	104	36.7	16	5.7	21	7.4	66	23.3	1	0.4	3	1.1
Third	251	181	72.1	69	27.5	6	2.4	12	4.8	51	20.3	....	....	1	0.4
Fourth	180	143	79.4	37	20.6	1	0.6	5	2.8	31	17.2	....	....	....	....
Fifth	138	114	82.6	24	17.4	2	1.4	5	3.6	17	12.3	....	....	....	....
Sixth	95	75	.....	20	....	1	....	1	18	18	....	....	....	....	....
Seventh	69	64	.....	5	....	1	....	3	....	1	....	....	....	....	....
Eighth	47	37	.....	10	....	....	....	1	....	9	....	....	....	....	....
Ninth	21	20	.....	1	....	....	....	....	....	1	....	....	....	....	....
Tenth or later	32	26	.....	6	....	....	....	....	....	6	....	....	....	....	....
Not reported	3	2	.....	1	....	....	....	....	....	1	....	....	....	....	....

[1] Not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births, and 5 instances where mother had two confinements in 1916.

Eighty-eight per cent of the births were reported to have been attended by no complications.[38] Of the remaining 12 per cent (168) which were accompanied by complications, half were to mothers receiving some prenatal care; about one-twentieth to mothers who had Grade A care; one-twentieth to mothers with Grade B care; two-fifths to mothers whose care during pregnancy was of Grade C. Like mothers approaching their first confinement, mothers who experienced or feared some complication of pregnancy or confinement showed a greater tendency to seek prenatal supervision and help than was shown by the mothers as a whole or by those whose pregnancy was normal and presaged no difficulty for confinement. Even among mothers suffering some complication, however, 9 out of 10 either had no prenatal care or care of Grade C, a fact indicating an unmistakable need for educating mothers regarding what to seek and to demand in the way of care and supervision during pregnancy and at confinement.

TABLE XVII.—*Grade of prenatal care of mother by complications of pregnancy and confinement; births in Gary in 1916.*

Complications of pregnancy and confinement.	Births in 1916 to mothers—							
	Total.	Receiving prenatal care of specified grade.						Not reported whether care received.
		Receiving no prenatal care.	Total.	A.	B.	C.	Grade unknown.	
Total	1,393	980	409	33	54	321	1	4
No complications	1,224	896	324	24	46	253	1	4
Complications	169	84	85	9	8	68	.....	.....
Prematurity only	48	29	19	4	.....	15	.....	.....
Prematurity with:								
Stillbirth	7	1	6	.....	.....	6	.....	.....
Stillbirth and instrumental delivery	6	3	3	1	1	1	.....	.....
Instrumental delivery	3	3	.....	.....	.....	.....	.....	.....
Convulsions	1	1	.....	.....	.....	.....	.....	.....
Instrumental delivery and convulsions	1	.....	1	1	.....	.....	.....	.....
Full-term births:								
Stillbirth only	17	14	3	.....	.....	3	.....	.....
Stillbirth, convulsions, and instrumental delivery	1	.....	1	1	.....	.....	.....	.....
Stillbirth and instrumental delivery	8	4	4	.....	.....	4	.....	.....
Stillbirth and Cæsarian section	1	1	.....	.....	.....	.....	.....	.....
Instrumental delivery	68	22	46	1	6	39	.....	.....
Cæsarian section	2	1	1	.....	1	.....	.....	.....
Convulsions	5	5	6	.....	.....	.....	.....	.....
Not reported[1]	1	.....	1	1	.....	.....	.....	.....

[1] Period of gestation not reported; delivery instrumental.

Approximately one-third of the mothers had recognized a need for instruction in prenatal care and endeavored to secure it. Of these,

[38] The complications reported upon were instrumental delivery, Cæsarean section, convulsions, premature delivery, and stillbirth.

29 per cent were advised and instructed by physicians and a small number (27), by nurses. About 1 mother in 10 found help through books or magazine articles. Usually this was in addition to instruction by word of mouth from doctor or nurse, but 2 per cent of the mothers relied upon literature alone. (Table XV.)

Native mothers sought advice and instruction more frequently than foreign-born mothers. Only 25 per cent of the native white mothers had no instruction in prenatal care from doctor, nurse, or literature; 84 per cent of the foreign born were without such instruction. The foreign-born woman is much less likely to seek out physician or trained nurse inasmuch as she relies in the New World as in the Old upon the services of a midwife or upon the advice of neighbors, relatives, and friends.[39] The same tendency holds with reference to prenatal care. Less than 1 per cent of the foreign-born mothers had Grade A care while 7 per cent of the native mothers secured the best grade of supervision. Approximately seven-eighths of the foreign born had no medical care whatsoever, while but one-fourth of the native white mothers suffered such complete lack.[40] From the point of view of maternal mortality it is significant that all three of the deaths from causes connected with pregnancy and confinement were deaths of foreign-born mothers who, as already stated, had no prenatal care.

Where no widespread system of free maternity care and instruction is operative, it may be expected that the size of the family income will influence more or less the extent to which mothers in different income groups will aspire to prenatal instruction and care and be able to satisfy their desires.

When the family income, as represented by the chief breadwinner's earnings, was under $1,050 per annum, only 14 per cent of the mothers had any prenatal instruction and only 12 per cent received any prenatal care. In the highest income group where annual earnings were $1,850 or over, 65 per cent of the mothers had prenatal instruction and 62 per cent prenatal care. The intermediate group, with annual earnings of chief breadwinners $1,050 but less than $1,850, occupied a mid position also in the proportion of mothers securing prenatal instruction (34 per cent) and prenatal care (31 per cent). The mothers in the lowest earnings group having Grade A care during pregnancy constituted 1 per cent; in the mid-group, 2 per cent; and in the highest group, 7 per cent. The three maternal deaths from childbirth were of mothers in families with less than $1,050 for a yearly income. All conditions of family and individual life are likely to be less favorable when the income is low; housing inferior, ignorance of sanitation and hygiene greater, and power to satisfy physical wants reduced.

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[39] General Table 12, p. 103.
[40] General Table 13, p. 103.

TABLE XVIII.—*Prevalence of prenatal care and instruction in prenatal care, by annual earnings of chief breadwinner; confinements in Gary in 1916.*

Annual earnings of chief breadwinner.	Confinements in 1916 of mothers—											
	Total.	Receiving no prenatal care.		Receiving prenatal care.		Not reported whether care received.		Receiving no instruction in prenatal care.		Receiving instruction in prenatal care.		Not reported whether instruction received.	
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	[2] 1,376	966	70.2	[3] 406	29.5	4	0.3	924	67.2	451	32.8	1	0.1
Under $1,050	392	345	88.0	46	11.7	1	0.3	337	86.0	55	14.0	.....	.....
$1,050, under $1,850	721	499	69.2	221	30.7	1	0.1	473	65.6	248	34.4	.....	.....
$1,850 and over	185	69	37.3	115	62.2	1	0.5	64	34.6	121	65.4	.....	.....
No earnings, no chief breadwinner, and not reported.	78	53	.....	24	.....	1	.....	50	.....	27	.....	1	.....

[1] Not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births, and 5 instances where mother had two confinements in 1916.
[3] Of the 33 instances of adequate care included here, 4 were in the earnings group "under $1,050," 14 in "$1,050, under $1,850," 13 in "$1,850 and over," 2 in "earnings not reported."

CARE DURING CONFINEMENT PERIOD.

Attendant at birth.

The foreign-born mother, it has been seen, secured much less help and supervision from physicians during pregnancy than did the native white mother. For confinement care her custom was to resort to the help of a midwife rather than to engage a physician to attend her. The reasons for this preference for the midwife doubtless included, besides the desire for a woman attendant at confinement, appreciation of the greater amount of nursing service and household help which the midwife rendered in conjunction with the lower fee which she charged. Slightly more than seven-tenths of the mothers of foreign birth had no attendant other than a midwife. Fifty-one others (5 per cent) had both a midwife and a physician, the latter having been called in usually because labor had been long or difficult or because the confinement presented complications. Among the native white mothers but 13 per cent had no attendant except a midwife, and 3 per cent had both physician and midwife. The proportion of native white mothers who were attended by physicians approximated nine-tenths while the proportion of foreign-born mothers attended by physicians but slightly exceeded two-tenths. Hospital confinements constituted 22 per cent of the total among the native white, and but 4 per cent among the foreign born. As a group, therefore, the foreign born had confinement care which was less skilled and much less capable of meeting successfully any abnormal conditions which might arise during, or immediately following, delivery.

TABLE XIX.—*Attendant at confinement and time of arrival of attendant, by color and nativity of mother; confinements in Gary in 1916.*

Attendant and time of arrival, and place of confinement.	Confinements in 1916.						
	Total.		Nativity of mother.				
			Native white.		Foreign-born white.		Negro.[1]
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	[2] 1,376	100.0	392	100.0	972	100.0	12
Confinement in hospital	125	9.1	87	22.2	35	3.6	3
Physician	120	8.7	86	21.9	31	3.2	3
Midwife	2	0.1	1	0.3	1	0.1	.....
Physician and midwife	3	0.2	.....	.....	3	0.3	.....
Confinement not in hospital	1,251	90.9	305	77.8	937	96.4	9
Physician only	393	28.6	242	61.7	146	15.0	5
On time	381	27.7	234	59.7	143	14.7	4
Late	12	0.9	8	2.0	3	0.3	1
Midwife only	754	54.8	51	13.0	699	71.9	4
On time	737	53.6	49	12.5	684	70.4	4
Late	16	1.2	2	0.5	14	1.4	.....
Not reported	1	0.1	.....	.....	1	0.1	.....
Other	32	2.3	2	0.5	30	3.1	.....
On time	30	2.2	2	0.5	28	2.9	.....
Late	2	0.1	.....	.....	2	0.2	.....
Physician and midwife	58	4.2	10	2.6	48	4.9	.....
Both on time	55	4.0	9	2.3	46	4.7	.....
Midwife on time, physician late	3	0.2	1	0.3	2	0.2	.....
No attendant	14	1.0	.....	.....	14	1.4	.....

[1] Per cent not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

One per cent of the physicians and 1 per cent of the midwives summoned to attend mothers reached the mothers only after delivery but in time to perform part of the services required, namely, delivery of the placenta or tying and cutting the cord. A small number of physicians (13) were not able to reach the mothers in time to render any of these services.

Thirty-two mothers (2 per cent) had for attendant a relative, neighbor, or friend, sometimes pressed into service because labor was so short no professional help could be secured, sometimes because either mother or father thought professional services a needless expenditure. One father, for example, said he became disgusted with doctors during his wife's earlier pregnancies because she went to them for little headaches, the doctors did nothing, and he always had big bills to pay. This father, however, after delivering the mother himself, sent for a doctor when the baby was 7 hours old, upon the advice of a fellow section hand, to make sure everything was all right. He also stayed home from work 12 days to care for the mother. Fourteen women (1 per cent) had no attendant of any kind at confine-

ment, but did everything for themselves. In a few of these cases the birth occurred so quickly that the attendant was unable to reach the mother before delivery. In some cases the mother was alone and could not send for help and in others no effort was made to procure assistance though the father was at home. (Table XIX.)

Since slightly more than seven-tenths of the 1,371 mothers considered were born outside the United States, most of them in countries where it is customary to employ midwives at confinement, it is not surprising that about six-tenths of all the mothers were delivered by midwives. As might be expected, Gary with its large foreign population had a number of midwives. The Indiana State medical law, passed in 1897, provides a State board of medical registration and examination. According to the law which went into effect in 1899, an applicant for a certificate to practice midwifery in the State was required to present a duly attested diploma from an obstetrical school approved by the board or to pass a satisfactory examination. A midwife who had been practicing in the State 10 years preceding 1897 might secure a certificate to continue her vocation by submitting affidavit prior to July 11, 1899. No provision had been made for the supervision of midwives after certification.[41]

The official register of midwives licensed to practice in the State in 1916 did not contain the names of 17 who attended some of the births in Gary in 1916. The number of mothers who were attended by unlicensed midwives was only approximately 5 per cent of those who had midwife attendants. If to these mothers are added those who reported a midwife attendant but failed to disclose her name, the percentage, though doubled, is still low. No unlicensed midwife attended any large number of births; usually she had taken charge of but a single confinement. On the whole, then, it appears that the State law was functioning in Gary to such an extent that in 90 per cent of the 817 confinements attended by midwives in 1916 the attendant midwives had been licensed to practice. Nearly half the births attended by unlicensed midwives were not registered, while of those attended by licensed midwives, 89 per cent were registered, a showing only slightly below the percentage of registered births among those attended by physicians.

Postnatal care has been classified into grades A, B, C, and D on the basis of the number of visits made by the attendant subsequent

[41] The examination fee was fixed at $10; at the time of this study, 1916, the examination might be written in whatever language the applicant desired but an additional $10 fee was required for translation. By 1919 the privilege of using any language but English had been withdrawn and a possible source of deception done away with. Indiana, Acts of 1897, p. 255, as amended; Burns' Annotated Statutes 1914, secs. 8401 to 8408.

to the visit at delivery and the period of time covered by them. For the highest grade of care (grade A) it was necessary that the attendant make at least daily visits through the fifth day of the lying-in period, and call again the seventh or eighth day, and once more on the tenth or eleventh day, giving a minimum of seven visits. The lowest grade required merely one visit besides the visit at delivery. Grades B and C are intermediate.

Of the 517 babies whose mothers were attended by physicians only 30 per cent received grade A, 34 per cent grade B, 26 per cent grade C, and 6 per cent grade D care. For mothers of 763 babies where a midwife was the only attendant, the postnatal care was distributed as follows through the different grades: Grade A, 26 per cent; B, 71 per cent; C, 2 per cent; D, three-tenths of 1 per cent. When a physician and midwife both attended the delivery the after care during the confinement period suffered, probably because neither attendant felt undivided responsibility. Of the 66 babies born to mothers who had 2 attendants (doctor and midwife), 25 were to mothers to whom no return visits were made; and among the different grades of care the largest number (15) fell into grade D.[42] The figures just cited show the midwife custom in caring for mother and baby. Usually for 7 or 8 consecutive days after delivery the midwife makes a daily visit during which she gives nursing service to both mother and child.

The final examination of a maternity patient 4 to 6 weeks after delivery is coming to be recognized as one of the standards of good practice which an obstetrical attendant should meet.[43] Of the mothers who bore babies in Gary in 1916, 1,215 (or 88 per cent) had no such final examination from attendant physician or midwife; 54 mothers (4 per cent) who were attended by physicians received examinations 4 weeks or more after delivery; an additional 13 (about 1 per cent) received examinations before their physicians discharged them, but were discharged less than a month after delivery. Fifty-two mothers (about 4 per cent) reported receiving final examinations from midwife attendants. In view of the midwife's more restricted obstetrical knowledge and training these examinations were undoubtedly less thorough than those given by physicians and afforded correspondingly less protection to the mothers.

[42] General Table 14, p. 104.

[43] Minimum Standards for the Public Protection of the Health of Children and Mothers, p. 436; Standards of Child Welfare, Children's Bureau Publication, No. 60.

TABLE XX.—*Final examination of mother by attendant before discharge; confinements in Gary in 1916.*

Final examination of mother by attendant before discharge.	Total confinements in 1916.	
	Number.	Per cent distribution.
Total	[1] 1,376	100.0
No examination	1,251	90.9
Physician or midwife attending	1,215	88.3
No physician or midwife attending	36	2.6
Examination by physician	67	4.9
4 weeks or more after delivery	54	3.9
Less than 4 weeks after delivery	13	0.9
Examination by midwife	52	3.8
Not reported whether examination made	6	0.4

[1] Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

Nursing care.

The kind and extent of nursing care given a mother during the lying-in period are extremely important. The mothers of about one-tenth of the babies born in 1916 were cared for in hospitals, and a similar group was cared for by trained nurses at home. The mothers of 7 per cent of the infants were cared for by practical or student nurses; those of a little over a fifth of the babies were dependent upon untrained outsiders or members of the family; and in fully half the cases the mothers were dependent upon midwives for nursing care.

It has been noted that the training of attendants at birth among foreign-born women was usually inferior to that of attendants at confinements of the native mothers. The nursing service which foreign-born mothers had during the lying-in period was also of a less skilled type. Well over a third of the babies of native mothers and only about an eighth of those of foreign mothers were born in hospitals or in homes where a trained nurse was employed for the confinement period. Midwife care was the highest type of nursing service received by two-thirds of the foreign-born and by only one-tenth of the native white mothers.

TABLE XXI.—*Kind of nursing care received by mother during lying-in period, by nativity of mother; births in Gary in 1916.*

Kind of nursing care during lying-in period.	Births in 1916 to—					
	All mothers.		Native mothers.		Foreign-born mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total	1,393	100.0	[1] 406	100.0	987	100.0
Hospital	130	9.3	92	22.7	38	3.8
Trained nurse	146	10.5	61	15.0	85	8.6
Midwife	711	51.0	42	10.3	669	67.8
Practical or student nurse	101	7.3	75	18.5	26	2.6
Other (outsider)	244	17.5	120	29.6	124	12.6
Other (member family)	59	4.2	16	3.9	43	4.4
Not reported	2	0.1	.....	.....	2	0.2

[1] Includes 12 native negro mothers.

A difference similarly favorable to the native mother was found in the aggregate length of time which nursing care of any type covered. Of the foreign-born mothers, 57 per cent had ceased to have nursing care within 10 days after delivery; while 56 per cent of the native mothers received nursing care for two weeks or longer.[44]

In progressing from the lower to the higher income groups, the amount of nursing care received by the mothers showed a steady increase. For example, nursing care lasting for two weeks or longer was received by the mothers of 30 per cent of the babies in the lowest earnings group, 40 per cent in the mid group and 58 per cent in the highest group. Conversely, when the income was low the mothers of 1 baby in 10 had nursing care less than a week as compared with 1 in 30 when the income was high.

TABLE XXII.—*Duration of nursing care for mother, by annual earnings of chief breadwinner; births in Gary in 1916.*

Annual earnings of chief breadwinner.	Births in 1916.											
	Total.	Duration of nursing care.										
		Less than 7 days.		7 days, less than 10.		10 days, less than 14.		14 days and over.		Duration not reported.		
		Number.[1]	Per cent.	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	
Total	1,393	[2] 109	7.8	512	36.8	217	15.6	552	39.6	3	0.2	
Under $1,050	403	44	10.9	186	46.2	53	13.2	120	29.8	.....	.....	
$1,050, under $1,850	727	55	7.6	260	35.8	121	16.6	289	39.8	2	0.3	
$1,850 and over	185	6	3.2	38	20.5	34	18.4	107	57.8	.....	.....	
No earnings, no chief breadwinner, and not reported	[3] 78	4	.....	28	.....	9	.....	36	.....	1	.....	

[1] Not shown where base is less than 100.
[2] Includes one infant whose mother died at childbirth, and one whose mother died four days after delivery.
[3] Includes 6 births in families where there was no chief breadwinner and 11 in families where there were no earnings.

Days in bed and household help.

A minimum of 10-days' rest in bed after a normal delivery is commonly recommended by obstetricians and resumption of household duties is discouraged under a fortnight. Seven hundred and forty-six mothers (54 per cent) remained in bed less than 10 days after delivery. Native mothers are much more likely to observe 10 days as a requisite rest period following parturition than are foreign-born mothers. No native women in the group studied spent less than a day in bed after delivery, but two Polish and two Slovak mothers rested less than 24 hours following the birth of their babies. One-eighth of the foreign mothers were up within 4 days, more than

[44] General Table 15, p. 104.

one-fourth within a week, and only a third spent 10 days (the minimum recommended) or more, in bed. Three-fourths of the native white mothers, on the other hand, spent at least 10 days in bed following confinement.

TABLE XXIII.—*Number of days in bed following confinement, by color and nationality of mother; confinements in Gary in 1916.*

Color and nationality of mother.	Confinements in 1916.															
	Total.	Number days in bed following confinement.														
		Less than 1 day.		1 day, less than 4.		4 days, less than 7.		7 days, less than 10.		10 days, less than 14.		14 days and over.		Not reported.	
		Number.	Percent.[1]	Number.	Percent.[1]	Number.	Percent.[1]	Number.	Percent.[1]	Number.	Percent.[1]	Number.	Percent.[1]	Number.	Percent.[1]
Total	[2]1,376	4	0.3	120	8.7	170	12.4	452	32.8	289	21.0	336	24.4	[3]5	0.4
Native white	392	....	....	4	1.0	15	3.8	75	19.1	183	46.7	115	29.3	....	....
Foreign-born white	972	4	0.4	115	11.8	155	15.9	371	38.2	103	10.6	219	22.5	5	0.5
Polish	272	2	0.7	45	16.5	58	21.3	84	30.9	15	5.5	67	24.6	1	0.4
Serbian and Croatian	159	....	....	16	10.1	18	11.3	60	37.7	19	11.9	43	27.0	3	1.9
Slovak	135	2	1.5	15	11.1	23	17.0	64	47.4	6	4.4	25	18.5	....	....
All other	406	....	....	39	9.6	56	13.8	163	40.1	63	15.5	84	20.7	1	0.2
Negro	12	....	....	1	....	....	....	6	....	3	....	2	....	....	....

[1] Not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.
[3] Includes 3 instances where the mother died as result of childbirth.

A mother may know that it is wise to rest the prescribed number of days after her baby's birth, yet believe that for her it is impracticable not to resume activities sooner. Mothers of 1,271 babies were confined at home; in only 4 cases did the mothers have no household help during the lying-in period, while the mothers of 1,252 babies had assistance with housework for at least part of the time after delivery. Mothers of 121 babies remained in bed less than 4 days after the babies' birth, although half of them had household help of some sort for a week or more. The mothers of all but 15 of these babies (12 per cent) were dependent upon the unpaid help of either a neighbor or member of the household, and accordingly might have felt obliged to get up as soon as possible. When, as in 9 cases, the mother stayed in bed less than 4 days in spite of the fact that hired help was kept from 1 to 4 weeks, it would appear that she herself had small regard for her own welfare and safety. For the most part, however, there seemed to be some relation between the length of time the mother rested in bed and the portion of the lying-in period during which she had help with her housework.[45]

[45] General Table 16, p. 105

In approximately one-third of the homes there was paid household help during the confinement period, but it was customary both in homes of the native white and those of the foreign-born mothers for neighbors or members of the family to assume extra tasks while the mother was incapacitated. Paid assistance was relatively less frequent among foreign-born mothers, however, who also showed a tendency to dispense sooner with any additional help secured because of confinement. Almost half of the native white mothers kept household help for at least a month after delivery; almost half the foreign-born mothers, on the contrary, had help for less than two weeks, and the proportion among them keeping assistance for a month or longer was less than half that among native white mothers.[46]

Family income apparently had some effect upon the length of time which the mother spent in bed after her baby's birth as well as upon the time she kept help with housework. More than three-fifths (65 per cent) of the mothers in families in which the chief breadwinners earned less than $1,050 in a year observed less than the 10-day period in bed after delivery, and about one-half (51 per cent) had household help less than two weeks. When the income was $1,850 or over, 36 per cent got up before the tenth day and only about one mother in six (16 per cent) had household help less than a fortnight.[47]

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[46] General Table 17, p. 106.
[47] General Tables 18 and 19, pp. 107, 108.

AGE OF MOTHER AND ORDER OF BIRTH.

A mother's age at the time her child is born may exert an influence over the infant's chance of survival. A very young mother suffers the disadvantages of physical immaturity, inexperience in the proper care of herself during pregnancy, and ignorance regarding the proper care of her baby. On the other hand, a woman who has borne many children may suffer physical disadvantages from repeated child-bearing although she may be able to counteract them by the knowledge which she has secured from experience and instruction.

The highest infant death rate in Gary in 1916 (187.1) was found among babies born to mothers less than 20 or to women 40 years of age or over.[48] Babies born to mothers in the twenties had the best likelihood of living 12 months, for the mortality rate among these children was only 106.7. The mortality rate for infants born to mothers in the thirties (132.3), while it showed a notable rise above the lowest rate, fell far short of the highest. The stillbirth rate also was lowest (2.2) among babies born to mothers in the twenties. The proportion of dead-born infants was highest (4.5 per 100), however, among the births to women in the thirties. Subdivision according to mother's nativity, though it renders the numbers too small to permit calculation of all the rates, shows that the trend in each nativity class is similar to that in the group as a whole.

TABLE XXIV.—*Infant mortality and stillbirth rates, by age and color and nativity of mother; births in Gary in 1916.*

Age of mother at birth in 1916 and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[a]
		Number.	Per cent.[a]			
All mothers	1,393	40	2.9	1,353	169	124.9
Under 20 or 40 and over	143	4	2.8	139	26	187.1
20 to 29	824	18	2.2	806	86	106.7
30 to 39	396	18	4.5	378	50	132.3
Not reported	30	.....	.....	30	7	.....
Native white mothers	394	11	2.8	383	37	96.6
Under 20 or 40 and over	[b] 57	2	.....	55	10	.....
20 to 29	241	6	2.5	235	18	76.6
30 to 39	96	3	.....	93	9	.....
Foreign-born white mothers	987	28	2.8	959	128	133.5
Under 20 or 40 and over	[c] 83	2	.....	81	15	.....
20 to 29	578	12	2.1	566	66	116.6
30 to 39	296	14	4.7	282	40	141.8
Not reported	30	.....	.....	30	7	.....
Negro mothers	12	1	.....	11	4	.....
Under 20 or 40 and over	3	.....	.....	3	1	.....
20 to 29	5	.....	.....	5	2	.....
30 to 39	4	1	.....	3	1	.....

[a] Not shown where base is less than 100.

[b] Includes 46 to mothers under 20.

[c] Includes 50 to mothers under 20.

[48] In other studies both the groups "under 20" and "40 and over" showed high rates; the groups are combined in this report on account of the small number of cases.

Two hundred and fifty-eight babies were born as the result of first pregnancies. Of these births, 8 per cent, according to the mothers' statement, were premature, a proportion higher than was found to obtain for any succeeding pregnancy. First births to women under 20 years of age formed about a fourth (26 per cent) of the total first births, but included almost half the first pregnancies which terminated at less than normal term.

Of all births in 1916 to mothers under 20 or 40 years of age or over, 1 in 10 was reported to have occurred prematurely; of births to mothers in the twenties, 1 in 22; and of those to mothers in the thirties, 1 in 28.[49]

The 53 babies born at less than full term—less than 4 per cent of the live births—contributed 36, or 21 per cent, to the total of 169 infant deaths. If all the babies in Gary had been born at full term the infant mortality rate would have been reduced from 124.9 to 101.6, or nearly one-fifth.

TABLE XXV.—*Infant mortality and stillbirth rates, by period of gestation; births in Gary in 1916.*

Period of gestation.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent.[1]			
Total	1,393	40	2.9	1,353	169	124.9
Under 7 months	11	.....	.....	11	11	.....
7 months, under 8	26	7	.....	19	11	.....
8 months, under 9	29	6	.....	23	14	.....
9 months and over	1,326	27	2.0	1,299	132	101.6
Not reported	1	.....	.....	1	1	.....

[1] Not shown where base is less than 100.

Infants born of first pregnancies had a mortality rate of 140.6; second born 104.3; third born 104.8. For fourth born the rate rose to 142 but sank to 115.1 for children fifth in order of birth. Babies born of sixth or later pregnancies had a rate of 142.3. The stillbirth rate was high for first pregnancies (3.5), although it was exceeded by the rate, 4.4, secured when sixth and later pregnancies were combined.

Infant mortality rates by order of birth to native white and to foreign-born mothers showed substantially the same trend. In interpreting the differences, however, between the infant mortality rates for all babies of native white mothers (96.6) and for all infants of foreign-born mothers (133.5), the higher proportion of first births

[49] General Table 20, p. —.

TABLE XXVI.—*Infant mortality and stillbirth rates, by order of pregnancy and color and nativity of mother; births in Gary in 1916.*

Order of pregnancy and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent.[1]			
All mothers	1,393	40	2.9	1,353	169	124.9
Order of pregnancy:						
First	258	9	3.5	249	35	140.6
Second	285	7	2.5	278	29	104.3
Third	253	5	1.9	248	26	104.8
Fourth	182	6	3.3	176	25	142.0
Fifth	140	1	0.7	139	16	115.1
Sixth and later	272	12	4.4	260	37	142.3
Not reported	3	.....	.....	3	1	.....
Native white mothers	394	11	2.8	383	37	96.9
Order of pregnancy:						
First	120	5	4.2	115	15	130.4
Second	107	2	1.9	105	8	76.2
Third	64	2	.....	62	3	.....
Fourth	31	.....	.....	31	4	.....
Fifth	26	.....	.....	26	1	.....
Sixth and later	46	2	.....	44	6	.....
Foreign-born white mothers	987	28	2.8	959	128	133.5
Order of pregnancy:						
First	134	3	2.2	131	19	145.0
Second	174	5	2.9	169	20	118.3
Third	188	3	1.6	185	23	124.3
Fourth	149	6	4.0	143	20	139.9
Fifth	114	1	0.9	113	15	132.7
Sixth and later	225	10	4.4	215	30	139.5
Not reported	3	.....	.....	3	1	.....
Negro mothers	12	1	.....	11	4	.....
Order of pregnancy:						
First	4	1	.....	3	1	.....
Second	4	.....	.....	4	1	.....
Third	1	.....	.....	1	.....	.....
Fourth	2	.....	.....	2	1	.....
Sixth and later	1	.....	.....	1	1	.....

[1] Not shown where base is less than 100.

and of births to young mothers among the infants in the native white group should be borne in mind. Fourteen per cent of the babies of foreign-born mothers as compared with 31 per cent of those of native white mothers were first-born children; 5 per cent of the babies of foreign-born mothers as compared with 12 per cent of those of native white mothers were born to mothers when under 20 years of age. (Tables XXIV and XXVI.) The unfavorable tendencies which attached to first births and to births to young mothers as shown in this study tended to raise slightly the mortality rate for babies of native white mothers as compared with the rate for babies of foreign-born mothers.

INTERVAL BETWEEN BIRTHS.

Births other than first births comprised 1,135 (82 per cent) of the total. The rapidity with which pregnancy succeeds pregnancy and birth follows birth is a factor influencing infant mortality. One birth in 10 in Gary came within 15 months after its immediate predecessor, and 1 in 5 occurred after an interval of less than 18 months. The infant mortality rate among babies born within 15 months after their mothers' previous confinement was 169.1, a rate considerably in excess of even that for children of first pregnancies. When the interval between births stretched into two years or more the infant mortality rate fell to 102.8. Among the native white mothers 6 per cent of the births came within the shortest interval; foreign-born mothers bore 12 per cent of their babies less than 15 months after a previous pregnancy had terminated. The lowest infant mortality rate among babies of native white as among those of mothers of foreign birth occurred when the period between the last two confinements was at least two years in length. The very low rate for this interval among infants of native white mothers (62.9) deserves notice.

TABLE XXVII.—*Infant mortality and stillbirth rates, by interval from preceding confinement and color and nativity of mother; births in Gary in 1916.*

Interval from preceding confinement and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent.[1]			
All mothers	1,393	40	2.9	1,353	169	124.9
No preceding confinement	258	9	3.5	249	35	140.6
Under 15 months	139	3	2.2	136	23	169.1
15 months, under 18	142	6	4.2	136	17	125.0
18 months, under 24	309	5	1.6	304	39	128.3
24 months and over	522	16	3.1	506	52	102.8
Interval not reported	23	1	.....	22	3	.....
Native white mothers	394	11	2.8	383	37	96.6
No preceding confinement	120	5	4.2	115	15	130.4
Under 15 months	23	.....	.....	23	4	.....
15 months, under 18	36	1	.....	35	3	.....
18 months, under 24	65	1	.....	64	6	.....
24 months and over	147	4	2.7	143	9	62.9
Interval not reported	3	.....	.....	3	.....	.....
Foreign-born white mothers	987	28	2.8	959	128	133.5
No preceding confinement	134	3	2.2	131	19	145.0
Under 15 months	115	3	.....	112	19	169.6
15 months, under 18	105	5	4.8	100	13	130.0
18 months, under 24	240	4	1.7	236	32	135.6
24 months and over	373	12	3.2	361	42	116.3
Interval not reported	20	1	.....	19	3	.....
Negro mothers	12	1	.....	11	4	.....
No preceding confinement	4	1	.....	3	1	.....
Under 15 months	1	.....	.....	1	.....	.....
15 months, under 18	1	.....	.....	1	1	.....
18 months, under 24	4	.....	.....	4	1	.....
24 months and over	2	.....	.....	2	1	.....

[1] Not shown where base is less than 100.

In Table XXVIII births have been grouped according to the annual earnings of the chief breadwinner in the family and the interval since the preceding confinement. The lowest earnings group, which had less than $1,050 per annum, contained the smallest percentage (15 per cent) of children born as the result of first pregnancies; it comprised the largest proportion (12 per cent) of infants born less than 15 months after an earlier issue. In the highest earnings group 22 per cent of the births were first issues; only 6 per cent came at less than a 15-month interval from preceding births. Lowest, mid, and highest groups had a practically similar proportion of births coming at an interval of at least 18 months.

TABLE XXVIII.—*Interval from preceding confinement, by annual earnings of chief breadwinner; births in Gary in 1916.*

Interval from preceding confinement.	Births in 1916.								
	Total.		Annual earnings of chief breadwinner.						
			Under $1,050.		$1,050 and under $1,850.		$1,850 and over.		No earnings, no chief breadwinner, and not reported.[1]
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	1,393	100.0	403	100.0	727	100.0	185	100.0	[2] 78
No preceding confinement	258	18.5	60	14.9	147	20.2	41	22.2	10
Under 15 months	139	9.9	50	12.4	69	9.5	11	5.9	9
15 months, under 18	142	10.2	38	9.4	81	11.1	19	10.3	4
18 months, under 24	309	2.2	87	21.6	164	22.6	38	20.5	20
24 months and over	522	37.5	158	39.2	259	35.6	74	40.0	31
Not reported	23	1.7	10	2.5	7	1.0	2	1.1	4

[1] Per cent not shown where base is less than 100.
[2] Includes 6 births in families where there was no chief breadwinner and 11 in families where there were no earnings.

PLURAL BIRTHS.

Among the 1,353 live births in Gary in 1916 were 33 twins, of whom but 15 survived a year; 1 twin was stillborn. Infant mortality among twins is very high, and the child who is the product of a single birth has a much greater expectancy of living a year than has a child who is one of twins. To all the mothers in the city for whom complete maternity histories were secured, 100 live-born twins had come. Of these, 46 died in infancy, making the mortality rate for plural births 460, a rate eloquently expressive of the added hazard to which a child born a twin is subjected. The influence of the mortality rate among plural births in Gary in 1916 is shown by comparing the mortality rate for single births (114.4) with that for live births (124.9), in which are included plural issues as well. Plural births added but 33 to the 1,353 live births and yet contributed 18 of the 169 infant deaths.

One per cent of the live births to native mothers and 3 per cent of those to foreign-born mothers were twins. Comparison of the infant mortality rates for single births in the two nativity groups—native white 92.3, foreign born 120.4—and the rates for all births, inclusive of plural—native white 96.6, foreign born 133.5—reveals that a part of the difference was due to the influence which the larger proportion of plural births exerted upon the mortality rate among infants with foreign-born mothers.

TABLE XXIX.—*Infant mortality rates for single and plural births, by color and nativity of mother; births in Gary in 1916.*

Single or plural birth and color and nativity of mother.	Total births.	Still-births.	Live births.	Infant deaths.	Infant mortality rate.[1]
All mothers	1,393	40	1,353	169	124.9
Single births	1,359	39	1,320	151	114.4
Plural births	34	1	33	18	.....
Native white mothers	394	11	383	37	96.6
Single births	390	11	379	35	92.3
Plural births	4	.....	4	2	.....
Foreign-born white mothers	987	28	959	128	133.5
Single births	957	27	930	112	120.4
Plural births	30	1	29	16	.....
Negro mothers	12	1	11	4	.....
Single births	12	1	11	4	.....

[1] Not shown where base is less than 100.

SEX.

Vital statistics show, almost invariably, a preponderance of male over female births and an infant mortality rate among males which is in excess of that for females. In the birth-registration area in 1916, for example, for every thousand live-born girl babies there were 1,057 live-born male infants. The males died in infancy at the rate of 111 per 1,000; the females, at 90 per 1,000.[50] The figures for births and infant deaths in Gary are in practical conformity with this general experience. There were 659 female and 694 male live births; the infant mortality rate for girl babies was 115.3, while for boy babies it was 134.0. Male births exceeded female both among native white and foreign-born mothers. Among infants of native mothers the mortality rate for males very greatly outran the death rate of females; among infants of foreign-born mothers the rate for males fell slightly below that for females.

TABLE XXX.—*Infant mortality rates, by sex of infant and color and nativity of mother; births in Gary in 1916.*

Sex of infant and color and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]
All mothers	1,393	1,353	169	124.9
Male	721	694	93	134.0
Female	672	659	76	115.3
Native white mothers	394	383	37	96.6
Male	204	196	25	127.6
Female	190	187	12	64.2
Foreign-born white mothers	987	959	128	133.5
Male	512	494	65	131.6
Female	475	465	63	135.5
Negro mothers	12	11	4	.....
Male	5	4	3	.....
Female	7	7	1	.....

[a] Not shown where base is less than 100.

[50] U. S. Bureau of the Census, Birth Statistics, 1916, p. 16.

INCOME.

Family income has been shown to be one of the most significant environmental factors influencing infant life. Prolonged inadequacy of income ushers in poverty with its attendant evils—insufficient food and clothing, poor housing and sanitation, lessened ability to secure proper medical care and attention, and increased need for the mother to seek gainful employment to add to the earnings of the natural breadwinner in the family. Consequently, the part which adequacy of income plays in governing the new-born child's chance to survive should not be minimized.

EARNINGS OF CHIEF BREADWINNER.

Financial responsibility for the family is usually assumed by the father. In determining the economic status of families, therefore, the father's annual earnings constitute perhaps the best index of the standard of living of the family. In 98 per cent of all the families into which babies were born in Gary in 1916, fathers were the chief breadwinners. A few families (2 per cent), however, by reason of the father's death, desertion, or incapacity were dependent upon the earnings of some other member who took up the responsibility for the maintenance of the home. In these families classification has been made, accordingly, on the basis of the annual earnings of the chief breadwinner, that is, the person upon whom the baby and the family were mainly dependent for financial support.[50a] The calendar year 1917 was chosen as the year to which the annual earnings relate, on the ground that the amount of the earnings could be more accurately and easily secured for this period (which corresponded with the year for which incomes are commonly reported for tax purposes) than for the precise 12 months following the birth of the infant in 1916. The earnings for this period doubtless afford as fair a basis for classification of families into income groups as the earnings for the year following the birth. All reports of earnings, therefore—those of chief breadwinner, other supplementary earnings, and the monetary contribution of mothers through gainful employment—pertain to the calendar year 1917.

Ordinarily, income from supplementary sources was less regular and more difficult to secure accurately than the chief breadwinner's

[50a] In the tabulations, the mother was never classified as chief breadwinner, and if no person other than the mother assumed financial responsibility for the family it was considered as having no chief breadwinner. General Table 24 shows the proportion of mothers in each nationality group who were employed, and the relation of mothers' employment to earnings of chief breadwinners.

earnings. The majority of mothers who worked kept lodgers and could state the gross receipts only. The gainful employment of the mother usually indicated a need for supplementing the father's wage, but whether she worked at home or in the factory, the fact that the time and service she could give to home and children were necessarily lessened, tended to offset the benefit from the addition made to the family resources. Income from investments, on the contrary, was found usually where the chief breadwinner's earnings were in themselves sufficient to meet the needs of the family; not only was the amount of net income difficult to obtain, but in these cases the earnings alone usually furnished a fair indication of the standard of living.

The chief breadwinners for 29 per cent of the babies earned less than $1,050 in a twelvemonth; for an additional 52 per cent their annual earnings reached $1,050 but fell below $1,850. The proportion of babies of foreign-born mothers in families where the chief breadwinner's earnings were below $1,050 was 3½ times as great as the proportion among babies of native white mothers. The proportion of babies of native white mothers in families where the chief breadwinner's annual earnings were $1,850 or over was more than 3 times as large as the proportion among babies of foreign-born mothers. Slightly over one-fourth of the babies of native white mothers, as compared with less than one-twelfth of those of foreign-born mothers, had chief breadwinners whose yearly earnings equaled or exceeded $1,850.

TABLE XXXI.—*Annual earnings of chief breadwinner, by color and nativity of mother; births in Gary in 1916.*

Annual earnings of chief breadwinner.	Births in 1916 to—							
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.[1]
Total	1,393	100.0	394	100.0	987	100.0	12	.....
Under $1,050	403	28.9	41	10.4	358	36.3	4	.....
$1,050, under $1,850	727	52.2	225	57.1	495	50.1	7	.....
$1,850 and over	185	13.3	104	26.4	80	8.1	1	.....
No earnings, no chief breadwinner and not reported	[2] 78	5.6	24	6.1	54	5.5	.....	.....

[1] Not shown where base is under 100.
[2] Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

SUPPLEMENTARY EARNINGS.

Nearly two-thirds (64 per cent) of the families had no earnings besides those of the chief breadwinner. If the families are classified according to the earnings of all members of the family, the income group under $1,050 embraces only 23 per cent of the entire number,

the mid group contains 53 per cent and the highest group 18 per cent, instead of 29, 52, and 13 per cent, respectively, when the families are classified according to the earnings of the chief breadwinner.[51]

The proportion of families in which the chief breadwinner's earnings were not supplemented varied according to the amount of the breadwinner's contribution. When his earnings were below $1,050, 56 per cent of the babies were found in families which had no supplementary earnings; in the next higher income group, 67 per cent; in the highest, 72 per cent. In short, the more adequate the chief breadwinner's earnings, the smaller the tendency, the less the need to add to them by the earnings of other members of the family. Mothers were less likely to be gainfully employed if the chief breadwinner's earnings were high, though even in the highest income group 29 per cent of the mothers were employed. In the lowest income group the percentage was 41.[52]

MOTHER'S EMPLOYMENT AND EARNINGS.

Slightly over one-third of the 1,393 babies born in 1916 had mothers who were gainfully employed during all, or part, of the year 1917. By far the largest proportion of these mothers (86 per cent) were engaged in keeping lodgers. Since in these cases it was impossible to determine the expenditures incidental to furnishing room and board, or to secure a statement of net income, the gross earnings usually represented considerably more than the real addition made to the family resources. Of the mothers gainfully employed 47 per cent earned less than $200 in the year, 40 per cent earned $200 or over, while in 12 per cent of the cases earnings were not reported. Gainful employment was a little more common among foreign-born than among native white mothers. Likewise the proportion of foreign-born mothers who kept lodgers (32 per cent) exceeded the proportion of native white mothers (24 per cent).[53]

Employment of mothers outside the home was not of frequent occurrence in Gary. Steel, the chief industry of the city, did not afford many openings for women outside the clerical positions and in few factories in the other industries was woman labor common.

A special inquiry was made into the question of the relation between infant mortality and gainful employment of the mother within one year after the birth in 1916. If a mother is gainfully employed only after her baby dies, the baby's death obviously can not be ascribed in any way to that employment. But if a mother's employment takes her away from the child or lessens the care she can give him, the infant's chance of life may be lessened. The mothers of 391 infants (28.9 per cent) commenced or resumed gainful work

[51] General Table 23, p. 111.
[52] General Table 24, p. 111.
[53] General Table 25, p. 112.

during their babies' lifetime and before the babies' first birthdays. In the overwhelming majority of these cases (91.6 per cent), however, the mother's work was in her own home and consisted for the most part of keeping lodgers or boarders; in only 33 cases did the mother's work take her out of the home, and in only 25 of these did it result in separation of mother and baby.

The effect upon infant mortality of the mother's gainful employment during the year after the infant's birth may be shown by the following calculation. Among the entire group of 391 infants, 40 deaths occurred before the end of the first year of life, 2 of them among the infants whose mothers worked away from home. If the average monthly death rates for the city had prevailed among these infants from the time their mothers commenced or resumed work until the end of the year, only 33 deaths instead of 40 would have resulted. This difference, although suggestive of a greater mortality rate among infants of employed mothers, is hardly large enough to be conclusive. In general, gainful employment of the mother during the infant's lifetime was for the most part at home, and the mother's employment away from home after the birth in 1916 was a negligible factor in the city's infant mortality rate.

EMPLOYMENT OF CHIEF BREADWINNER.

As might be expected in a city in which the basic industry was steel, the greatest proportion of wage earners were employed in the steel mills. Gary, however, has had in its brief history a wholesome development of trade and commerce and other industries essential to steady growth as a community, with the result that a considerable number of its wage earners were employed outside the steel industry. Of the babies born in 1916, 87 per cent were in families having chief breadwinners who were wage earners, practically two-thirds of whom were connected with the production of steel. Of the infants of foreign-born mothers slightly over seven-tenths (71 per cent) were dependent upon workers in the steel mills. The proportion of babies of native white mothers whose chief breadwinners were employed in other industries than steel was more than double the proportion among babies of mothers born outside the United States.

A comparison of the earnings of employees in steel with those of employees in other industries shows for the most part a similar distribution among the three earnings groups. A slightly larger proportion of the wage earners in the steel industry were in the highest earnings group. The difference in earnings in favor of the steel industry was more marked in the foreign-born group. In the foreign-born group of wage earners in other industries than steel (47 per cent) had earnings of less than $1,050, and only 1 per cent

had earnings of $1,850 and over, as compared with 37 per cent and 7 per cent, respectively, of wage earners in the steel industry.[54]

INFANT MORTALITY RATES AND EARNINGS OF CHIEF BREADWINNER.

Among the 392 live-born infants in the lowest earnings group 54 deaths under 1 year of age occurred, giving a mortality rate of 137.8; 90 out of the 708 babies in the mid group died under 12 months of age, making an infant mortality rate of 127.1; of the 179 in the highest income group, 16 died in infancy, establishing a mortality rate of 89.4 for the group which was best favored financially. In these figures appears again the coincidence between low income and high infant mortality rate which has so persistently recurred in the studies made by the Children's Bureau.[55]

TABLE XXXII.—*Infant mortality rates, by annual earnings of chief breadwinner and color and nativity of mother; live births in Gary in 1916.*

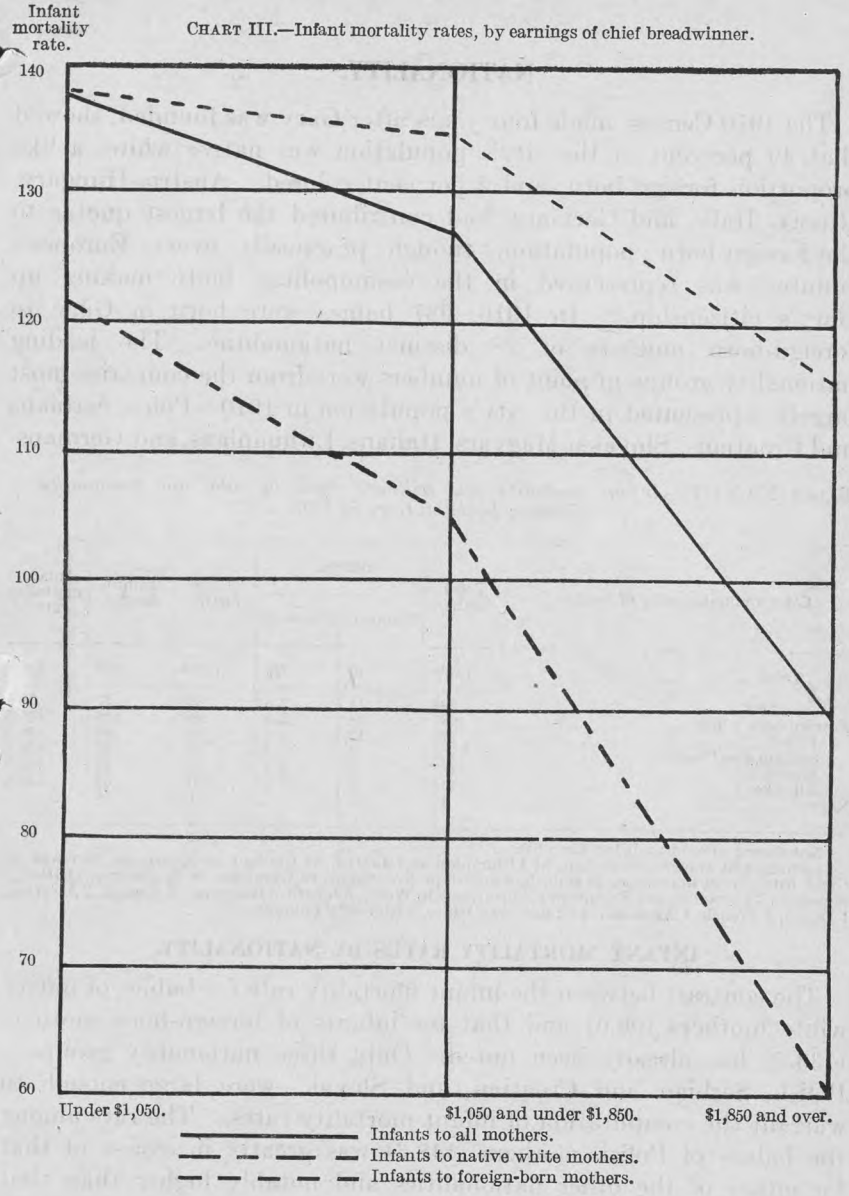
Annual earnings of chief breadwinner and color and nativity of mother.	Total live births.	Infant deaths.	Infant mortality rate.[1]
All mothers	1,353	169	124.9
Under $1,050	392	54	137.8
$1,050, under $1,850	708	90	127.1
$1,850 and over	179	16	89.4
No earnings, no chief breadwinner and not reported	[2] 74	9	.....
Native white mothers	383	37	96.6
Under $1,050	41	5	.....
$1,050, under $1,850	219	23	105.0
$1,850 and over	100	6	60.0
No earnings, no chief breadwinner and not reported	23	3	.....
Foreign-born white mothers	959	128	133.5
Under $1,050	348	48	137.9
$1,050, under $1,850	482	65	134.9
$1,850 and over	78	9	.....
No earnings, no chief breadwinner and not reported	51	6	.....
Negro mothers	11	4	.....
Under $1,050	3	1	.....
$1,050, under $1,850	7	2	.....
$1,850 and over	1	1	.....

[1] Not shown where base is less than 100.
[2] Includes 5 instances of "no chief breadwinner" and 11 of "no earnings."

Division according to nativity of the mothers shows for each nativity class the same movement from higher to lower infant mortality rate with increase in the earnings of the chief breadwinner. Among the infants of native white mothers the rate in the highest earnings group (60.0) was a little less than half that in the lowest (121.9). The rates among babies of foreign-born mothers, though they do not fall so markedly, nevertheless display a steady descent as the breadwinner's earnings rise. (Chart III.)

[54] Percentages are based upon births.
[55] Save the Youngest, U. S. Children's Bureau Publication, No. 61, p. 15.

CHART III.—Infant mortality rates, by earnings of chief breadwinner.



NATIONALITY.

The 1910 Census, made four years after Gary was founded, showed that 49 per cent of the city's population was native white, a like proportion foreign born, and 2 per cent colored. Austria-Hungary, Russia, Italy, and Germany had contributed the largest quotas to the foreign-born population, though practically every European country was represented in the cosmopolitan body making up Gary's citizenship.[56] In 1916, 987 babies were born in Gary to foreign-born mothers of 28 distinct nationalities. The leading nationality groups in point of numbers were from the countries most largely represented in the city's population in 1910—Poles, Serbians and Croatians, Slovaks, Magyars, Italians, Lithuanians, and Germans.

TABLE XXXIII.—*Infant mortality and stillbirth rates, by color and nationality of mother; births in Gary in 1916.*

Color and nationality of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent.[1]			
Total	1,393	40	2.9	1,353	169	124.9
Native white	394	11	2.8	383	37	96.6
Foreign-born white	987	28	2.8	959	128	133.5
Polish	275	12	4.4	263	39	148.3
Serbian and Croatian	162	4	2.5	158	20	126.6
Slovak	135	3	2.2	132	15	113.6
All other[2]	415	9	2.2	406	54	133.0
Negro	12	1	.....	11	4	.....

[1] Not shown where base is less than 100.

[2] Including 64 Magyar, 60 Italian, 54 Lithuanian and Lettish, 41 German, 36 Rumanian, 24 Greek, 22 Great Russian, 20 Bohemian, 20 Danish, Swedish or Norwegian, 19 Ukrainian or Ruthenian, 14 Irish, 8 Slovenian, 7 Canadian (not French), 6 English, Scotch, Welsh, 6 Jewish, 5 Bulgarian, 3 Spanish, 2 Assyrian, 1 Dutch, 1 French, 1 Albanian, 1 foreign-born white, nationality unknown.

INFANT MORTALITY RATES BY NATIONALITY.

The contrast between the infant mortality rate for babies of native white mothers (96.6) and that for infants of foreign-born mothers (133.5) has already been noted. Only three nationality groups—Polish, Serbian and Croatian, and Slovak—were large enough to warrant the computation of infant mortality rates. The rate among the babies of Polish mothers (148.3) was greatly in excess of that for either of the other nationalities and notably higher than that for the babies of all foreign-born mothers. The stillbirth rate (4.4) was also high for the Polish group. Since births to these mothers constituted 28 per cent of the entire number of babies born to foreign women, the high infant death rate among babies of Polish mothers was undoubtedly strongly instrumental in raising the general infant mortality rate for babies of foreign-born mothers.

[56] Thirteenth Census of the United States, 1910, Vol. II, Population, p. 568.

NON-ENGLISH-SPEAKING NATIONALITIES.

With the exception of 20 births to mothers from the British Isles and seven infants whose mothers were of Canadian origin other than French, the foreign-born mothers belonged to non-English-speaking nationalities. Of the mothers of non-English-speaking nationalities 67 per cent were of the different Slavic races, and therefore possessed the racial customs, culture, and ideals characteristic of these races. Moreover, although Lithuanians, Rumanians, and Magyars—16 per cent of the non-English-speaking nationalities, as represented among the births in Gary in 1916—are not Slavic peoples and do not speak Slavic languages, nevertheless in customs and habits they have many points of resemblance to the Slavs. In Gary there was but little segregation of different nationalities into distinct colonies; a few blocks predominantly Polish had been dubbed "Little Poland," but Poles were living in other parts of the city as well. Certain subdivisions of Gary were chiefly foreign, as the South Side, or Tolleston, for example, but a single block, or even a single tenement in these subdivisions, might contain families of various nationalities living side by side.

In religious life, perhaps more than in social and economic custom, the different national groups held themselves distinct. There were Polish, Slovak, Croatian, Lithuanian, Magyar, Ruthenian, Rumanian orthodox, Russian orthodox, Italian, German, and Jewish congregations. Practically every nationality had, in addition, its societies, clubs, or associations for social, protective, fraternal, or educational purposes, and a person of almost any nationality could find without much search a store or bank wherein he could make his wants known in his native tongue.

On the other hand the very youthfulness of Gary, the general feeling there that change and growth were normal, could scarcely have failed to permeate even the most foreign sections and tend there also, to break down connections with the past and foster the adoption of new customs and ideas. To this was added the very real influence which the public schools of the city exerted, not only over the children attending them, but over the adults, the foreign-speaking men and women who enrolled in the manual training shops and night classes of the schools, who used the schools' swimming pools and baths as well as the instruction offered in English, cooking, sewing, foundry work, and other subjects.

MOTHERS' ABILITY TO SPEAK ENGLISH.

Of the 1,393 babies, 44 per cent were born to mothers unable to speak English. Inability to speak English was of significance so far as it might constitute a social and economic handicap, curtail a

mother's opportunity to use the community's medical, social, and educational resources to the fullest degree, or close to her ways of obtaining valuable information on the care of her home and children. The babies of Polish women had the highest proportion of mothers (83 per cent) who could not speak English; among the Serbians and Croatians the proportion was slightly less than three-fourths (74 per cent), while among the Slovaks only half the infants had mothers incapable of conversing in English. It is to be noted that the infant mortality rate was highest among babies of Polish mothers—the women least proficient in the English tongue—and that while the infant mortality rate for babies of mothers of non-English speaking nationalities was 134.8, when this group was subdivided further according to mother's ability to speak English, the mortality rate for infants whose mothers had not acquired the language was 145.2, whereas the rate for infants whose mothers had learned to use English was but 116.1. Apparently the mother's inability to speak English was found aligned with other forces inimical to infant life.

TABLE XXXIV.—*Infant mortality rates, by mother's ability to speak English, and color and nationality of mother; births in Gary in 1916 to foreign-born white mothers.*

Ability to speak English, and color and nationality of mother.	Total births.		Live births.	Infant deaths.	Infant mortality rate.[1]
	Number.	Per cent distribution.			
All foreign-born white mothers	987	.....	959	128	133.5
English-speaking nationalities	27	.....	24	2	.....
Non-English-speaking nationalities	960	100.0	935	126	134.8
Able to speak English	346	36.0	336	39	116.1
Unable to speak English	614	64.0	599	87	145.2
Polish	275	100.0	263	39	148.3
Able to speak English	47	17.1	45	8	.....
Unable to speak English	228	82.9	218	31	142.2
Serbian and Croatian	162	100.0	158	20	126.6
Able to speak English	43	26.5	41	4	.....
Unable to speak English	119	73.5	117	16	136.8
Slovak	135	100.0	132	15	113.6
Able to speak English	67	49.6	66	7	.....
Unable to speak English	68	50.4	66	8	.....
All other	388	100.0	382	52	136.1
Able to speak English	189	48.7	184	20	108.7
Unable to speak English	199	51.3	198	32	161.6

[1] Not shown where base is less than 100.

YEARS IN THE UNITED STATES.

Foreign-born mothers of slightly more than one-tenth of the babies had been in the United States less than five years. Since the nationalities found were chiefly from the countries of southeastern Europe, they were almost wholly of the "newer immigration" and displayed, but little individual differences in length of residence within the United States.

TABLE XXXV.—*Infant mortality rates, by years of residence of mother in the United States, and color and nationality of mother; births in Gary in 1916 to foreign-born white mothers.*

Years of residence in United States and color and nationality of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[1]
All foreign-born white mothers	987	959	128	133.5
Less than 5 years	108	107	17	158.9
5 years and over	872	845	111	131.4
Not reported	7	7	.....	.....
Polish	275	263	39	148.3
Less than 5 years	22	21	6	.....
5 years and over	253	242	33	136.4
Serbian and Croatian	162	158	20	126.6
Less than 5 years	19	19	3	.....
5 years and over	143	139	17	122.3
Slovak	135	132	15	113.6
Less than 5 years	9	9	2	.....
5 years and over	122	119	13	109.2
Not reported	4	4	.....	.....
All other	415	406	54	133.0
Less than 5 years	58	58	6	.....
5 years and over	354	345	48	139.1
Not reported	3	3	.....	.....

[1] Not shown where base is less than 100.

One in 6 of the babies whose mothers had been in the United States less than 5 years and 1 in 8 of those whose mothers had been in this country for a longer period, died within 12 months after birth. Each of the 3 most numerous foreign nationality groups showed a lower infant mortality rate among the babies whose mothers had had a more extended residence within the United States. Besides making possible the acquisition of English and the methods of child care which are best suited to this country, lengthened residence also had a tendency to better the economic status of the family and thus to enhance the infants' likelihood of living beyond infancy. Length of residence was apparently a factor in reducing the mortality rate among infants of foreign-born mothers toward the level of the rate among infants of native mothers.

LITERACY OF MOTHER.

Only 2 native white mothers said they were unable to read and write. There were, however, 361 babies (37 per cent) whose foreign-born mothers could not read and write in any language. The percentage of illiteracy, gauged simply by the mother's statement as to her ability to read and write in any language, was greatest among the Serbian and Croatian women. Approximately two-fifths of the Polish mothers could not meet this crude test as to literacy. Among the Slovaks somewhat over one-fourth of the babies (27 per

cent) had illiterate mothers. When the numbers were not so small as to make the calculation of infant mortality rates undependable, the babies with mothers who could not read and write showed a higher mortality rate than did those whose mothers were literate. This was especially true in the case of Polish mothers.[57]

Illiteracy, like inability to speak English, was of significance chiefly because it restricted the mother's opportunity to acquire knowledge by limiting her to the spoken word as the sole medium of instruction. The mother's illiteracy, furthermore, tended to be associated with ignorance and a lower economic level. Of the babies of illiterate mothers 24 per cent had chief breadwinners whose earnings totaled less than $1,050 per annum, while 44 per cent of those infants whose mothers could not read and write had chief breadwinners in the lowest income group.[58]

The proportion of illiteracy was less among the younger foreign-born mothers. Slightly over one-fourth of the mothers under 25 could not read and write, as compared with one-half of those 35 years of age and over.[59]

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[57] General Table 26, p. 113.
[58] General Table 27, p. 113.
[59] General Table 28, p. 114

MATERNITY HISTORIES.

In addition to the information gathered with special reference to the question of infant mortality among the babies born in Gary in 1916, mothers were asked to report the sequence, duration, and outcome of their earlier pregnancies as well, their ages at the time each successive birth occurred, and, for the children who had died, the causes of death and the children's ages at time of death. The data secured in maternity histories corroborate and supplement certain findings based on the data regarding infants born in 1916.

The 1,393 births in Gary in 1916 included in this study represented births to 1,371 mothers, since in 17 cases of confinement twins were born, and in 5 cases the mothers had been confined previously within the year. Twenty-two maternity histories were omitted because they were incomplete or included births out of wedlock. To the 1,349 mothers remaining, the total births, both live and still, of at least seven months' gestation numbered 4,714.

INFANT MORTALITY RATE.

Among the 4,572 children born alive to these 1,349 mothers 637 deaths under 12 months of age had occurred, making the infant mortality rate for all babies born to these mothers 139.3. This rate was considerably in excess of that (124.9) among babies born in 1916. The complete maternity histories contained a larger proportion of first births as well as a larger proportion of births to foreign-born mothers than did the 1,353 live births in the selected group. Because infant mortality among first births and among births to foreign-born mothers was high, a larger percentage of these among the births from all pregnancies would tend to raise the mortality rate.

TABLE XXXVI.—*Infant mortality and stillbirth rates, by color and nationality of mother; births from all pregnancies.*

Color and nationality of mother.	Total mothers.	Births, all pregnancies.					
		Total.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.
			Number.	Per cent.[a]			
Total	[b] 1,349	4,714	142	3.0	4,572	637	139.3
Native white	389	1,054	36	3.4	1,018	100	98.2
Foreign-born white	948	3,632	105	2.9	3,527	532	150.8
Polish	270	1,023	34	3.3	989	153	154.7
Serbian and Croatian	153	605	17	2.8	588	104	176.9
Slovak	129	515	12	2.3	503	68	135.2
Magyar	60	243	2	0.8	241	45	186.7
Italian	57	254	10	3.9	244	33	135.2
Lithuanian and Lettish	52	232	8	3.4	224	38	169.6
German	39	150	7	4.7	143	14	97.9
All other	188	610	15	2.5	595	77	129.4
Negro	12	28	1	.....	27	5	.....

[a] Not shown where base is less than 100.
[b] Excludes 19 mothers to whom there were illegitmate births prior to 1916 and 3 whose maternity history was incomplete or unreliable.

The mortality rate for all infants of native white mothers, 98.2, was but very slightly different from that, 96.6, for babies of these mothers in 1916. The rate for babies of foreign-born mothers, 150.8, on the contrary, was noticeably above the rate, 133.5, for babies of these mothers in the selected year. It is interesting to note that among the different nationalities, the mortality rate for babies of German mothers, 97.9, almost identical with that for infants of native white mothers, accompanied the highest stillbirth rate, 4.7; that the rate of 135.2 for all babies of Italian mothers accompanied a stillbirth rate of 3.9; whereas an identical rate, 135.2, among babies of Slovak mothers was attended by a stillbirth rate of only 2.3. The excessive infant mortality rate for babies of Magyar mothers, 186.7, was found coexistent with a very low stillbirth rate, 0.8. Other high rates were those for babies of Serbian and Croatian mothers (176.9), Lithuanian mothers (169.6), and Polish mothers (154.7).

AGE OF MOTHER AND ORDER OF BIRTH.[61]

Among all live births included in the maternity histories, the rate of mortality during the first year of life was greatest for babies of mothers under 20 and those 40 years of age or over (163.9), and least among babies whose mothers were in the twenties (129.9). The rate for infants born to mothers when in the thirties was intermediate (144.1). While the range of variation was not so extreme as in the corresponding rates among babies born in 1916 to mothers of these ages (see p. 41), the ranking was the same. The percentage of stillbirths (2.3) was lowest among births to mothers under 20 and those 40 or over and highest (4.5) among babies born to mothers in the thirties. Among babies born in the selected year the highest stillbirth rate fell likewise among births to women in the thirties; the lowest, however, was to mothers in the twenties.

Among all babies included in the complete maternity histories, infant mortality rates according to order of birth confirm the trend shown when births in 1916 alone were under consideration (p. 42). Infants born of first pregnancies had a high mortality rate of 147; the rate fell among second-born infants to 124.2; rose for the babies third in order of birth to 132.8; for fourth, to 151.1; sank to 142.9 for fifth-born infants; and increased slightly to 145.3 for those offspring of sixth and later pregnancies.

[61] See General Table 29, p. 115.

INTERVAL BETWEEN BIRTHS.

Over seven-tenths of the total births to the 1,349 mothers followed an earlier pregnancy. Babies born within 15 months of the time when their mothers had been previously confined showed a mortality rate in their first year of 183.9; when the interval from a preceding birth lengthened to 15 but less than 18 months the mortality rate fell to 157.4. When at least two years elapsed between confinements the infant mortality rate sank to 99.5. This again parallels and confirms what held true among the births in 1916. About 1 in 8 of all births to foreign-born mothers came less than 15 months after a preceding pregnancy had terminated; among all births to native white mothers approximately 1 in 14 occurred after so short an interval.

TABLE XXXVII.—*Infant mortality and stillbirth rates, by interval from preceding confinement and color and nativity of mother; births from all pregnancies.*

Interval from preceding confinement and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent.[1]			
All mothers	4,714	142	3.0	4,572	637	139.3
No preceding confinement	1,308	43	3.3	1,265	186	147.0
Interval from preceding confinement:						
Under 15 months	557	24	4.3	533	98	183.9
15 months, under 18	429	16	3.7	413	65	157.4
18 months, under 24	862	13	1.5	849	113	133.1
24 months and over	1,426	39	2.7	1,387	138	99.5
Not reported	132	7	5.3	125	37	296.0
Native white mothers	1,054	36	3.4	1,018	100	98.2
No preceding confinement	371	15	4.0	356	35	98.3
Interval from preceding confinement:						
Under 15 months	77	5	.....	72	14	.....
15 months, under 18	88	5	.....	83	6	.....
18 months, under 24	161	1	0.6	160	17	106.3
24 months and over	346	10	2.9	336	24	71.4
Not reported	11	.....	.....	11	4	.....
Foreign-born white mothers	3,632	105	2.9	3,527	532	150.8
No preceding confinement	925	27	2.9	898	150	167.0
Interval from preceding confinement:						
Under 15 months	477	19	4.0	458	84	183.4
15 months, under 18	340	11	3.2	329	58	176.3
18 months, under 24	697	12	1.7	685	95	138.7
24 months and over	1,073	29	2.7	1,044	112	107.3
Not reported	120	7	5.8	113	33	292.0
Negro mothers	28	1	.....	27	5	.....
No preceding confinement	12	1	.....	11	1	.....
Interval from preceding confinement:						
Under 15 months	3	.....	.....	3	.....	.....
15 months, under 18	1	.....	.....	1	1	.....
18 months, under 24	4	.....	.....	4	1	.....
24 months and over	7	.....	.....	7	2	.....
Not reported	1	.....	.....	1	.....	.....

[1] Not shown where base is less than 100.

EARNINGS AND INFANT MORTALITY RATE.

An important question is: Do infant mortality rates for all babies show a tendency to rise with fall in family income similar to that evidenced among babies born in 1916? Since the only information

on earnings relates to the year 1917, this question can be answered only on the assumption that the earnings in 1917 are roughly indicative, for the groups as a whole, of the economic status of the families over the period of the mothers' maternity histories. Of course in an individual case in which the mother's pregnancy record extends over a number of years, the economic status may have been changed considerably; but for some families which have moved upward there are others that have fallen back; the assumption simply means that classifying the families into income groups based on fathers' 1917 earnings gives a result that is broadly correct for the period covered by the maternity histories. In the lowest income group, the infant mortality rate for all babies was 166; in the mid group, 139.5; and in the highest, 78.8.

TABLE XXXVIII.—*Infant mortality and stillbirth rates, by annual earnings of chief breadwinner; births from all pregnancies.*

Annual earnings of chief breadwinner.	Total mothers.	Births, all pregnancies.					
		Total.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.
			Number.	Per cent.			
Total	[1] 1,349	4,714	142	3.0	4,572	637	139.3
Under $1,050	369	1,445	49	3.4	1,392	230	166.0
$1,050, under $1,850	706	2,383	57	2.4	2,330	325	139.5
$1,850 and over	180	545	12	2.2	533	42	78.8
No earnings, no chief breadwinner, and not reported	94	341	24	7.0	317	40	126.2

[1] Excludes 19 mothers who had illegitimate births prior to 1916 and 3 whose maternity history was incomplete or unreliable.

CIVIC AND SOCIAL FACTORS.

BIRTH AND DEATH REGISTRATION.

The Indiana State vital statistics law as amended in 1913 requires births and deaths to be registered within 36 hours by the physician or other person in attendance. The enforcement of the law is centralized in the State board of health; in Gary the city health officer is in charge of enforcement locally and for this purpose is designated as a State official. The State was admitted to the death-registration area in 1900 and to the birth-registration area in 1917.

The material secured during the study, which included a house-to-house canvass of the entire city, showed that birth and death registration in 1916 was far from complete. Death registration was more complete than birth registration, but in a total of 211 deaths of infants born alive, 7 were found in which the death was not registered. Of the total 1,353 live births included in the study, 195, or 14.4 per cent, had not been registered. This percentage is probably an understatement of the proportion of unregistered births, since others may have occurred which were not discovered by the canvass.[62]

Failure to register 7 (or 3 per cent) of these unregistered live births was attributable to hospitals; 32 (or 14 per cent) to private physicians; 117 (or over half the entire number) to midwives; in 71 cases (31 per cent) there was no professional attendant at the time of birth or information as to the attendant was lacking. Of the live births included in the study which were attended by midwives 15.1 per cent were not registered, while of those attended by physicians in hospitals, 6.1 per cent, and of those attended by physicians outside of hospitals, 7.3 per cent, were not registered. In practically all the cases in which neither physician nor midwife was in attendance the birth had not been reported to the registrars.

Complete birth registration can be secured only through wider publicity, and through cooperation on the part of physicians, midwives, and health authorities. In case of persistent neglect or refusal on the part of physicians and midwives to report births, prosecu-

[62] See Appendix, p. 87, for a more complete discussion of the evidence regarding birth registration.

Stillbirths of 7 or more months' gestation are required by law to be registered as both births and deaths, but since for purposes of admission to the birth and death registration areas the completeness of registration of live births and of deaths (exclusive of stillbirths) is used as the criterion, the discussion above has been based upon the registration of live births and of deaths of live born infants. The requirement for double registration of stillbirths is not observed uniformly. Thus, 8 stillbirths were registered as deaths but not as births, while 60 were registered both as births and deaths as required by law. Three stillbirths were found which were not registered either as births or deaths.

tions may prove necessary to enforce the law. In Gary during the three or four years prior to the study no prosecutions had been made for neglect to register births.

In July, 1914, the registrar of births in Gary adopted the practice of giving a certificate of birth registration to the parents of each child whose birth was registered. This practice has met with a considerable degree of success wherever it has been tried in stimulating parents to secure prompt birth registration for their children and in spreading information in regard to the birth-registration law among all classes of the population.

The importance of complete birth registration must not be underestimated. Complete registration of both births and deaths under 1 year of age is essential to an accurate knowledge of the infant mortality rate. Registration of births is coming to be everywhere more useful in furnishing a means of proof of age in connection with compulsory school attendance, employment certificate laws, employment in dangerous trades, voting privileges, not to mention its value in establishing inheritance and in proving nationality. One important use is furnishing the basis for visits of the health officer to insure that the provisions of the infant-blindness law, for the prevention of ophthalmia neonatorum, are observed.[63]

HOUSING.

Laws and ordinances applicable to housing in Gary include the city tenement-house law of the State and a number of local ordinances.

The city's chief dependence in control of housing at the time of this study was the city tenement-house law of the State, which was passed in 1913; this law applies to all tenement houses, including apartment houses, in which two or more families live. In regard to tenement houses already built when the law went into effect, the law requires that water-closets, at least one to every two families, must be provided; basement water-closets are prohibited; water must be supplied on each floor. If a tenement is found unfit for habitation, or dangerous to health, authority is given to the board of health to order the house put into good condition or vacated. Fire escapes were required to be provided for all tenement houses of three or more stories. With reference to new tenement houses the provisions of the law are much more strict. Connection with water and sewer mains must be made if the mains lie within 100 feet; limits are prescribed to the proportion of the lot that may be covered by buildings; each tenement must be provided with a yard; rear tenements are prohibited; further regulations cover other particulars such as the arrangement of rooms, window space, separate water-closets within

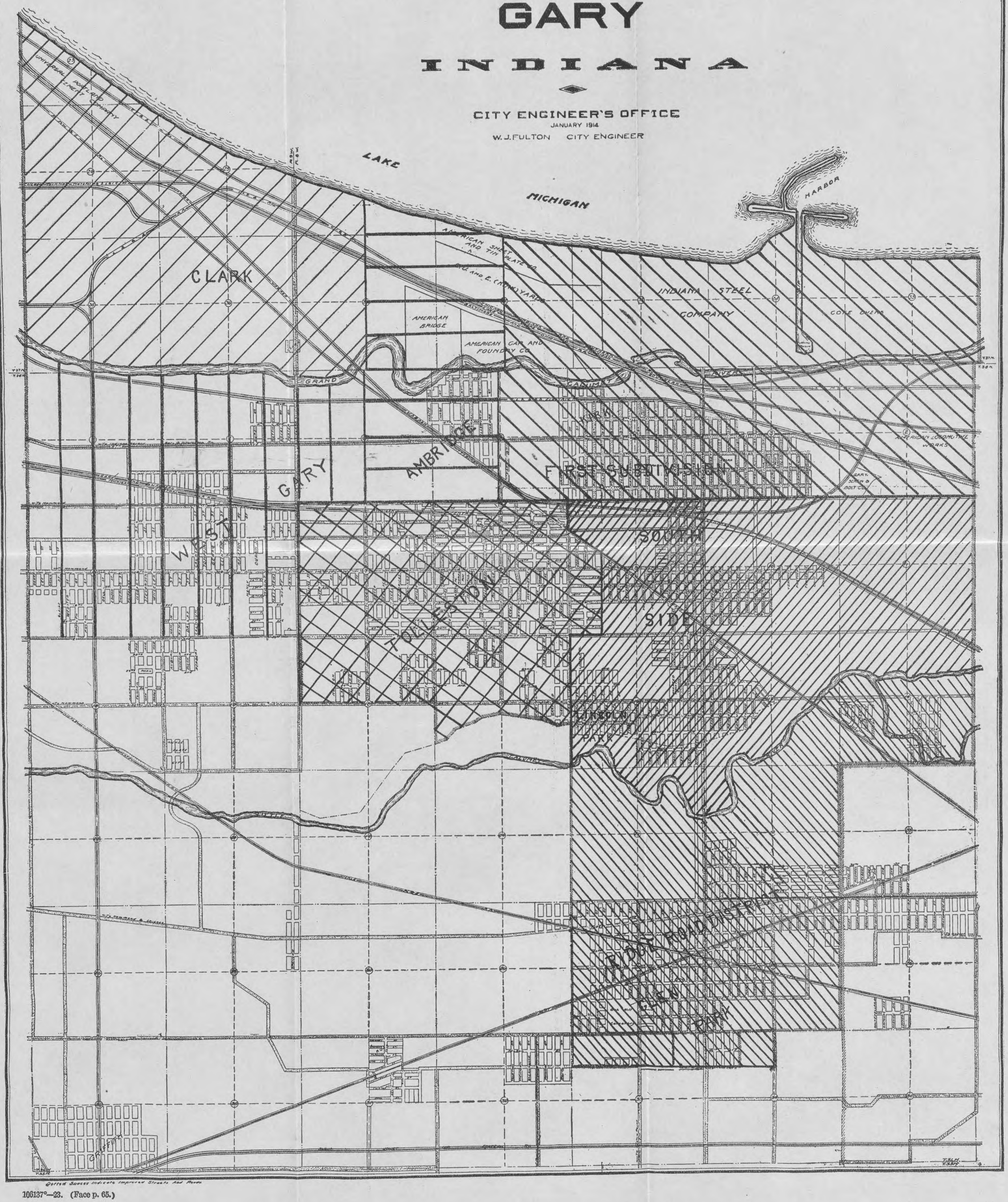
[63] Book of Instructions to Health Authorities, Infant Blindness Law, p. 126.

REVISED Mar 18, 1913

GARY

INDIANA

CITY ENGINEER'S OFFICE
JANUARY 1914
W. J. FULTON CITY ENGINEER



Dotted Spaces indicate Improved Streets And Roads

106137°—23. (Face p. 65.)

each apartment or tenement, and fire escapes for tenements three or more stories in height. Provision for enforcement is made by a system of permits and inspections.

City ordinances provided for permits for building, and for building inspection, and laid down specifications relating to fireproof construction, window space, and light and air shafts. The enforcement of housing regulations was in charge of a department of buildings, headed by a commissioner.

The principal weakness of the State law and the city ordinances lay in the absence of regulations applicable to one-family dwellings. Furthermore, in Gary many tenements constructed before the State law of 1913 went into effect already incorporated serious housing evils. Since the demand for housing accommodations in Gary has consistently exceeded the supply of desirable quarters, many temporary makeshift structures have continued in use and the condemnation and abandonment of unfit dwellings has been retarded.

Housing conditions in Gary may be considered as largely influenced by the circumstances of its founding. Practically all the housing is of recent origin. The city grew rapidly, but local ordinances to govern building were slow to appear, with the result that during the early period of growth building was little regulated, either by city ordinance or by State law. Housing was begun under the auspices of the land company, a subsidiary company to which the steel corporation gave the task of providing shelter for the employees of the steel mills. In certain subdivisions, the development of housing has remained largely in control of this subsidiary company. But although the company's housing developments, as shown later, resulted for the most part in well-built and attractive residence areas, in other parts of the city less satisfactory housing conditions arose.

THE SUBDIVISIONS OF GARY.

Those who planned the city of Gary found their chief problem in leveling the shifting hills of sand which covered the chosen site on the southern shore of Lake Michigan. The mills secured a lake frontage of 7 miles,[64] and the spacious harbor in which huge ore steamers now anchor was constructed. The Grand Calumet River, paralleling the lake shore, was made to flow in a new channel half a mile from the one it had formerly occupied, and formed a line of division between the mills and the city designed to house the mills' employees. Besides the river, ribbed bands of railroad tracks already converging toward Chicago, lying to the northwest, separated mills and city. The city itself was laid out on the simple but unlovely gridiron plan. Straight south from the mill gates runs Broadway, the principal

[64] Gary, Indiana, 1917–18, p. 4.

north and south thoroughfare, and intersecting it at right angles is Fifth Avenue, the main east and west business street of the city.

The subdivisions of the city nearest the mills—the First Subdivision, Kirk, and Ambridge—were largely developed by the land company for the companies whose mills lay to the north just beyond the railroad tracks and the river. Before opening a district for residence, streets were laid out and paved, sewers and water mains were constructed, and attractive dwellings with modern improvements were erected. For the most part, the company houses exhibit a pleasing variety of architecture. In the section of the city just south of the Grand Calumet are the attractive red-brick, frame, or brick-and-frame houses built for the employees of the steel company and the workmen of the bridge company; and the structures in plaster and cement, very different in plan and appearance, in which the workmen of the sheet and tin plate mills and their families dwell. In contrast to these groups of homes are the more stereotyped and ugly small frame houses sheltering the employees of the freight railroad which serves the mills and has its great yards north of the Grand Calumet River. Besides the dwellings erected by the land company, many houses, apartment buildings, and business blocks were erected independently, but subject, when building was done upon company-owned land, to certain salutary restrictions.[65]

At first a number of two-family frame houses were rented by the land company to foreign-born laborers employed in the mills. Perhaps because these families were unfamiliar with such modern conveniences as bath, toilet, and sink, or perhaps because they overcrowded their houses with lodgers, the company before long refused to rerent to these first tenants, put the buildings into good condition, and then rented them to Americanized workmen only, leaving the foreign-born laborer to house himself and his family as best he could. The result of this policy was to concentrate the foreign-born workmen in the South Side and Tolleston, subdivisions which display bad housing conditions.

A number of long, one-story frame buildings, cheaply constructed and designed to bring in a maximum return in rental, which were built on the South Side, perhaps epitomize the worst ills of uncontrolled housing. They were planned for lodging houses, and divided into two-room, or more rarely three-room, apartments. These small apartments were occupied by families, however, with consequent overcrowding. When two such long buildings occupy adjoining or "shoe-string" lots with only a narrow passage between, used in common by the tenants of both buildings, the congestion is great, and but little relief is afforded by the small yards left at the end of each lot. Two adjoining houses of this type supplied but a single

[65] Including uniform building line and modern type of building.

water faucet and four privies for the use of 12 families. In another instance a single flush toilet was provided to accommodate nine families. Inadequate at all times, during cold weather it was rendered useless, due to its location at the end of the last apartment where it was not protected against freezing.

Apartments in such houses were found occupied by both colored and white families of different nationalities, as well as by groups of lodgers. From the point of view both of morals and of sanitation such buildings are not in accordance with decent housing standards, and their continued existence should not be tolerated.

The possibility of using a single lot for more than one house was not overlooked in the haphazard, little-regulated building of Gary's South Side and examples of rear houses are not lacking there. One rear house abutting directly on the alley faced upon a small, cluttered yard, flanked with coal sheds and closed at its other end by the back of the house occupying the front of the lot. Six of its rooms were occupied by a Spanish family of 6 and their 6 lodgers, and its basement, containing three rooms, housed a Polish family and lodgers, 8 persons in all. These 20 individuals were dependent upon a single toilet under the outside steps leading from the yard to the first floor. It was dark, dirty, ill ventilated, and its walls and door had been disintegrated by dampness.

Portions of the South Side had city water, while other sections were still using well water at the time this study was made. Some houses had baths, indoor toilets, gas, and electricity and were in every way modern; others lacked all these features. Privies were still far too numerous. Certain districts of the South Side embodied many of the primitive conditions of pioneer life, where, for a nominal yearly fee of a dollar or two, one might have squatters' rights and put up one's own shelter or occupy the cast-off abode of a family which had prospered and been enabled to move into a house. Tumbledown shacks, made of scraps of boards unevenly pieced together, having roofs patched with tin cans and pierced by stovepipe or tile, were clustered together in the sand alongside more pretentious and stable, though less picturesque, tar-paper structures, which might even disport brick chimneys. The wind, ever busy with the sand, frequently made rebanking of shacks necessary, especially when winter struck. Gardens were not possible because of the character of the soil, but the desire of an agricultural, foreign-born people to possess chickens, ducks, geese, or pigs could be satisfied. In the construction of pens for domestic fowls and animals ingenuity had full play. Their frequent proximity to the living quarters of the families was undesirable.

The heat in these low buildings during summer was intensified by the glare of the sun upon the hot sand; the water supply was a well

common to many, and the toilet was often but a single privy for several families.

In short, the South Side as a whole, in 1918, exemplified the need of community supervision over housing conditions, especially in districts largely inhabited by citizens of foreign birth.

More closely akin to the South Side than any other section of the city was Tolleston, an older town, which became part of the city of Gary in 1910. In foreign population it ranked next to the South Side; in much of it, living conditions were rural. Wells were in use where city water had not yet been piped, and outside privies were still to be found.

Clark and Pine were also rural sections. The city sewer and water systems had not been extended to them, and they were sparsely populated. West Gary, another subdivision not at all thickly settled, was tending to become a good residence section and, though water and sewer systems had not yet reached it, some houses in it were being fitted with modern plumbing.

Ridge Road and Glen Park, subdivisions lying farthest to the south, were separated from the bulk of the city by the Little Calumet River and they were characterized by a different physical contour and a greater degree of vegetation and beauty. Their population was mostly native white and many houses were modern family residences well constructed and situated.

Lincoln Park, just north of the Little Calumet River, closely resembled the South Side and Tolleston in the character of its housing and population. It suffered more than any other subdivision from periodic inundation by the Little Calumet, a stream which might almost be considered to have no banks—so unbrokenly flat and marshy is the land on each side of the small river's shallow bed.

In sanitary development, in economic status of families and in nativity of population, certain subdivisions grouped themselves together. Ambridge and the First Subdivision, with predominantly native white population, with more uniformly excellent housing, wider extension of sewers and water mains, and general high economic level formed a group in contrast to Lincoln Park, the South Side, and Tolleston, where the greater proportion of the population was of foreign birth, yard privies and well water were still used by many, housing was much less favorable and the economic status of the bulk of families lower than in the sections chiefly native white. In the one group, excellence of housing and sanitation was found co-existent with other factors favoring a low death rate among babies; in the other, unsuitable housing and community failure to develop municipal sanitation and hygiene to a high degree were allied with forces antagonistic to infant life. Among the live births in Ambridge and the First Subdivision, 27 infant deaths occurred, resulting in an

infant mortality rate of 90.6 for these parts of the city. In Tolleston, the South Side, and Lincoln Park 942 babies were born alive and 133 deaths occurred under 12 months of age, giving an infant mortality rate of 141.2. The contrast in the infant mortality rates from the gastric and intestinal diseases as shown in Table XXXIX was even more marked. In the sections where housing ills were greatest and where the yard privy lingered, the infant mortality rate from gastric and intestinal diseases was 63.7; in the sections preponderantly native white where community progress had been greater the corresponding rate was 23.5.

TABLE XXXIX.—*Infant mortality rates from all causes and from gastric and intestinal diseases, by subdivision of city; live births in Gary in 1916.*

Subdivision of city.	Live births.	Infant deaths.			
		Total.	Infant mortality rate.[1]	Gastric and intestinal diseases.	
				Number.	Infant mortality rate.[1]
Total	1,353	169	124.9	68	50.3
Ambridge	36	2	.....	.....	.....
First Subdivision	262	25	95.4	7	26.7
Ridge Road and Glen Park	63	6	.....	1	.....
Lincoln Park	27	3	.....	2	.....
South Side	729	104	142.7	46	63.1
Tolleston	186	26	139.8	12	64.5
Clark, Pine, and Cavanaugh	6	.....	.....	.....	.....
West Gary	5	1	.....	.....	.....
Not reported	39	2	.....	.....	.....

[1] Not shown where base is less than 100.

The welfare of infant and mother has long been recognized as a test for judging the excellence of a city's community life because especially upon babies and mothers do the failures of municipal endeavor fall. Among the elements in a city's work for health and hygiene, besides its housing, are its water supply, milk supply, sewer system, system of garbage collection and disposal, street cleaning and paving, as well as its agencies more immediately concerned with infant and child welfare. All of these have interest and merit study as criteria of community vision and community recognition of responsibilities.

DEPARTMENT OF HEALTH AND CHARITIES.

At the time of this study, chief responsibility for civic health and sanitation in Gary was centered in a department of health and charities headed by a board of health of four physicians, one of whom acted as secretary. The health staff included besides the board of health, one sanitary inspector, one food and milk inspector, a plumb-

ing inspector, a city bacteriologist and chemist, a nurse, and a city matron. The secretary of the board of health was the city health officer; neither he nor any member of the board was giving full-time service to city health work. Part-time service and inadequate recompense were faults inherent in the State law regulating health work throughout the cities, towns, and counties in Indiana. In 1918, in cities of the second class, to which group Gary belonged, salaries of members of boards of health did not exceed $100 per annum and the secretary of a board might not be paid in excess of $1,000 a year for his services.[66]

As already mentioned, the health officer was in charge of vital statistics in the city. Recognizing the importance of prompt recording of births and deaths, he began in July, 1914, to send a certificate to the parents of each baby whose advent was reported to the health officer by the attendant at birth. In the opinion of the health officer, these certificates had been the means of securing more complete registration not only of births in the current year but of earlier births which had failed of record. During the 3 or 4 years preceding the study no use had been made of prosecution to enforce the law requiring registration of births.

The health department had recognized the value of a good supply of pure milk in reducing infant mortality and worked toward the elimination of dirty and unfit milk. This subject is discussed further in the following section.

The city of Gary was handicapped in making provision for nurses on its health staff. During the summer months of 1918, however, a city-paid trained nurse was employed, as part of the police staff, to do infant-welfare work and to give educational service to the mothers living in Gary's South Side where the summer toll of infant deaths was especially high.

Another trained nurse, who was on the staff of the health department, visited cases which came under the supervision of the department because of contagious diseases.[67]

The members of the department of health and charities other than members of the board of health were full-time employees reporting every two weeks to the board's secretary. The municipal laboratory presided over by the city chemist was equipped for the making of chemical and bacteriological tests of milk and water, tests for tuberculosis, meningitis, diphtheria, hookworm, typhoid, and trachoma, as well as for venereal diseases.

[66] Indiana Yearbook, 1918, p. 856.

[67] The mayor's annual message to the city council, 1919, said: "I am of the opinion that laws should be enacted which would authorize cities of this magnitude to employ a full-time physician and surgeon at the head of our health department and also a corps of trained nurses. During the past year we have had a trained nurse on our police department, and I assure you that the work she has done and the results obtained have been remarkable."

The sanitary inspector with his deputy established and maintained quarantine; investigated insanitary and uncleanly premises of home dwellers or business places, public nuisances of any sort which were reported, and overcrowding in rooming houses; inspected privies and toilets; ordered the provision of garbage cans and containers; and initiated prosecution of offenders against the city's sanitary regulations, wherever necessary. The inspector was hampered in bettering sanitary conditions by the inadequacy of the building ordinances and the fact that the State housing law did not apply to one-family dwellings. In spite of having no power to compel the removal of yard privies belonging to one-family houses he had succeeded by persuasion in reducing markedly the number of outside closets.

MILK SUPPLY.

In 1918 Gary citizens were receiving their milk supply from 126 different farms through 13 licensed city dairies.

An ordinance passed in 1908 provided that it should be unlawful for any person, firm, or corporation to engage in the sale of milk within the town of Gary without first procuring a license granted by the town clerk upon presentation of a certificate from the secretary of the board of health. By a subsequent ordinance each milk dealer had been further required to furnish to the secretary of the board of health the name and location of every dairy, farm, or other place where the milk which the dealer was offering for sale had been produced.[68] The ordinance provided further that milk should contain 3.6 per cent of butter fat and 8.4 per cent of solids not fat, but the State law fixed 3.25 per cent as the minimum for butter fat and 8.5 per cent for milk solids exclusive of fat.[69]

The pure food and drug law of Indiana of 1907 forbade the manufacture, sale and offering for sale of any adulterated or misbranded foods or drugs. It defined adulterated milk as milk to which water or any foreign substance had been added; milk produced by sick and diseased cows; milk from which the cream or part thereof had been removed; milk which was not of standard quality; milk collected and kept or handled under conditions which were not cleanly and sanitary; milk which contained visible dirt, or less than $8\frac{1}{2}$ per cent of milk solids exclusive of fat and $3\frac{1}{4}$ per cent of milk fat; or milk to which color or preservative had been added.[70]

The State law further provided [71] against the use of any building for stabling cows for dairy purposes "which was not properly constructed, well lighted, well ventilated, and provided with a suitable solid floor of plank, cement, or other impervious material that can be

[68] Ordinances, City of Gary 1913, p. 119.
[69] Pure Food Laws of State of Indiana, p. 3; Ordinances, City of Gary, 1913, p. 118.
[70] Pure Food Laws of State of Indiana, p. 3.
[71] Ibid., p. 30.

readily cleaned." It held that all milking rooms and stables were to be "thoroughly clean and in good repair and each milk cow clean and groomed." All milk as soon as drawn was to be removed from the stable to a milk room, separate from the place in which cows were kept, and used exclusively for the handling and keeping of milk and cream. The milk room must be of sanitary construction, and equipped with facilities for straining, cooling and storing milk and for "washing and sterilizing all utensils and apparatus in which milk is removed, stored and delivered." [72] All milk was to be cooled to 60° F., or below, within one hour after milked and kept at such temperature until it left the farm, or, if retailed to consumer, until it was delivered.

By city ordinance milk and cream had to be Pasteurized and clarified before Pasteurization by means of centrifugal clarifiers or separators.[73] Pasteurization required subjecting the milk to a temperature of at least 145° F. for 30 minutes, or 165° F. for 30 seconds. Immediately after Pasteurization, milk or cream must be cooled to 50° F., or below. Records which would show the temperature of the milk and cream during Pasteurization were to be kept by "some form of self-recording thermometer to be available for inspection." All cans, bottles, or other containers must be sterilized by live steam or hot water at a temperature of at least 170° F. All milk and cream must be sold to retail or wholesale trade in the original container, which must show the name of the filler or packer, and bear the word "Pasteurized" or "raw." Labels or caps must, moreover, bear the name or trade-mark of the person or firm originally filling the bottles and be stamped to show the day of the week the milk or cream contained in the bottles was received from the producer. It was thus required that milk or cream sold in Gary should be Pasteurized and bottled.[74]

The enforcement of the provisions of both city and State rulings regarding milk in 1918, lay in the hands of a food and milk inspector who was both a State and city offical and a member of the city department of health and charities. This inspector had supervision over the 13 city dairies, the vehicles, the milk cans, and the stores dispensing milk, and over the farmers selling it to the city; in addition, he collected samples of milk and cream for analysis. He endeavored to make monthly visits to the 126 farms supplying the city, timing his visits for no exact day but, as far as possible, so that milking would be in process on his arrival. The city dairies he visited weekly and observed the records of the thermometers which indicated the tempera-

[72] Ibid., p. 31.

[73] City Ordinance No. 543 regulating the production and sale of milk passed Jan. 17, 1916.

[74] An exception to the requirements for bottling was that restaurants and hotels might receive milk or cream by the can. None but bottled milk or cream might be peddled on the city streets.

tures at which Pasteurization had been effected. Stores and vehicles he inspected as frequently as his other duties would permit.[75]

Gary milk and cream were examined for bacterial count, total solids, and butter fat weekly by the city chemist and bacteriologist. His report for 1918 showed 500 chemical examinations; 514 bacteriological examinations of milk and cream, and 175 special chemical examinations of milk. Reports based on his analyses were published weekly in the city papers giving the percentage of butter fat, the bacterial count per cubic centimeter in the milk of each dairy and describing the milk as "dirty," "slightly dirty," or "clean."

During 1918 there was considerable dissatisfaction with the quality of the milk supply in the city and a feeling that the bacterial count ran too high. Mothers not infrequently, as their reason for not feeding their babies milk, stated that the supply was dirty. For a time the city newspapers failed to publish the weekly reports, but publication was resumed at the request of women interested in knowing about the quality and purity of milk they were buying. A movement was started in 1918 for the purchase of milk from near-by farmers to be delivered by truck, a plan which would obviate many of the disadvantages resulting from the "long haul." By the end of the year, 160 to 200 of the 600 or 700 cans of milk used daily were being received by truck.

The duties of the one food and milk inspector were numerous and there was a growing realization that additional inspectors were necessary to watch over the city's milk supply. City ordinance and State law were together comprehensive in regulatory power [76] and, had provision for their enforcement been more adequate, should have insured to Gary a milk supply both safe and satisfactory.

COLLECTION AND DISPOSAL OF GARBAGE AND OTHER WASTE.

During the period covered by this study of infant mortality and up to May, 1918, the city ordinance regulating the removal and disposal of garbage specified that no person, firm, or corporation might collect and remove garbage without first securing a permit from the secretary of the board of health. Such permits could be granted only to qualified applicants 18 years of age, or over, who were properly equipped for such work. Each owner of a dwelling house was required to furnish a suitable and sufficient metal container with tightly fitting cover. A city incinerator was maintained for the disposal of the garbage which the city itself collected [77]

[75] Statement of food and milk inspector.

[76] In the ordinance requiring Pasteurization the provision permitting the alternative method of heating milk to a temperature of 165° F. for 30 seconds was not in accord with the most approved practice, and in 1921 this method had been abandoned.

[77] Ordinance No. 23, Mar. 22, 1910; Ordinance No. 212, Apr. 15, 1912; Ordinance No. 538, Dec. 20, 1915.

In April, 1918, a new ordinance was passed to become effective on and after the 15th of May and to repeal all previous ordinances on the subject.[78] The new ordinance stipulated that separate receptacles should be provided for garbage, for waste in the form of tin and metal, for glass and earthenware, and for ashes. By the provisions of the new regulation, the city assumed complete responsibility for collection of garbage and forbade the use of the streets and alleys of Gary by any person or corporation for the purpose of removing and transporting garbage. Before the end of the year, collections were being made daily in the business section; three times a week in more thickly settled residence districts; and twice a week in sparsely settled regions.

By keeping garbage free from other forms of waste the city was enabled to contract for the sale of all garbage collected. In the operation of this system of contract, however, care must be exercised in selecting the party to the contract if evils are to be avoided. It would appear unwise to grant the right to purchase garbage for feeding swine on a farm located within the city limits. Even if contract were made with a farmer outside the city, it would be desirable, especially if close to the city, that the farmer should be equipped to handle the garbage in a satisfactory way. The first contract made under the new ordinance system considered these points and was not attended by evils.

The city also shouldered the burden of collecting ashes, glass and earthenware, and tin and metal waste. This duty, like that of gathering garbage, was placed in the department of public works under the supervision of the street commissioner. Collections of ashes were made once in two weeks in residence and once a week in business districts. The sale of these forms of waste also was authorized, and accordingly carloads of tin cans collected were sold. The ashes were utilized in constructing alleys.

Although Gary possessed no city dump there were different places on undeveloped private property which the city in common with private individuals was allowed to use for dumping purposes. The street commissioner inspected these dumps regularly to see that nothing was deposited which would be a menace to the city's health.

At the time of the completion of the field work of this study in October, 1918, the change to the regulations of the new ordinance had not yet been wholly completed and some of the evils of the older system lingered. By the end of 1918, however, considerable improvement had been made in regularity of collection of all forms of waste, and the consequent increased cleanliness of alleys was noticeable.

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[78] Ordinance No. 697, Apr. 17, 1918.

SEWERS AND SEWAGE DISPOSAL.

Gary's sewerage system in 1918 included 82 miles of sewers, of the combination sanitary and storm type. In the built-up portions of the city sewer connections were possible in practically 95 per cent of the area. A large part of the 31 square miles included within the city limits, however, was still rural in character, a fact which must be borne in mind when comparing the 137 miles of improved streets with the miles of sewer mains.

Disposal of sewage consisted in allowing it to flow untreated into the Grand Calumet and Little Calumet Rivers. The sewage, small in amount, from the two southernmost residence districts, Glen Park and Ridge Road, was emptied into the Little Calumet; the sewage from the rest of the city, together with the waste from the mills, was all emptied into the Grand Calumet. It was probably owing to the large volume of water with which the sewage was diluted that this method of sewage disposal apparently involved little that was unpleasant for Gary.

In 1918 some difficulty was encountered, however, in connection with the outlet for the sewers serving Broadway between Fifth and Eighth Avenues; the outlet was submerged, and failed to function properly. The city was giving its attention to this problem and a satisfactory solution was expected.[79]

The sewer system was so constructed that the sewage, not only from the outlet into the Little Calumet but also from the three outlets into the Grand Calumet, could "be diverted to special locations for septic tanks and filtration beds at any time." [80]

During 1917, 875 permits were issued for service connections to the public sewers.[81]

According to the State housing law, tenement houses were held to be accessible to public sewer if the sewer main ran within 100 feet of any outside line of the lot upon which the tenement house stood. The erection of tenement houses which did not connect directly with

[79] Annual Report, City Engineer, 1917, p. 4, * * * Needed relief will be secured when the submerged condition of the outfall is remedied. This can be done by lowering the water surface of the Grand Calumet River or by installing a pumping station at the river. The recent activities of the commissioners of the sanitary district of Chicago in connection with the disposal of the sewage from this city through their Calumet Sag Channel may offer the solution by the first method. This department (i. e., the city engineer's department) is gathering data to prepare plans for a solution by this second method." Connecting the Grand Calumet with the Sag Canal and hence with the Chicago Drainage Canal would mean diverting the sewage from the Calumet region eventually into the Mississippi River. At present Gary sewage discharged into the Grand Calumet after being carried approximately 25 miles reaches Lake Michigan at the South Chicago, Ill., outlet of the river. It is believed that the current of the river does not permit the emptying of Gary sewage into the lake nearer Gary through the river outlet at Indiana Harbor. By additional industrial and domestic sewage from other parts of the Calumet region the Grand Calumet becomes grossly polluted before reaching South Chicago and constitutes a grave nuisance and source of contamination to the water supplies of Hammond, East Chicago, and Whiting.

[80] Annual Report of the Heads of the Departments of the City of Gary, Indiana, for the Year Ending Dec. 31, 1914, p. 61.

[81] Annual Report, City Engineer, 1917, p. 5.

a sewer had been forbidden since 1913.[82] As has been mentioned, there was in 1918 no city ordinance to supplement the State law and give adequate regulations for one-family houses.

WATER SUPPLY.

A water company, since May, 1907, has had the right and privilege of installing, acquiring, maintaining, and operating a waterworks plant in Gary. Lake Michigan is the source of the city's water supply through a tunnel 6 feet in diameter which extends 1½ miles from shore.[83] The water enters this intake at a depth of 40 feet. Coming from such a distance in the lake and at such depth the water shows the effect of storms only when they are exceptionally severe and stir the lake very unusually. The city engineer stated that no system of filtration was necessary and that there had been but few instances in the history of Gary when the city water had not been clear. The capacity of the system was more than sufficient for the city's needs. The average daily pumpage at the time this study was made was 5,738,344 gallons.[84]

In 1918 the contents of a large concrete water tower of 500,000 gallons capacity lasted little more than an hour, whereas when the city was small the tower contained a day's supply.[85] No storage system was in use but purification was secured by the introduction of liquid chlorine into suction wells.[86]

The report of the city chemist showed 99 examinations of the city water made by him in 1918. In addition, the water company had examinations of the water made at irregular intervals. All tests were favorable and showed that the city was in possession of a very satisfactory water supply. In fact Gary city water met the high standards set by the United States Public Health Service and had been certified for use on interstate carriers.

There were, in 1918, 80 miles of water mains in the city. It was estimated that 80 per cent of the population of Gary could secure city water. To the outlying rural parts of the city—Pine, Clark, and West Gary—the water system had not yet been extended. Some sections of the old town of Tolleston still lacked service.

In the districts of Gary to which the city water supply had not yet reached the driven well was the ordinary source of water. Such

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[82] Housing law of State of Indiana, acts of 1913, sections 7 and 35.

[83] Taylor, Graham R.: Satellite Cities, p. 183, New York, 1915.

[84] Indiana Year Book, 1918, p. 398.

[85] Statement of an official of the water company.

[86] An average of 1.8 pounds chlorine per million gallons was used, Sept. 30, 1917, to Oct. 1, 1918, in Gary. By a rule made by the State board of health in October, 1917, "the superintendents of all waterworks plants operating or maintaining chemical precipitation or purification plants" are required to submit a report to the water department of the State board of health on Monday of each week, giving the following facts: "Daily pumpage, pounds of chemicals and grains per gallon used each day, any unusual condition that may have affected pumpage, character of raw water, and the quality of the treated water during the week previous ending Saturday at midnight." Indiana Year Book 1918, pp. 396–398.

a well consisted of a pipe, with a sieve over its lower end, driven into the sand to a depth of perhaps 20 feet until a supply of ground water was tapped. A common iron pump attached to the upper end of the pipe made the well complete. Such wells did not present so great chance of contamination by seepage of surface water into them as would dug wells with imperfectly fitted tops or platforms. By the time surface water had filtered through the sand to the depth of the sieve at the end of the pipe there had been opportunity for the surface water to become greatly purified. In its well water as in its city water Gary was fortunate.

The typhoid-fever record of a city may be taken as indicative of the excellence of its water. But one death from typhoid occurred in Gary in 1917, and but 16 deaths in 1918. Gary had never had an epidemic traceable to its water supply.[87]

STREETS AND ALLEYS.

In Gary a street must be paved if it is to be of much real value, since travel through loose sand is too laborious to be practicable. The 137 miles of improved highways within the city in 1918, therefore, represented by far the largest proportion of the streets. Only in the less-settled and less-frequented parts were unpaved sand roads used.

With the exception of the main thoroughfares, Broadway and Fifth Avenue, which were of greater width, Gary streets were uniformly 60 feet wide, while alleys for the most part were half as wide. Approximately 50 per cent of alleys in the built-up sections of Gary were paved.[88] During 1918 the ashes collected by the city were used to construct cinder alleys in the Ambridge and the Tolleston districts. As already stated, both water and sewer mains had been laid in the alleys, so that repair or extension work on the mains did not involve tearing up the streets.

As is the case in all windy cities, the streets of Gary, in spite of the efforts of an efficient street-cleaning force, sometimes looked dirty and littered. Even in the thickly built-up sections a high wind could still displace a considerable amount of loose sand. In Gary's earlier days it was found that paved streets and sidewalks might become covered over with sand drifting from neighboring lots. Accordingly the Gary council declared it a public nuisance to permit "loose sand to be carried onto the streets, alleys, sidewalks, and pavements" and provided a penalty for the property holder who allowed sand from his lot to remain upon the adjoining street and walk.[89]

[87] Statement by city engineer, an official of the water company; and the city chemist.
[88] Statement of city superintendent of streets.
[89] Ordinance No. 113, Oct. 26, 1909.

Improvement in the condition of alleys due to the new system of city garbage and rubbish collection was marked in most parts of the city but perhaps less widespread on the South Side and sections where the paving of alleys had not progressed far. Successful enforcement of the provisions of the new method depends upon inculcating in the rank and file of citizens increased knowledge of their responsibilities and upon their intelligent cooperation with the civic agencies intrusted with collecting garbage and rubbish and with keeping streets and alleys clean.

Beauty of lawn and shade trees had indeed been bought with a price in Gary since, in most of the city, grass-covered yard and curb lawn had been won only by overlaying the sand with black earth and patiently and painstakingly fostering the formation of sod. The remark that the number of inches of black dirt on top of the sand in his yard might be taken as a measure of a householder's financial status in the community was not without its element of truth.

INFANT WELFARE.

During the years 1916 and 1917 comparatively little infant-welfare work was being done in Gary. One infant-welfare station was conducted under the auspices of Neighborhood House, a settlement in the midst of the foreign-born community on the South Side. The work, conducted in cooperation with physicians, consisted in educating the mothers in the proper care of babies. Babies were weighed and measured and given physical examination; mothers were taught modification of milk according to the formulæ prescribed by physicians. General instruction in the hygiene of infancy was accompanied by emphasis upon the fundamental principles of the care of milk and other food.

Some prenatal work was done, both with mothers visiting the station and with mothers in their homes.

A Little Mother's class for girls of foreign-born parentage met once a week to learn proper ways of bathing, dressing, feeding, and putting a baby to sleep, as well as how to care for an infant's clothing.

Milk was dispensed from Neighborhood House but not without cost except to those designated by the charity association. The privilege of securing milk kept fresh and cool on ice was appreciated by mothers who had no home facilities for preventing milk from souring. The city in 1918 gave $50 to the settlement for ice, to be distributed to families who were unable to purchase it.

Late in 1918 Friendship House, another settlement house on the South Side, resumed infant-welfare work it had largely discontinued during 1916 and 1917.

Besides these stations, a third center for infant-welfare work on the South Side had been opened under the charge of the visiting

nurse for the employees of one of the steel companies. This station not only undertook teaching of infant care, but also held a clinic twice weekly for examination and treatment of sick babies. In 1918 this station was reaching about 50 families.

The work of the health department, besides the activities already discussed, included in 1916 and 1917 the enforcement of the provisions of the infant blindness law. The city matron's work was also partially concerned with infant welfare, since in cases of extreme poverty or of abandonment she often provided outfits for newly arrived infants; this work, however, was incidental to her general philanthropic and charitable work.

In 1918, the city took a greater interest in infant welfare. A city-paid nurse was put in charge of the work of the infant-welfare station at Neighborhood House already mentioned, and the city matron reported daily to this station for work during the summer months.

Since 1918 Community House in the First Subdivision has also become a center for infant welfare.

SUMMARY AND CONCLUSIONS.

This study of infant mortality and of conditions in the city of Gary affecting babies born in 1916 contributes further evidence of the importance of social and economic factors in infant mortality.

Infant mortality rate and cause of death.

Among 1,353 babies born alive 169 deaths under 1 year of age occurred, and the resulting infant mortality rate was 124.9. Four-tenths of the deaths were attributed to gastric and intestinal diseases; one-fifth to causes connected with early infancy; and one-sixth to respiratory diseases. Gary's infant mortality rate from gastric and intestinal diseases, 50.3, was almost double the corresponding rate for the birth-registration area.

Loss from causes connected with early infancy gave Gary a specific infant mortality rate (25) half as large as the one from gastric and intestinal diseases, and somewhat less than the rate in the birth-registration area.

The infant mortality rate from respiratory diseases in Gary was 19.9; from the group of "other communicable diseases" it was 11.1. These rates were both higher than the corresponding rates, 15.9 and 8.9, in the birth-registration area.

Nationality of mother and infant mortality.

Of the births in Gary in 1916, 71 per cent were to foreign-born mothers. The principal nationalities were the Polish with 19.7 per cent, the Serbian and Croatian with 11.6 per cent, and the Slovak with 9.7 per cent. The infant mortality rate among babies of native white mothers was 96.6 and among infants of foreign-born mothers, 133.5. The babies of Polish mothers had the highest rate, 148.3. The mortality rate from gastric and intestinal diseases among the infants of foreign-born mothers was 2½ times as high as among those of native white mothers and the rate from respiratory diseases was slightly higher; the rate for "other communicable diseases" was identical in the two groups, while the rates from malformations and from early infancy were considerably lower among the infants of foreign-born than among those of native white mothers.

Feeding and infant mortality.

Of the infants who lived to be fed, 93 per cent were exclusively breast fed and only 4 per cent were exclusively artificially fed in the

first month. The proportion breast fed gradually diminished and the proportion artificially fed increased month by month; in the ninth month only 35.4 per cent were exclusively breast fed, 41.7 per cent were partly breast fed, and 22.5 per cent were exclusively artificially fed.

During the first 9 months of life the mortality among the artificially-fed infants averaged 5 times that among the exclusively breast fed and about 3 times that among the partly breast-fed infants. The mortality from gastric and intestinal diseases among the artificially-fed infants was relatively much greater, on an average 8 times as high as among breast-fed infants. The mortality from other causes, including respiratory and "other communicable" diseases, was also higher among the artificially-fed infants, and averaged about 4 times as high as among the babies exclusively breast fed.

The mortality among babies of foreign-born mothers was greater than among babies of native white mothers among both the exclusively-breast fed and the exclusively artificially-fed infants.

Native mothers fed their babies artificially earlier and more extensively than mothers of foreign birth. Supervised feeding of babies was about twice as frequent among infants of native mothers—a fact which accounts in part for the greater safety which attended the use of artificial feeding by these mothers. Examples of unwise feeding of infants were far too common, and served to illustrate the need of educating mothers in acceptable and safe methods of feeding their babies and caring for articles of food.

Maternal mortality and maternity care.

Seven mothers died within a year after confinement in 1916, three from causes connected with childbirth. The care, supervision, and assistance that mothers receive during pregnancy and confinement have bearing not only on maternal health and well-being but also upon infant welfare. Of the mothers giving birth to children in Gary in 1916 seven-tenths had had no prenatal care; only about one-fiftieth had had care that could be termed adequate. Native white mothers secured better care than foreign-born mothers. About seven-eighths of the foreign-born women had no medical supervision whatever, while among native women this group constituted only two-eighths.

At confinement and for the lying-in period the foreign-born woman depended much more generally upon midwife services than did the mother born in the United States. About nine-tenths of the native white mothers, but two-tenths of the foreign-born mothers had physician attendants. Of the native white mothers 22 per cent and of the foreign-born mothers only 4 per cent were confined in hospitals.

Prenatal and confinement care received by the foreign-born mothers as a group was less skilled than that which native white mothers sought and obtained.

Gainful employment of mothers outside the home either during pregnancy or after confinement when their babies were still very young was not widespread. Only 3.5 per cent of the mothers worked away from home during pregnancy, and only 2.4 per cent after confinement during the life of their infants prior to the first birthday. Lodger keeping, on the contrary, was frequently carried on by mothers during pregnancy. Gainful employment of mothers during pregnancy was associated with increased infant mortality and stillbirth rates. The highest infant mortality rate occurred among babies whose mothers continued gainful work up to within a few hours of confinement.

Earnings of chief breadwinner and infant mortality.

A decline in the infant mortality rate with a rise in the earnings of the chief breadwinner in the family was again demonstrated in this study. When the chief breadwinners' earnings were under $1,050 a year, the infant mortality rate was 137.8; when chief breadwinners' earnings reached or exceeded $1,850 per annum, the infant mortality rate fell to 89.4; among babies to native white mothers when earnings were in the highest group, the mortality rate sank to 60. Over one-third of the babies of foreign-born mothers, and only one-tenth of those of native white mothers, had chief breadwinners in the lowest earnings group; somewhat more than one-fourth of those of native white, and somewhat less than one-twelfth of those of foreign-born mothers, had chief breadwinners whose annual earnings at least equaled $1,850. From the point of view of infant welfare, low family income is important because of other unfavorable factors—ignorance, poor housing, and inability to purchase medical and nursing service—with which it tends to be associated.

Civic and social factors.

Birth and death registration.—Good vital statistics records are a prerequisite to ascertaining the status of infant well-being in a community. In 1916 about 1 baby in 7 was not receiving public record of birth in Gary, and for 1 in 30 of those who died under 1 year of age no death certificate was found. The city was attempting to secure public cooperation in birth registration by mailing a certificate to the parents of each child whose birth was registered. So far as the registration of births in 1916 was concerned, midwives in failing to report one-eighth of the births they attended were more serious offenders against Indiana's law for birth registration than were physicians, who failed to report one-twelfth of the births they attended. Midwives not on the official register of those licensed by

the State to practice were largely responsible for lowering the record of midwives as a whole. The law is explicit in requiring licenses for those who practice obstetrics and in providing for the prompt registration of births. Improvement lies in better enforcement.

Housing and other civic factors.—Poorer housing, less development in municipal sanitation, lower average in economic status, and preponderance of the foreign born were characteristics of the South Side, Tolleston, and Lincoln Park subdivisions. More uniformly better housing, superior development and extension of sewers and water mains, higher general economic level, and predominantly native white population were features of the First Subdivision and Ambridge. The infant mortality rate for the babies born in the first group of subdivisions was 141.2; in the second, 90.6.

City officials were aware that the building ordinances did not cover the one-family house and that the city's chief dependence in regulating building was the State law of 1913 directly concerned with tenement houses. Extension of sewers and water mains and the paving of streets were being pushed forward. The installation of a new system of garbage and rubbish collection by the city in 1918 was salutary.

Gary was still suffering in 1918 from having only a part-time city health officer, inadequately salaried, and no nursing staff sufficient to its work. Need for changing the State law governing city health departments was recognized.

Infant-welfare work.—During the years 1916 and 1917 comparatively little infant-welfare work was being done in Gary. In 1918 the city detailed a nurse to assist in this work during the summer months. This provision was totally inadequate to meet the needs of Gary's population. Gary needed additional infant-welfare stations and additional public-health nurses.

In conclusion, much of the mortality among infants in Gary was preventable. The heaviest toll was taken by the gastric and intestinal diseases, and it has been repeatedly demonstrated that the mortality from these causes can be largely reduced by the encouragement of breast feeding, improvement of the milk supply, improvement of community housing and sanitation, and especially by the instruction and education of mothers in the proper methods of infant feeding and care through the establishment of infant-welfare stations. Experience has shown that mortality from causes peculiar to early infancy can be reduced by education of mothers in the principles of prenatal care and personal hygiene during pregnancy and by skilled care at confinement. By carrying forward and extending work already commenced in Gary, through infant-welfare stations, prenatal clinics, and public-health nurses, it should be possible within a few years to reduce the infant mortality rate to a very low figure.

APPENDIX.

METHOD OF PROCEDURE.

Infant mortality rate.

An infant mortality rate expresses the probability of a live-born infant dying before his first birthday and is usually stated as the number of deaths under 1 year per 1,000 live births.[1] The usual approximate method of finding the infant mortality rate for a certain area is to divide the number of registered deaths of infants under 1 year of age occurring in a given calendar year by the number of registered live births in the same year. The number of deaths thus secured includes not only deaths of infants born in the same calendar year, but also some deaths of infants born in the preceding year or in a different area; it excludes deaths of infants included in the group of births if the death occurred either in a different area or in the following calendar year. The two numbers—of deaths and births—do not refer to the same group of infants. To avoid this inaccuracy, the method employed by the Children's Bureau is to follow each infant born in a given selected year in a certain area for a period of 12 months. The deaths among these infants are then compared to the births. In this way the deaths include no infants not included in the births, and the true probability of dying in the first year of life is secured.

The chief difficulty, in practice, in computing infant mortality rates arises from the incompleteness of registration of births and deaths. Two methods are available for treating the original data to make them more serviceable. One is to exclude the least accurate material, where it is known to be incomplete or inaccurate; the other is so to supplement the original data that the figures used include all the evidence applicable to the groups studied in the city.

Certain groups for which the information was inaccurate or incomplete were excluded in this study. The groups for which the rates were most open to question and most difficult to obtain were illegitimate births, births in families that moved away, and births to nonresident mothers.

The first of the groups that were excluded from the general analysis was the group of illegitimate births. The information secured was probably not so complete as for legitimate births; futhermore, it related to an abnormal family group.

[1] Stillbirths are omitted from both births and deaths.

Births to mothers who moved away in the first year of the infant's life formed the second group of exclusion. The information as to the number of deaths that occurred in this group was not complete. Obviously, if the infant moved away from the city after the first few weeks or months of life, his death, if he died, would not be registered in the city. Deaths registered in the city of infants born to mothers who later moved away also had to be excluded; otherwise the rates would be biased by the exclusion of live births only, with no exclusion of infant deaths to correspond.

A third group of exclusions was the births to nonresident mothers. These were excluded not only on the ground that in most cases the infant did not live in the city during his entire first year of life but also on the ground that the conditions under which nonresident mothers lived prior to coming to the city might have been different from those of the average mother in the city. In order to make the rate as characteristic of the city as possible these births were excluded.

Births to mothers who could not be found were also excluded. In such cases the probability was that the mother had moved away. No reliable information could be secured about these cases and hence the only safe policy was to exclude them.

In practice, since the visit of the agent of the bureau to the mother to secure the information called for on the schedule always was made after the first anniversary of the birth of the child—in some cases a year or more afterwards—births were excluded if the mother had moved away from the city prior to the agent's visit or could not be found at the time of the visit.[2]

The data submitted in the report apply, therefore, to births in the city during the selected year to resident married mothers who lived there during the child's first year and were found at the time of the agent's visit.

Though the records for births to resident married mothers were much more complete and satisfactory than for all births in the city, the difficulty of the incompleteness of registration still remains.

In Gary a house-to-house canvass was made to supplement the list of names secured from the birth register. This procedure was plainly necessary, since Gary was not in the birth-registration area in 1916. The canvass was undertaken not so much to complete the record of children born in Gary during the selected year as to complete the record of such children who lived in Gary during the first year of

[2] The rulings in two special cases might be mentioned: (1) If the mother died during the child's first year, the birth was included if the infant (or, in case of death, his family) had lived in the city during the first year after his birth. (2) In a few cases mother and child were away from the city for a part only of the child's first year but later moved back and were found by the agent. These cases were excluded in case of removal, a temporary absence not exceeding three months, such as absence during a summer vacation, not being considered a removal.

life. Obviously it would be more difficult to secure records for children whose mothers moved away from the city before the end of the first year of life, or for children who had died. The omission of such births from the canvass would not have affected the validity of the canvass for the purposes of this study. All the names secured either by birth records or by the canvass were used as a basis of visits to mothers, and those cases for which the information secured showed that the child had been born in Gary in the selected year and had lived in the city during his lifetime up to the first birthday were included in the detailed study. Incidentally the canvass greatly facilitated the work of finding the mothers, for it gave the correct addresses of most of the mothers to be interviewed.

Live births excluded.

With the foregoing explanation of the method of procedure in mind the significance of the exclusions and the rates for the excluded groups may be more easily grasped. During the selected year there were 1,682 known live births in Gary; of these, 274 had moved out of town and no trace of 32 could be found, making a total of 306 which were excluded on grounds of removal or lack of information. Forty deaths occurred in this group, giving a rate of 130.7. Of these 306 live births, 31 were unregistered. The majority of the 31 unregistered births were discovered through death certificates. The true number of unregistered live births to mothers who moved away from the city was probably greater than the number discovered, since, as suggested previously, it was difficult to locate unregistered live births through a canvass made after the families had moved away; on the other hand, the true number of deaths under 1 year of age was probably also somewhat greater than the number registered, since the deaths registered in the city did not include deaths which might have occurred outside the city after the families had moved away. In two instances the births were excluded on account of incomplete or unreliable data; in one of these cases the infant died.

Among the 19 live-born infants excluded on account of nonresidence of the mother, one death occurred in the city. In most cases the mother probably left the city soon after the birth of the child. The mortality therefore understates the true mortality for this group.

Two births were excluded on the ground of illegitimacy; neither of these babies died.

From the figures light may be thrown upon the completeness of the registration of live births in Gary. If the deaths of infants whose births were not registered are compared with the total deaths in the city of infants whose births occurred in the selected year, the figure of 21.8 per cent is obtained as an index of the proportion of live births unregistered. This index gives the true proportion only in case the

mortality in the groups where registration was faulty was the same as the average. The mortality rates are usually high in the foreign-born and low earnings groups among which registration is probably less complete. This percentage, therefore, represents a maximum statement of the number of live births unregistered. Another method of determining the proportion of live births unregistered is by comparing the unregistered live births which were discovered by the canvass or in other ways with the total number of live births. There were 227 unregistered births discovered or 13.5 per cent of the total number known to have occurred in the city in the selected year. A fairer comparison, however, is of the 195 unregistered live births to mothers who were resident in the city not only at the time of the birth but also at the time of the agent's visit, with the 1,353 live births in the same group; this gives a percentage of 14.4.

The true percentage of unregistered births probably lies slightly above this figure, but below the figure given by the first method.

TABLE I.—*Registered and unregistered live births in Gary in 1916, infant deaths, and infant mortality rates for births included in and for births excluded from detailed analysis, by reason for exclusion.*

Inclusion or exclusion of live birth, and reason for exclusion.	Live births.			Infant deaths.			Infant mortality rate.[1]		
	Total.	Registered.	Unregistered.	Total.	Births registered.	Births unregistered.	Total.	Births registered.	Births unregistered.
Total	1,682	1,455	[2]227	211	165	[3]46	125.4	113.4	202.6
Included	1,353	1,158	195	169	139	30	124.9	120.0	153.8
Excluded	329	297	32	42	26	16	127.7	87.5	.....
Reason for exclusion:									
Nonresidence or lack of information.									
Total	327	296	31	42	26	16	128.4	87.8	.....
Not found	32	28	4	6	3	3	.....	.....	.....
Data incomplete or unreliable	2	2	.....	1	1	.....	.....	.....	.....
Nonresident	19	19	.....	1	1	.....	.....	.....	.....
Removed	274	247	27	34	21	13	124.1	85.0	.....
Illegitimate	2	1	1	.....	.....	.....	.....	.....	.....

[1] Not shown where base is less than 100.
[2] Includes 44 registered only as deaths.
[3] Includes 2 not registered as deaths.

Stillbirth rate.

Stillbirth rates are obtained by dividing the stillbirths by the total number of live and stillbirths. A stillbirth is defined as a dead-born issue of seven or more months' gestation. Miscarriages, or dead-born issues of less than seven months' gestation, were excluded.

A policy of exclusions was followed similar to that for infant mortality. Stillbirths to nonresident mothers were excluded because of the possible effect of conditions not characteristic of Gary; likewise, stillbirths to mothers who moved away prior to the visit of the

agent. In the latter case, not only was information difficult to obtain, but also there was the same chance of omission of births as in calculating the infant mortality rate.

In Indiana the law requires registration of stillbirths of seven or more months of gestation. A stillbirth must be registered both as a death and as a birth. It frequently happens, however, that a stillbirth is registered as a death but not as a birth. It is obvious that such an omission is one of carelessness only, as ordinarily a physician would register both. The number of unregistered stillbirths is difficult to determine. In the course of the canvass in Gary three cases of stillbirth were found which were registered neither as births nor as deaths.

Stillbirths excluded.

There were 60 registered stillbirths and 11 unregistered stillbirths[3] known to have occurred in Gary in the selected year; 4 of those registered were excluded because they were found to be miscarriages of less than seven months' gestation. Twenty-five stillbirths were excluded because the mothers had moved out of the city or were nonresidents, or because they could not be found. In these cases it could not be determined definitely whether the birth was a stillbirth or a miscarriage. Two stillbirths were excluded on account of illegitimacy. There were 40 stillbirths to mothers resident in the city both at the time of the birth of the child and at the time of the agent's visit. The stillbirth rate for the included group was found by dividing the number of stillbirths, 40, by the total number, 1,393, of births included in the study, giving 2.9 as the percentage of stillbirths. No rate has been formed for the nonresident, not found, or removed groups because it could not be ascertained from the records whether or not the birth was a stillbirth or a miscarriage.

TABLE II.—*Stillbirths* [1] *in Gary in 1916 included in and excluded from detailed analysis, by reason for exclusion.*

Inclusion or exclusion of stillbirth, and reason for exclusion.	Stillbirths [a] (total number).
Total	71
Included	40
Excluded	31
Reasons for exclusion:	
Nonresidence or lack of information	25
Not found	8
Data incomplete or unreliable	
Nonresident	1
Removed	16
Miscarriage	4
Illegitimate	2

[a] Includes miscarriages if registered as stillbirths.

[3] Includes 8 registered as deaths, but not as births.

GENERAL TABLES.

GENERAL TABLES.

TABLE 1.—*Registration of birth, by attendant at birth; live births in Gary in 1916.*

Attendant at birth.	Live births.				
	Total.	Registered.		Unregistered.	
		Number.	Per cent.	Number.	Per cent.
Total	1,353	1,158	85.6	195	14.4
Physician (at hospital)	115	108	93.9	7	6.1
Physician (not at hospital)	439	407	92.7	32	7.3
Midwife	753	639	84.9	114	15.1
Other, none, or not reported	46	4	.....	42	.....

TABLE 2.—*Infant mortality rates, by cause of death; comparison of deaths among infants born in Gary in 1916 with infant deaths in the birth-registration area in 1916.*

Abridged International List No.[1]	Detailed International List No.[1]	Cause of death.[2]	Infant deaths in—			
			Gary.		Birth-registration area, 1916.	
			Number.	Infant mortality rate.	Number.	Infant mortality rate.
		All causes	169	124.9	82,734	101.0
		Gastric and intestinal diseases [3]	68	50.3	20,834	25.4
24	102, 103	Diseases of the stomach	3	2.2	1,145	1.4
25	104	Diarrhea and enteritis	65	48.0	19,689	24.0
		Respiratory diseases [4]	27	19.9	13,092	15.9
20	89	Acute bronchitis	1	.7	2,088	2.5
Part of 23	91	Broncho-pneumonia	16	11.8	7,804	9.5
22	92	Pneumonia	10	7.4	3,200	3.9
Part of 33	150	Malformations	11	8.1	5,583	6.8
		Early infancy	34	25.1	27,586	33.7
Part of 33	151[1]	Premature birth	20	14.8	15,846	19.3
Part of 33 Part of 37	151[2], 152[2], 153	Congenital debility	13	9.6	8,316	10.2
Part of 37	152[1]	Injuries at birth	1	.7	3,424	4.2
		Epidemic diseases and other communicable diseases. [5]	15	11.1	7,329	8.9
5	6	Measles	5	3.7	1,175	1.4
6	7	Scarlet fever	2	1.5	45	.1
7	8	Whooping cough	3	2.2	1,824	2.2
8	9	Diphtheria and croup	1	.7	418	.5
9	10	Influenza	.....	.....	693	.8
Part of 12	14	Dysentery	.....	.....	161	.2
Part of 12	18	Erysipelas	.....	.....	464	.6
Part of 37	24	Tetanus	.....	.....	77	.1
13	28, 29	Tuberculosis of the lungs	.....	.....	447	.5
14	30	Tuberculous meningitis	1	.7	673	.8
15	31, 32, 33, 34, 35	Other forms of tuberculosis	1	.7	203	.2
Part of 37	37	Syphilis	2	1.5	1,149	1.4
35	155 to 186	External causes	1	.7	887	1.1
38	187, 188, 189	Diseases ill defined or unknown	8	5.9	768	.9
		All other causes	5	3.7	6,655	8.1
17	61	Meningitis	.....	.....	626	.8
Part of 37	71	Convulsions	.....	.....	1,030	1.3
19	79	Organic diseases of the heart	1	.7	278	.3
		Other	4	2.9	4,721	5.8

[1] The numbers indicate the classification in the abridged and detailed lists, respectively, of the Manual of the International List of Causes of Death.

[2] The causes of death included in this list are those used by the U. S. Bureau of the Census (see Mortality Statistics, 1914, p. 660) in classifying the deaths of infants under 1 year. They are those causes of death or groups of causes which are most important at this age. The numbers of the detailed and abridged International Lists will facilitate their identification. In order to make discussion of the figures easier, these causes of death have been grouped in 8 main groups.

[3] The term "gastric and intestinal diseases" as used in the tables and discussion, includes, as above shown, only the diseases of this type which are most important among infants, i. e., diseases of the stomach, diarrhea, and enteritis. It does not include all "diseases of the digestive system" as classified under this heading according to the detailed International List.

[4] "Respiratory diseases," as used in the tables and discussion similarly includes only those of the respiratory diseases which are most important among infants; i. e., acute bronchitis, broncho-pneumonia, and pneumonia. It does not include all "diseases of the respiratory system" as classified under this heading according to the detailed International List.

[5] Epidemic and other "communicable diseases" as used in the tables and discussion includes only those of this group which are most important among infants.

TABLE 3.—*Cause of death, by month of life; deaths among infants born in Gary in 1916.*

Cause of death.	Deaths among infants born in 1916.												
		Occurring in specified month of life.											
	Total.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.
All causes	169	[1] 56	16	10	13	11	10	14	8	7	9	4	11
Gastric and intestinal diseases	68	12	7	5	7	5	6	8	5	5	4	1	3
Respiratory diseases	27	2	2	3	2	3	3	2	....	2	3	1	4
Malformations	11	6	3	....	1	....	....	1	....	....	....	....	....
Early infancy	34	30	2	....	....	1	....	1	....	....	....	....	....
Premature birth	20	20	....	....	....	....	....	....	....	....	....	....	....
Congenital debility	13	9	2	....	....	1	....	1	....	....	....	....	....
Injuries at birth	1	1	....	....	....	....	....	....	....	....	....	....	....
Epidemic and other communicable diseases	15	1	....	....	2	....	1	....	3	....	2	2	4
External causes	1	....	....	....	1	....	....	....	....	....	....	....	....
Diseases ill defined or unknown	8	3	....	2	....	1	....	2	....	....	....	....	....
All other causes	5	2	2	....	....	1	....	....	....	....	....	....	....

[1] Includes 45 deaths under 2 weeks, 6 ascribed to gastric and intestinal diseases, 1 to respiratory diseases, 6 to malformations, 28 to causes connected with early infancy, 3 to diseases ill defined or unknown, 1 to some "other cause."

TABLE 4.—*Cause of death, by calendar month of death; deaths among infants born in Gary in 1916.*

Cause of death.	Deaths among infants born in 1916.													
		Occurring in specified calendar month.												
	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November	December.	Month of death not reported.
All causes	169	13	13	19	18	13	10	18	22	15	13	9	5	1
Gastric and intestinal diseases	68	3	1	5	4	4	3	11	18	12	4	2	1	....
Respiratory diseases	27	5	6	4	2	2	2	2	....	....	1	1	2	....
Malformations	11	....	....	2	2	1	1	2	1	....	1	....	1	....
Early infancy	34	2	3	6	5	1	2	2	3	1	5	3	1	....
Premature birth	20	1	2	5	3	....	1	....	2	....	3	2	1	....
Congenital debility	13	1	....	1	2	1	1	2	1	1	2	1	....	....
Injuries at birth	1	....	1	....	....	....	....	....	....	....	....	....	....	....
Epidemic and other communicable diseases.	15	2	2	....	3	4	1	....	....	2	....	1	....	....
External causes	1	....	....	....	....	....	....	1	....	....	....	....	....	....
Diseases ill defined or unknown	8	....	1	1	2	....	1	....	....	....	....	2	....	1
All other causes	5	1	....	1	....	1	....	....	....	....	2	....	....	....

TABLE 5.—*Monthly death rate by type of feeding, by month of life and nativity of mother.*

Month of life and nativity of mother.	Infants born in 1916.																		
	Total.					Exclusively breast fed.				Partially breast fed.				Artificially fed.				Not fed.	Feeding not reported
	Infants surviving at beginning of specified month.	Subsequent deaths.				Infants surviving at beginning of specified month.	Subsequent deaths.			Infants surviving at beginning of specified month.	Subsequent deaths.			Infants surviving at beginning of specified month.	Subsequent deaths.			Died at once.	Infants surviving at beginning of specified month.	Subsequent deaths.[1]	
		In year.		In month.			In year	In month.			In year.	In month.			In year.	In month.					In year.	In month
		Number.	Per cent of survivors.	Number.	Per 1,000 survivors.			Number.	Per 1,000 survivors.			Number.	Per 1,000 survivors.[1]			Number.	Per 1,000 survivors.[1]					
All mothers:																						
First month	[2] 1,353	169	12.5	[2]56	41.4	1,231	107	19	15.4	26	6	1	.....	58	23	4	.....	31	7	2	1
Second month	1,297	113	8.7	16	12.3	1,152	75	9	7.8	48	6	1	.....	91	31	5	.....	.....	6	1	1
Third month	1,281	97	7.6	10	7.8	1,080	56	6	5.6	68	6	1	.....	128	35	3	23.4	.....	5	.....	.....
Fourth month	1,271	87	6.8	13	10.2	987	43	5	5.1	114	7	1	8.8	164	36	7	42.7	.....	6	1	.....
Fifth month	1,258	74	5.9	11	8.7	910	35	5	5.5	154	5	.....	.....	188	33	6	31.9	.....	6	1	.....
Sixth month	1,247	63	5.1	10	8.0	836	26	2	2.4	210	7	1	4.8	195	29	7	35.9	.....	6	1	.....
Seventh month	1,237	53	4.3	14	11.3	636	19	3	4.7	368	9	2	5.4	227	24	9	39.6	.....	6	1	.....
Eighth month	1,223	39	3.2	8	6.5	542	11	2	3.7	428	10	1	2.3	248	18	5	20.2	.....	5	.....	.....
Ninth month	1,215	31	2.6	7	5.8	430	7	2	4.7	507	11	.....	.....	273	13	5	18.3	.....	5	.....	.....
Tenth month	1,208	24	1.9	9	7.5	.....	5	2	.....	.....	10	4	.....	.....	9	3	.....	.....	5	.....	.....
Eleventh month	1,199	15	1.3	4	3.3	.....	2	1	.....	.....	6	1	.....	.....	7	2	.....	.....	5	.....	.....
Twelfth month	1,195	11	0.9	11	9.2	.....	.....	.....	.....	.....	5	5	.....	.....	6	6	.....	.....	5	.....	.....
Native mothers: [3]																					
First month	394	41	10.4	21	53.3	345	19	6	17.4	6	.....	.....	.....	30	10	3	.....	12	1	.....	.....
Second month	373	20	5.4	3	8.0	320	10	.....	.....	12	1	.....	.....	40	9	3	.....	.....	1	.....	.....
Third month	370	17	4.6	1	2.7	298	8	1	3.4	16	1	.....	.....	55	8	.....	.....	.....	1	.....	.....
Fourth month	369	16	4.3	3	8.1	269	5	.....	.....	30	2	.....	.....	69	9	3	.....	.....	1	.....	.....
Fifth month	366	13	3.6	1	2.7	246	4	.....	.....	41	2	.....	.....	78	7	1	.....	.....	1	.....	.....
Sixth month	365	12	3.3	1	2.7	227	4	.....	.....	55	2	.....	.....	82	6	1	.....	.....	1	.....	.....
Seventh month	364	11	3.0	4	10.9	173	4	2	11.6	94	2	.....	.....	96	5	2	.....	.....	1	.....	.....
Eighth month	360	7	1.9	1	2.8	150	1	1	6.7	111	2	.....	.....	98	4	.....	.....	.....	1	.....	.....
Ninth month	359	6	1.7	2	5.6	118	.....	.....	.....	137	2	.....	.....	103	4	2	19.4	.....	1	.....	.....
Tenth month	357	4	1.1	2	5.6	.....	.....	.....	.....	.....	2	1	.....	.....	2	1	.....	.....	1	.....	.....
Eleventh month	355	2	0.6	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....
Twelfth month	355	2	0.6	2	5.6	.....	.....	.....	.....	.....	1	1	.....	.....	1	1	.....	.....	1	.....	.....

[1] Rate not shown where base is less than 100.

[2] Includes 31 infants who died not fed.

[3] Including 12 native negro.

TABLE 5.—*Monthly death rate by type of feeding, by month of life and nativity of mother*—Continued.

Month of life and nativity of mother.	Infants born in 1916.																			
	Total.					Exclusively breast fed.				Partially breast fed.				Artificially fed.				Not fed.	Feeding not reported.		
	Infants surviving at beginning of specified month.	Subsequent deaths.				Infants surviving at beginning of specified month.	Subsequent deaths.			Infants surviving at beginning of specified month.	Subsequent deaths.			Infants surviving at beginning of specified month.	Subsequent deaths.			Died at once.	Infants surviving at beginning of specified month.	Subsequent deaths.	
		In year.		In month.			In year.	In month.			In year.	In month.			In year.	In month.				In year.	In month.
		Number.	Per cent of survivors.	Number.	Per 1,000 survivors.			Number.	Per 1,000 survivors.			Number.	Per 1,000 survivors.			Number.	Per 1,000 survivors.				
Foreign-born mothers:																					
First month	959	128	13.3	35	36.5	886	88	13	14.7	20	6	1	.....	28	13	1	.....	19	6	2	1
Second month	924	93	10.1	13	14.1	832	65	9	10.8	36	5	1	.....	51	22	2	.....	.....	5	1	1
Third month	911	80	8.8	9	9.9	782	48	5	6.4	52	5	1	.....	73	27	3	.....	.....	4	.....	.....
Fourth month	902	71	7.9	10	11.1	718	38	5	6.9	84	5	1	.....	95	27	4	.....	.....	5	1	.....
Fifth month	892	61	6.8	10	11.2	664	31	5	7.5	113	3	.....	.....	110	26	5	45.5	.....	5	1	.....
Sixth month	882	51	5.8	9	10.2	609	22	2	3.3	155	5	1	6.5	113	23	6	53.1	.....	5	1	.....
Seventh month	873	42	4.8	10	11.5	463	15	1	2.2	274	7	2	7.3	131	19	7	53.4	.....	5	1	.....
Eighth month	863	32	3.7	7	8.1	392	10	1	2.6	317	8	1	3.2	150	14	5	33.3	.....	4	.....	.....
Ninth month	856	25	2.9	5	5.8	312	7	2	6.4	370	9	.....	.....	170	9	3	17.6	.....	4	.....	.....
Tenth month	851	20	2.4	7	8.2	.....	5	2	.....	.....	8	3	.....	.....	7	2	.....	.....	4	.....	.....
Eleventh month	844	13	1.5	4	4.7	.....	2	1	.....	.....	5	1	.....	.....	6	2	.....	.....	4	.....	.....
Twelfth month	840	9	1.1	9	10.7	.....	.....	.....	.....	.....	4	4	.....	.....	5	5	.....	.....	4	.....	.....

TABLE 6.—*Reason for weaning, by physician's advice, and infant's age at weaning; infants weaned under 15 months.*

Reason for,[1] and advice on, weaning.	Infants born in 1916 weaned under 15 months.																		
	Total.		Age at weaning.																
	Number.	Per cent distribution.	Under 15 days.	15 days under 1 mo.	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	7 mos.	8 mos.	9 mos.	10 mos.	11 mos.	12 mos.	13 mos.	14 mos.	Exact age not reported.
Total	845	100.0	58	22	30	29	39	32	11	39	31	30	63	63	58	173	88	78	1
Reason for weaning:																			
Condition of mother	529	62.6	53	20	27	27	32	27	9	35	26	26	40	46	33	73	29	25	1
Pregnancy	145	17.2	.....	.....	.....	.....	.....	1	2	7	10	10	17	20	22	30	12	14	.....
Supposed pregnancy	32	3.8	.....	.....	.....	2	.....	3	.....	4	1	4	1	2	4	5	4	2	.....
Illness of mother	60	7.1	10	3	1	1	3	5	.....	6	6	1	3	6	3	7	2	3	.....
Breast milk poor or disagreed with child	31	3.7	3	3	2	1	4	3	1	5	.....	1	4	1	.....	3	.....	.....	.....
Breast milk ceased or insufficient	182	21.5	30	12	22	20	24	12	2	10	6	9	8	7	2	9	5	3	1
Breast infected	19	2.2	7	1	2	1	1	.....	1	1	.....	.....	1	.....	1	2	.....	1	.....
Other reasons connected with mother's health	60	7.1	3	1	.....	2	.....	3	3	2	3	1	6	10	1	17	6	2	.....
Condition of infant	287	34.0	2	2	3	2	7	3	2	2	4	3	20	11	25	96	54	51	.....
Illness of infant	20	2.4	1	2	.....	1	2	1	1	.....	1	.....	4	.....	2	4	.....	1	.....
Refused or unable to nurse (not ill)	29	3.4	1	.....	3	1	5	2	1	2	3	2	2	.....	2	2	1	2	.....
Age	238	28.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	14	11	21	90	53	48	.....
Separation of mother and child	3	0.4	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....
Mother's employment	2	0.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....
Other causes of separation	1	0.1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other known reasons	18	2.1	2	.....	.....	.....	.....	.....	.....	.....	1	.....	3	5	.....	2	3	2	.....
Reason not reported	8	0.9	1	.....	.....	.....	.....	1	.....	2	.....	1	.....	.....	.....	2	1	.....	.....
Weaned by physician's advice	220	100.0	32	14	15	11	16	15	6	11	10	2	16	12	11	27	16	5	1
Reason for weaning:																			
Condition of mother	171	77.7	30	12	13	11	15	14	5	9	9	2	11	8	6	16	7	2	1
Pregnancy	13	5.9	.....	.....	.....	.....	.....	.....	.....	1	.....	1	3	2	1	3	2	.....	.....
Supposed pregnancy	3	1.4	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	1	.....	.....
Illness of mother	46	20.9	[2] 8	3	.....	1	2	5	.....	3	6	.....	1	4	3	7	2	1	.....
Breast milk poor or disagreed with child	21	9.5	[3] 3	2	1	1	4	3	1	3	.....	.....	2	.....	.....	1	.....	.....	.....
Breast milk ceased or insufficient	64	29.1	[4] 16	5	10	8	8	4	2	1	1	1	2	1	1	2	1	.....	[5] 1

[1] As stated by mother.
[2] Includes 5 cases where infant was never breast fed.
[3] Includes 2 cases where infant was never breast fed.
[4] Includes 15 cases where infant was never breast fed.
[5] Includes 1 case where infant was weaned more than once.

TABLE 6.—*Reason for weaning, by physician's advice, and infant's age at weaning; infants weaned under 15 months*—Continued.

Reason for, and advice on, weaning.	Infants born in 1916 weaned under 15 months.																		
	Total.		Age at weaning.																
	Number.	Per cent distribution.	Under 15 days.	15 days under 1 mo.	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	7 mos.	8 mos.	9 mos.	10 mos.	11 mos.	12 mos.	13 mos.	14 mos.	Exact age not reported.
Reason for weaning—Continued.																			
Breast infected	12	5.5	[6] 3	1	2	1	1	.....	1	.....	.....	.....	1	.....	1	.....	.....	1	.....
Other reasons connected with mother's health	12	5.5	.....	1	.....	.....	.....	2	1	1	1	.....	2	1	.....	2	1	.....	.....
Condition of infant	45	20.5	1	2	2	.....	1	1	1	1	1	.....	5	2	5	11	9	3	.....
Illness of infant	10	4.5	1	2	.....	.....	.....	.....	1	.....	1	.....	3	.....	1	.....	.....	1	.....
Refused or unable to nurse (not ill)	6	2.7	.....	.....	2	.....	1	1	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....
Age	29	13.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	4	11	8	2	.....
All other known reasons	2	0.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....
Reason not reported	2	0.9	[7] 1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Weaned without physician's advice	[8] 625	100.0	26	8	15	18	23	17	5	28	21	28	47	51	47	146	[8] 72	73	.....
Reason for weaning:																			
Condition of mother	358	57.3	23	8	14	16	17	13	4	26	17	24	29	38	27	57	22	23	.....
Pregnancy	132	21.1	.....	.....	.....	.....	.....	1	2	6	10	9	14	18	21	27	10	14	.....
Supposed pregnancy	29	4.6	.....	.....	.....	2	.....	3	.....	4	.....	4	1	2	4	4	3	2	.....
Illness of mother	14	2.2	[3] 2	.....	1	.....	1	.....	.....	3	.....	1	2	2	.....	.....	.....	2	.....
Breast milk poor or disagreed with child	10	1.6	.....	1	1	.....	.....	.....	.....	2	.....	1	2	1	.....	2	.....	.....	.....
Breast milk ceased or insufficient	118	18.9	[9] 14	7	12	12	16	8	.....	9	5	8	6	6	1	7	4	3	.....
Breast infected	7	1.1	[10] 4	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	.....	.....	.....
Other reasons connected with mother's health	48	7.7	[6] 3	.....	.....	2	.....	1	2	1	2	1	4	9	1	15	5	2	.....
Condition of infant	242	38.7	1	.....	1	2	6	2	1	1	3	3	15	9	20	85	45	48	.....
Illness of infant	10	1.6	.....	.....	.....	1	2	1	.....	.....	.....	.....	1	.....	1	4	.....	.....	.....
Refused or unable to nurse (not ill)	23	3.7	[7] 1	.....	1	1	4	1	1	1	3	2	2	.....	2	2	.....	2	.....
Age	209	33.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	12	9	17	79	45	46	.....
Separation of mother and child	3	0.5	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....
Mother's employment	2	0.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....
Other causes of separation	1	0.2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other known reasons	16	2.6	[3] 2	.....	.....	.....	.....	.....	.....	.....	1	.....	3	3	.....	2	3	2	.....
Reason not reported	6	1.0	.....	.....	.....	.....	.....	1	.....	1	.....	1	.....	.....	.....	2	[8] 1	.....	.....

[3] Includes 2 cases where infant was never breast fed.
[6] Includes 3 cases where infant was never breast fed.
[7] Includes 1 case where infant was never breast fed.
[8] Includes 1 case where no report as to advice on weaning was obtained.
[9] Includes 10 cases where infant was never breast fed.
[10] Includes 4 cases where infant was never breast fed.

TABLE 7.—*Supervision of feeding or access to instructive literature in first year of infant's life, by color and nativity of mother; infants partially or exclusively artificially fed.*

Supervision of feeding or access to instructive literature.	Infants born in 1916 partially or exclusively artificially fed at some time during first year.						
	Total.		Native white mothers.		Foreign-born white mothers.		Negro.[1]
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	1,053	100.0	313	100.0	729	100.0	11
No supervision or literature	[2] 632	60.0	116	37.1	511	70.1	5
Supervision or literature	421	40.0	197	62.9	218	29.9	6
Medical supervision	305	29.0	148	47.3	152	20.9	5
Physician only	231	21.9	96	30.7	132	18.1	3
Physician and nurse	11	1.0	5	1.6	6	0.8	.....
Physician, nurse, and literature	2	0.2	1	0.3	1	0.1	.....
Physician, nurse, other person, and literature	2	0.2	2	0.6	.....	.....	.....
Physician and other person	7	0.7	2	0.6	4	0.5	1
Physician, other person, and literature	6	0.6	5	1.6	1	0.1	.....
Physician and literature	46	4.4	37	11.8	8	1.1	1
Supervision by nurse	14	1.3	5	1.6	9	1.2	.....
Nurse only	10	0.9	3	1.0	7	1.0	.....
Nurse and literature	4	0.4	2	0.6	2	0.3	.....
Supervision by other[3]	45	4.3	14	4.5	30	4.1	1
Other only	35	3.3	9	2.9	25	3.4	1
Other and literature	10	0.9	5	1.6	5	0.7	.....
Literature only	57	5.4	30	9.6	27	3.7	.....

[1] Per cent not shown where base is less than 100.
[2] Includes 1 "not reported."
[3] Any person other than physician or nurse.

TABLE 8.—*Prevalence of artificial feeding with fresh cow's milk, with condensed milk, and with proprietary foods before and after weaning under 15 months of age, by color and nativity of mother; infants born in Gary in 1916.*

Type of artificial feeding given under 15 months before or after weaning.	Infants born in 1915 to—						
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.[1]
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	[2] 1,322	100.0	371	100.0	940	100.0	11
Cow's milk (fresh):							
None given under 15 months	[2] 356	26.9	114	30.7	238	25.3	4
Not reported whether given	4	0.3	.....	.....	4	0.4	.....
Given, beginning under 15 months	962	72.8	257	69.3	698	74.3	7
Before weaning	595	45.0	143	38.5	450	47.9	2
At or after weaning	365	27.6	114	30.7	246	26.2	5
Not reported whether before or after weaning	2	0.2	.....	.....	2	0.2	.....
Condensed milk:							
None given under 15 months	[2] 1,080	81.7	276	74.4	796	84.7	8
Not reported whether given	5	0.4	.....	.....	5	0.5	.....
Given, beginning under 15 months	237	17.9	95	25.6	139	14.8	3
Before weaning	84	6.4	27	7.3	57	6.1	.....
At or after weaning	152	11.5	68	18.3	81	8.6	3
Not reported whether before or after weaning	1	0.1	.....	.....	1	0.1	.....
Proprietary foods:							
None given under 15 months	[2] 1,188	89.9	311	83.8	867	92.2	10
Not reported whether given	5	0.4	1	0.3	4	0.4	.....
Given, beginning under 15 months	129	9.8	59	15.9	69	7.3	1
Before weaning	47	3.6	20	5.4	27	2.9	.....
At or after weaning	81	6.1	39	10.5	41	4.4	1
Not reported whether before or after weaning	1	0.1	.....	.....	1	0.1	.....

[1] Per cent not shown where base is less than 100.
[2] Excludes 31 infants who died not fed.

TABLE 9.—*Age at weaning of infant, by medical supervision of weaning and earnings of chief breadwinner; infants born in Gary in 1916.*

Earnings of chief breadwinner.	Infants born in 1916.						
	Total surviving.	Weaned.					
		Total.		By physician's advice.		Without physician's advice.	
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
SURVIVING AT END OF 3 MONTHS.							
Total	1,271	128	10.1	67	5.3	61	4.8
Under $1,050	372	31	8.3	16	4.3	15	4.0
$1,050, under $1,850	659	67	10.2	38	5.8	29	4.4
$1,850 and over	172	21	12.2	10	5.8	11	6.4
Not reported	52	6	.....	2	.....	4	.....
No earnings and no chief breadwinner	16	3	.....	1	.....	2	.....
SURVIVING AT END OF 6 MONTHS.							
Total	1,237	189	15.3	92	7.4	97	7.8
Under $1,050	355	46	13.0	19	5.4	27	7.6
$1,050, under $1,850	645	97	15.0	50	7.8	47	7.3
$1,850 and over	172	36	20.9	19	11.0	17	9.9
Not reported	49	6	.....	3	.....	3	.....
No earnings and no chief breadwinner	16	4	.....	1	.....	3	.....
SURVIVING AT END OF 9 MONTHS.							
Total	1,208	270	22.4	102	8.4	168	13.9
Under $1,050	347	72	20.7	19	5.5	53	15.3
$1,050, under $1,850	630	133	21.1	55	8.7	78	12.4
$1,850 and over	167	51	30.5	23	13.8	28	16.8
Not reported	48	9	.....	3	.....	6	.....
No earnings and no chief breadwinner	16	5	.....	2	.....	3	.....
SURVIVING AT END OF 12 MONTHS.							
Total	1,184	443	37.4	138	11.7	305	25.8
Under $1,050	339	125	36.9	22	6.5	103	30.4
$1,050, under $1,850	618	217	35.1	75	12.1	142	23.0
$1,850 and over	164	81	49.4	33	20.1	48	29.3
Not reported	48	14	.....	5	.....	9	.....
No earnings and no chief breadwinner	15	6	.....	3	.....	3	.....
SURVIVING AT END OF 15 MONTHS.							
Total	1,162	766	65.9	182	15.7	584	50.3
Under $1,050	326	213	65.3	30	9.2	183	56.1
$1,050, under $1,850	610	385	63.1	97	15.9	288	47.2
$1,850 and over	164	130	79.3	43	26.2	87	53.0
Not reported	47	27	.....	8	.....	19	.....
No earnings and no chief breadwinner	15	11	.....	4	.....	7	.....

[1] Based on total survivors. Not shown where base is less than 100.

TABLE 10.—*Prevalence of artificial feeding with fresh cow's milk, with condensed milk, and with proprietary foods before and after weaning under 15 months of age, by annual earnings of chief breadwinner; infants born in Gary in 1916.*

Type of artificial feeding given under 15 months before or after weaning.	Infants born in 1916.								
	Total.		Annual earnings of chief breadwinner.						No earnings, no chief breadwinner, and not reported.[1]
			Under $1,050		$1,050, under $1,850.		$1,850 and over.		
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	[2] 1,322	100.0	382	100.0	691	100.0	177	100.0	[3] 72
Cow's milk (fresh):									
None given under 15 months	[2] 356	26.9	95	24.9	203	29.4	39	22.0	19
Not reported whether given	4	0.3	2	0.5	2	0.3	.....	.....	.....
Given, beginning under 15 months	962	72.8	285	74.6	486	70.3	138	78.0	53
Before weaning	595	45.0	180	47.1	321	46.5	64	36.2	30
At or after weaning	365	27.6	105	27.5	164	23.7	73	41.2	23
Not reported whether before or after weaning	2	0.2	.....	.....	1	0.1	1	0.6	.....
Condensed milk:									
None given under 15 months	[2] 1,080	81.7	320	83.8	566	81.9	134	75.7	60
Not reported whether given	5	0.4	3	0.8	2	0.3	.....	.....	.....
Given, beginning under 15 months	237	17.9	59	15.4	123	17.8	43	24.3	12
Before weaning	84	6.4	24	6.3	43	6.2	14	7.9	3
At or after weaning	152	11.5	34	8.9	80	11.6	29	16.4	9
Not reported whether before or after weaning	1	0.1	1	0.3	.....	.....	.....	.....	.....
Proprietary foods:									
None given under 15 months	[2] 1,188	89.9	347	90.8	623	90.2	150	84.7	68
Not reported whether given	5	0.4	2	0.5	2	0.3	1	0.6	.....
Given, beginning under 15 months	129	9.8	33	8.6	66	9.6	26	14.7	4
Before weaning	47	3.6	9	2.4	25	3.6	10	5.6	3
At or after weaning	81	6.1	24	6.3	41	5.9	15	8.5	1
Not reported whether before or after weaning	1	0.1	.....	.....	.....	.....	1	0.6	.....

[1] Per cent not shown where base is less than 100.
[2] Excludes 31 infants who died not fed.
[3] Includes 5 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 11.—*Duration of household help during pregnancy, by kind of household help and color and nativity of mother; births in Gary in 1916.*

Kind of household help during pregnancy and color and nativity of mother.	Births in 1916.													
	Total.	No household help during pregnancy.		Household help preceding confinement.								Household help early in pregnancy only.		Household help not reported.	
				Less than 2 weeks.		2 weeks, under 1 month.		1 month, under 3 months.		3 months and over.					
		No.	Per ct.[1]	No.	Per ct.[1]	No.	Per ct.[1]	No.	Per ct.[1]	No.	Per ct.[1]	No.	Per ct.[1]	No.	Per ct.[1]
All mothers	1,393	718	51.5	38	2.7	65	4.7	136	9.8	416	29.9	6	0.4	14	1.0
No household help	720	718	99.9	....	....	....	....	....	....	1	....	....	....	1	.1
No household duties	12	....	.....	....	....	1	....	3	....	8	....	....	....	....	....
Household help	662	....	.....	38	5.7	64	9.7	133	20.1	408	61.6	6	.9	13	2.0
Adult doing work other than laundry	379	....	.....	34	9.0	44	11.6	72	19.0	218	57.5	5	1.3	6	1.6
Hired	157	....	.....	15	9.6	19	12.1	26	16.6	91	58.0	3	1.9	3	1.9
Outsider, not hired	107	....	.....	13	12.1	22	20.6	31	29.0	39	36.4	....	....	2	1.9
Member household	115	....	.....	6	5.2	3	2.6	15	13.0	88	76.5	2	1.7	1	.9
Laundry only	224	....	.....	4	1.8	19	8.5	59	26.3	134	59.8	1	.4	7	3.1
Child only	58	....	.....	....	....	1	....	2	....	55	....	....	....	....	....
Not reported	1	....	.....	....	....	....	....	....	....	1	....	....	....	....	....
Native white mothers	394	111	28.2	13	3.3	30	7.6	60	15.2	170	43.1	3	.8	7	1.8
No household help	111	111	100.0	....	....	....	....	....	....	....	....	....	....	....	....
No household duties	8	....	.....	....	....	....	....	3	....	5	....	....	....	....	....
Household help	275	....	.....	13	4.7	30	10.9	57	20.7	165	60.0	3	1.1	7	2.5
Adult doing work other than laundry	181	....	.....	13	7.2	26	14.4	32	17.7	104	57.5	3	1.7	3	1.7
Hired	87	....	.....	5	....	10	....	8	....	59	....	3	....	2	....
Outsider, not hired	57	....	.....	6	....	14	....	17	....	19	....	....	....	1	....
Member household	37	....	.....	2	....	2	....	7	....	26	....	....	....	....	....
Laundry only	89	....	.....	....	....	4	....	25	....	56	....	....	....	4	....
Child only	5	....	.....	....	....	....	....	....	....	5	....	....	....	....	....
Foreign-born white mothers	987	602	61.0	25	2.5	34	3.4	75	7.6	243	24.6	3	.3	5	.5
No household help	602	602	100.0	....	....	....	....	....	....	....	....	....	....	....	....
No household duties	4	....	.....	....	....	1	....	....	....	3	....	....	....	....	....
Household help	381	....	.....	25	6.6	33	8.7	75	19.7	240	63.0	3	.8	5	1.3
Adult doing work other than laundry	195	....	.....	21	10.8	17	8.7	40	20.5	112	57.4	2	1.0	3	1.5
Hired	70	....	.....	10	....	9	....	18	....	32	....	....	....	1	....
Outsider, not hired	49	....	.....	7	....	7	....	14	....	20	....	....	....	1	....
Member household	76	....	.....	4	....	1	....	8	....	60	....	2	....	1	....
Laundry only	132	....	.....	4	3.0	15	11.4	33	25.0	77	58.3	1	.8	2	1.5
Child only	53	....	.....	....	....	1	....	2	....	50	....	....	....	....	....
Not reported	1	....	.....	....	....	....	....	....	....	1	....	....	....	....	....
Negro mothers[2]	12	5	.....	....	....	1	....	1	....	3	....	....	....	2	....
No household help	6	5	.....	....	....	....	....	....	....	....	....	....	....	1	....
Household help	6	....	.....	....	....	1	....	1	....	3	....	....	....	1	....
Adult doing work other than laundry	3	....	.....	....	....	1	....	....	....	2	....	....	....	....	....
Outsider, not hired	1	....	.....	....	....	1	....	....	....	....	....	....	....	....	....
Member household	2	....	.....	....	....	....	....	....	....	2	....	....	....	....	....
Laundry only	3	....	.....	....	....	....	....	1	....	1	....	....	....	1	....

[1] Not shown where base is less than 100.
[2] The negro mothers were all native born.

TABLE 12.—*Source of instruction in prenatal care, by color and nationality of mother; confinements in Gary in 1916.*

Source of instruction in prenatal care.	Total confinements in 1916.		Confinements in 1916 of mothers of specified nationality.												Negro[1]
			Native white.		Foreign-born white.										
					Total.		Polish.		Serbian and Croatian.		Slovak.		All other.		
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.
Total	[2] 1,376	100.0	392	100.0	972	100.0	272	100.0	159	100.0	135	100.0	406	100.0	12
No prenatal instruction	924	67.2	97	24.7	820	84.4	243	89.3	148	93.1	125	92.6	304	74.9	7
Prenatal instruction	451	32.8	295	75.3	151	15.5	29	10.7	10	6.3	10	7.4	102	25.1	5
Physician only	283	20.6	178	45.4	101	10.4	17	6.3	8	5.0	8	5.9	68	16.7	4
Physician and nurse	6	.4	6	1.5	----	----	----	----	----	----	----	----	----	----	----
Physician, nurse and literature	10	.7	9	2.3	1	.1	----	----	----	----	----	----	1	.2	----
Physician and literature	94	6.8	80	20.4	13	1.3	1	.4	----	----	----	----	12	3.0	1
Nurse only	24	1.7	9	2.3	15	1.5	3	1.1	2	1.3	----	----	10	2.5	----
Nurse and literature	3	.2	----	----	3	.3	1	.4	----	----	----	----	2	.5	----
Literature only	31	2.3	13	3.3	18	1.9	7	2.6	----	----	2	1.5	9	2.2	----
Not reported whether prenatal instruction received	1	.1	----	----	1	.1	----	----	1	.6	----	----	----	----	----

[1] Per cent not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

TABLE 13.—*Grade of prenatal care, by color and nationality of mother; confinements in Gary in 1916.*

Color and nationality of mother.	Confinements in 1916 of mothers—													
	Total.	Receiving no prenatal care.		Receiving prenatal care of specified grade.								Not reported.		
				Total.		A.		B.		C.		Grade unknown.		Whether prenatal care received.	
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	[2] 1,376	966	70.2	406	29.5	33	2.4	54	3.9	318	23.1	1	0.1	4	0.3
Native white	392	113	28.8	276	70.4	27	6.9	37	9.4	211	53.8	1	.3	3	.8
Foreign-born white	972	846	87.0	125	12.9	6	.6	16	1.6	103	10.6	----	----	1	.1
Polish	272	252	92.6	20	7.4	2	.7	4	1.5	14	5.1	----	----	----	----
Serbian and Croatian	159	149	93.7	9	5.7	1	.6	1	.6	7	4.4	----	----	----	----
Slovak	135	127	94.1	8	5.9	----	----	1	.7	7	5.2	----	----	1	.6
All other	406	318	78.3	88	21.7	3	.7	10	2.5	75	18.5	----	----	----	----
Negro	12	7	----	5	----	----	----	1	----	4	----	----	----	----	----

[1] Not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

TABLE 14.—*Grade of postnatal care, by attendant at confinement; births in Gary in 1916.*

Attendant at confinement period.	Births in 1916 to mothers—															
	Total.	Receiving no care by attendant after delivery.		Receiving specified grade of postnatal care.										Grade not reported.[1]	
				Total.		Grade A.		Grade B.		Grade C.		Grade D.			
		No.	Per ct.[2]	No.	Per ct.[2]	No.	Per ct.[2]	No.	Per ct.[2]	No.	Per ct.[2]	No.	Per ct.[2]	No.	Per ct.[2]
Total	1,393	48	3.4	1,349	96.6	363	26.1	736	52.8	161	11.6	48	3.4	37	2.7
Physician only.[3]	517	8	1.5	509	98.5	156	30.2	177	34.2	132	25.5	31	6.0	13	2.5
Physician and midwife	66	25	.....	41	.....	1	....	10	....	11	....	15	....	4	....
Midwife only	763	....	.....	763	100.0	195	25.6	540	70.8	16	2.1	2	0.3	10	1.3
Other	33	1	.....	32	.....	11	....	9	....	2	....	....	....	10	....
No attendant	14	14	100.0	.....	.....	....	....	....	....	....	....	....	....	....	....

[1] Includes 21 cases in which attendant at confinement was member of household and 2 cases in which mother died during confinement.
[2] Not shown where base is less than 100.
[3] Includes 1 case with physician and "other" in attendance.

TABLE 15.—*Duration of nursing care at confinement, by color and nationality of mother; confinements in Gary in 1916.*

Color and nationality of mother.	Total confinements in 1916.	Confinements in 1916 of mothers with nursing care.									
		Less than 7 days.		7 days, less than 10.		10 days, less than 14.		14 days or over.		Duration not reported.	
		No.	Per cent.[1]	No.	Per cent.[1]	No.	Per cent.[1]	No.	Per cent.[1]	No.	Per cent.[1]
Total	[2] 1,376	[3] 108	7.8	506	36.8	216	15.7	543	39.5	3	0.2
Native white	392	5	1.3	52	13.3	113	28.8	221	56.4	1	.3
Foreign-born white	972	102	10.5	449	46.2	102	10.5	317	32.6	2	.2
Polish	272	48	17.6	132	48.5	18	6.6	74	27.2	.....	.....
Serbian and Croatian	159	15	9.4	63	39.6	20	12.6	59	37.1	2	1.3
Slovak	135	7	5.2	78	57.8	9	6.7	41	30.4	.....	.....
All other	406	32	7.9	176	43.3	55	13.5	143	35.2	.....	.....
Negro	12	1	.....	5	.....	1	.....	5	.....	.....	.....

[1] Not shown where base is less than 100.
[2] Includes 17 confinements which resulted in twin births and 5 instances where mother had 2 confinements in 1916.
[3] Includes 1 mother who died at childbirth; 1 who died 4 days after delivery.

TABLE 16.—*Duration of household help during lying-in period, by kind of household help and days in bed; births in Gary in 1916.*

Kind of household help during lying-in period and days in bed.	Births in 1916.														
	Total.	No household help during lying-in period.		Household help during lying-in period.										Household help not reported.	
				Less than 1 week.		1 week, less than 2.		2 weeks, less than 4.		4 weeks, less than 6.		6 weeks or over.			
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	1,393	7	0.5	168	12.1	384	27.6	411	29.5	117	8.4	298	21.4	8	0.6
Mothers in hospital for confinement	122	3	2.5	7	5.7	9	7.4	28	23.0	5	4.1	65	53.3	5	4.1
No household duties	15	....	....	....	....	1	....	2	....	2	....	10	....	....	....
No household help (confined at home)	4	4	....	....	....	....	....	....	....	....	....	....	....	....	....
Household help	1,252	....	....	161	12.9	374	29.9	381	30.4	110	8.8	223	17.8	3	.2
In bed less than 4 days	121	....	....	59	48.8	30	24.8	19	15.7	1	.8	12	9.9	....	....
Household help—															
Adult doing work other than laundry	116	....	....	58	50.0	30	25.9	18	15.5	1	.9	9	7.8	....	....
Hired	15	....	....	6	....	5	....	4	....	....	....	....	....	....	....
Outsider, not hired	40	....	....	21	....	10	....	8	....	1	....	....	....	....	....
Member household	61	....	....	31	....	15	....	6	....	....	....	9	....	....	....
Child only	5	....	....	1	....	....	....	1	....	....	....	3	....	....	....
In bed 4 days but less than 7 days	171	....	....	65	38.0	47	27.5	33	19.3	11	6.4	15	8.8	....	....
Household help—															
Adult doing work other than laundry	167	....	....	63	37.7	47	28.1	32	19.2	11	6.6	14	8.4	....	....
Hired	40	....	....	9	....	16	....	10	....	4	....	1	....	....	....
Outsider, not hired	62	....	....	26	....	10	....	17	....	5	....	4	....	....	....
Member household	65	....	....	28	....	21	....	5	....	2	....	9	....	....	....
Laundry only	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Child only	3	....	....	2	....	....	....	....	....	....	....	1	....	....	....
In bed 7 days but less than 10 days	437	....	....	29	6.6	218	49.9	109	24.9	28	6.4	52	11.9	1	.2
Household help—															
Adult doing work other than laundry	426	....	....	28	6.6	215	50.5	106	24.9	28	6.6	48	11.3	1	.2
Hired	139	....	....	8	5.8	54	38.8	44	31.7	12	8.6	20	14.4	1	.7
Outsider, not hired	171	....	....	11	6.4	89	52.0	47	27.5	14	8.2	10	5.8	....	....
Member household	116	....	....	9	7.8	72	62.1	15	12.9	2	1.7	18	15.5	....	....
Laundry only	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Child only	6	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Not reported	4	....	....	1	....	1	....	2	....	....	....	....	....	....	....
In bed 10 days but less than 14 days	239	....	....	4	1.7	59	24.7	83	34.7	33	13.8	60	25.1	....	....
Household help—															
Adult doing work other than laundry	235	....	....	4	1.7	57	24.3	81	34.5	33	14.0	60	25.5	....	....
Hired	93	....	....	3	....	23	....	33	....	14	....	20	....	....	....
Outsider, not hired	102	....	....	....	....	22	21.6	43	42.2	16	15.7	21	20.6	....	....
Member household	40	....	....	1	....	12	....	5	....	3	....	19	....	....	....
Laundry only	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Child only	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Not reported	2	....	....	....	....	1	....	1	....	....	....	....	....	....	....
In bed 14 days and over	282	....	....	4	1.4	20	7.1	137	48.6	37	13.1	83	29.4	1	.4
Household help—															
Adult doing work other than laundry	277	....	....	4	1.4	19	6.9	137	49.5	37	13.4	80	28.9	....	....
Hired	115	....	....	2	1.7	12	10.4	44	38.3	19	16.5	38	33.0	....	....
Outsider, not hired	105	....	....	2	1.9	7	6.7	61	58.1	12	11.4	23	21.9	....	....
Member household	57	....	....	....	....	....	....	32	....	6	....	19	....	....	....
Laundry only	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Child only	2	....	....	....	....	....	....	....	....	....	....	2	....	....	....
Not reported	2	....	....	....	....	1	....	....	....	....	....	....	....	1	....
Number days in bed not reported	2	....	....	....	....	....	....	....	....	....	....	1	....	1	....

[1] Not shown where base is less than 100.

TABLE 17.—*Duration of household help during lying-in period, by kind of household help and color and nativity of mother; births in Gary in 1916.*

Kind of household help during lying-in period, and color and nativity of mother.	Births in 1916.												
	Total.	No household help during lying-in period.		Household help during lying-in period.								Household help not reported.	
				Less than 1 week.		1 week, less than 2.		2 weeks, less than 4.		4 weeks or over.			
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	1,393	7	0.5	168	12.1	384	27.6	411	29.5	415	29.8	8	0.6
No household help and not reported	10	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....
No household duties	15	.....	.....	.....	.....	1	6.7	2	13.3	12	80.0	.....	.....
Household help	1,368	.....	.....	168	12.3	383	28.0	409	29.9	403	29.5	5	.4
Adult doing work other than laundry	1,319	.....	.....	164	12.4	376	28.5	399	30.3	376	28.5	4	.3
Hired	444	.....	.....	31	7.0	112	25.2	141	31.8	158	35.6	2	.5
Outsider, not hired	513	.....	.....	62	12.1	141	27.5	191	37.2	117	22.8	2	.4
Member household	362	.....	.....	71	19.6	123	34.0	67	18.5	101	27.9	.....	.....
Laundry only	19	.....	.....	.....	.....	.....	.....	6	.....	13	.....	.....	.....
Child only	21	.....	.....	3	.....	3	.....	1	.....	14	.....	.....	.....
Not reported	9	.....	.....	1	.....	4	.....	3	.....	.....	.....	1	.....
Native white	394	2	.5	6	1.5	65	16.5	126	32.0	191	48.5	4	1.0
No household help and not reported	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
No household duties	9	.....	.....	.....	.....	1	.....	1	.....	7	.....	.....	.....
Household help	382	.....	.....	6	1.6	64	16.8	125	32.7	184	48.2	3	.8
Adult doing work other than laundry	361	.....	.....	6	1.7	60	16.6	121	33.5	172	47.6	2	.6
Hired	153	.....	.....	4	2.6	27	17.6	44	28.8	78	51.0	.....	.....
Outsider, not hired	158	.....	.....	1	.6	26	16.5	71	44.9	58	36.7	2	1.3
Member household	50	.....	.....	1	.....	7	.....	6	.....	36	.....	.....	.....
Laundry only	15	.....	.....	.....	.....	.....	.....	4	.....	11	.....	.....	.....
Child only	3	.....	.....	.....	.....	2	.....	.....	.....	1	.....	.....	.....
Not reported	3	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	1	.....
Foreign-born white	987	4	.4	162	16.4	316	32.0	283	28.7	219	22.2	3	.3
No household help and not reported	5	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
No household duties	6	.....	.....	.....	.....	.....	.....	1	.....	5	.....	.....	.....
Household help	976	.....	.....	162	16.6	316	32.4	282	28.9	214	21.9	2	.2
Adult doing work other than laundry	948	.....	.....	158	16.7	313	33.0	276	29.1	199	21.0	2	.2
Hired	289	.....	.....	27	9.3	85	29.4	96	33.2	79	27.3	.....	.....
Outsider, not hired	348	.....	.....	61	17.5	112	32.2	119	34.2	56	16.1	.....	.....
Member household	311	.....	.....	70	22.5	116	37.3	61	19.6	64	20.6	.....	.....
Laundry only	4	.....	.....	.....	.....	.....	.....	2	.....	2	.....	.....	.....
Child only	18	.....	.....	3	.....	1	.....	1	.....	13	.....	.....	.....
Not reported	6	.....	.....	1	.....	2	.....	3	.....	.....	.....	.....	.....
Negro	12	1	.....	.....	.....	3	.....	2	.....	5	.....	1	.....
No household help and not reported	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Household help	10	.....	.....	.....	.....	3	.....	2	.....	5	.....	.....	.....
Adult doing work other than laundry	10	.....	.....	.....	.....	3	.....	2	.....	5	.....	.....	.....
Hired	2	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....
Outsider, not hired	7	.....	.....	.....	.....	3	.....	1	.....	3	.....	.....	.....
Member household	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....

[1] Not shown where base is less than 100.

TABLE 18.—*Number of days in bed following confinement, by annual earnings of chief breadwinner; births in Gary in 1916.*

Annual earnings of chief breadwinner.	Births in 1916.														
	Total.	Number of days in bed following confinement.												Not reported.	
		Less than 1 day.		1 day, less than 4.		4 days, less than 7.		7 days, less than 10.		10 days, less than 14.		14 days, or over.			
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	1,393	4	0.3	120	8.6	172	12.3	457	32.8	290	20.8	345	24.8	5	0.4
Under $1,050	403	2	0.5	52	12.9	54	13.4	155	38.5	51	12.7	86	21.3	3	0.7
$1,050, under $1,850	727	2	0.3	60	8.3	93	12.8	229	31.5	160	22.0	182	25.0	1	0.1
$1,850 and over	185	....	....	6	3.2	16	8.6	45	24.3	65	35.1	53	28.6	....	....
No earnings, no chief breadwinner, and not reported	[2] 78	....	....	2	....	9	....	28	....	14	....	24	....	1	....

[1] Not shown where base is less than 100.
[2] Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 19.—*Duration of household help during lying-in period, by kind of household help and earnings of chief breadwinner; births in Gary in 1916.*

Kind of household help and annual earnings of chief breadwinner.	Births in 1916.													
	Total.	No household help during lying-in period.		Household help during lying-in period.								Household help not reported.	
				Less than 1 week.		1 week, less than 2.		2 weeks, less than 4.		4 weeks or over.			
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
All mothers	1,393	7	0.5	168	12.1	384	27.6	411	29.5	415	29.8	8	0.6
Under $1,050	[2]420	4	1.0	65	15.5	145	34.5	114	27.1	91	21.7	1	0.2
No household help and not reported	4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No household duties	3	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....
Household help	413	.....	.....	65	15.7	145	35.1	114	27.6	88	21.3	1	0.2
Adult doing work other than laundry	401	.....	.....	64	16.0	143	35.7	113	28.2	80	19.9	1	0.2
Hired	104	.....	.....	9	8.7	38	36.5	35	33.7	21	20.2	1	1.0
Outsider, not hired	154	.....	.....	23	14.9	52	33.8	52	33.8	27	17.5	.....	.....
Member household	143	.....	.....	32	22.4	53	37.1	26	18.2	32	22.4	.....	.....
Laundry only	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Child only	9	.....	.....	.....	.....	1	.....	1	.....	7	.....	.....	.....
Not reported	2	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....
$1,050, under $1,850	727	3	0.4	89	12.2	203	27.9	230	31.6	198	27.2	4	0.6
No household help and not reported	5	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
No household duties	10	.....	.....	.....	.....	1	.....	2	.....	7	.....	.....	.....
Household help	712	.....	.....	89	12.5	202	28.4	228	32.0	191	26.8	2	0.3
Adult doing work other than laundry	685	.....	.....	86	12.6	199	29.1	222	32.4	177	25.8	1	0.1
Hired	221	.....	.....	17	7.7	63	28.5	78	35.3	63	28.5	.....	.....
Outsider, not hired	282	.....	.....	32	11.3	77	27.3	110	39.0	62	22.0	1	0.4
Member household	182	.....	.....	37	20.3	59	32.4	34	18.7	52	28.6	.....	.....
Laundry only	12	.....	.....	.....	.....	.....	.....	4	.....	8	.....	.....	.....
Child only	9	.....	.....	3	.....	.....	.....	.....	.....	6	.....	.....	.....
Not reported	6	.....	.....	.....	.....	3	.....	2	.....	.....	.....	1	.....
$1,850 and over	185	.....	.....	10	5.4	19	10.3	51	27.6	103	55.7	2	1.1
No household help and not reported	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
No household duties	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
Household help	182	.....	.....	10	5.5	19	10.4	51	28.0	101	55.5	1	0.5
Adult doing work other than laundry	174	.....	.....	10	5.7	18	10.3	48	27.6	97	55.7	1	0.6
Hired	95	.....	.....	3	.....	7	.....	22	.....	63	.....	.....	.....
Outsider, not hired	59	.....	.....	6	.....	7	.....	23	.....	22	.....	1	.....
Member household	20	.....	.....	1	.....	4	.....	3	.....	12	.....	.....	.....
Laundry only	5	.....	.....	.....	.....	.....	.....	2	.....	3	.....	.....	.....
Child only	2	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....
Not reported	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Earnings not reported	61	.....	.....	4	.....	17	.....	16	.....	23	.....	1	.....
Household help	61	.....	.....	4	.....	17	.....	16	.....	23	.....	1	.....
Adult doing work other than laundry	59	.....	.....	4	.....	16	.....	16	.....	22	.....	1	.....
Hired	24	.....	.....	2	.....	4	.....	6	.....	11	.....	1	.....
Outsider, not hired	18	.....	.....	1	.....	5	.....	6	.....	6	.....	.....	.....
Member household	17	.....	.....	1	.....	7	.....	4	.....	5	.....	.....	.....
Laundry only	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Child only	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....

[1] Not shown where base is less than 100.
[2] Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 20.—*Prematurity, by order of pregnancy and age of mother; births in Gary in 1916.*

Prematurity and order of pregnancy.	Births in 1916.						
	Total.		Age of mother.				
	Nnmber	Per cent distribution.	Under 20.	20 to 29.	30 to 39.	40 and over.	Not reported.
Total	1,393	100.0	99	824	396	44	30
Premature	66	4.7	12	37	14	3	.....
Full term	1,326	95.2	87	787	381	41	30
Not reported	1	0.1	.....	.....	1	.....	.....
First pregnancy	258	100.0	66	173	17	.....	2
Premature	21	8.1	10	11	.....	.....	.....
Full term	237	91.9	56	162	17	.....	2
Second pregnancy	285	100.0	28	215	37	1	4
Premature	8	2.8	2	6	.....	.....	.....
Full term	277	97.2	26	209	37	1	4
Third pregnancy	253	100.0	5	193	45	1	9
Premature	10	4.0	.....	6	4	.....	.....
Full term	242	95.7	5	187	40	1	9
Not reported	1	0.4	.....	.....	1	.....	.....
Fourth pregnancy	182	100.0	.....	128	44	8	2
Premature	10	5.5	.....	8	1	1	.....
Full term	172	94.5	.....	120	43	7	2
Fifth pregnancy	140	100.0	.....	62	68	5	5
Premature	3	2.1	.....	1	2	.....	.....
Full term	137	97.9	.....	61	66	5	5
Sixth or later pregnancy	272	100.0	.....	53	184	28	7
Premature	14	5.1	.....	5	7	2	.....
Full term	258	94.9	.....	48	177	26	7
Order of pregnancy not reported	3	.....	.....	.....	1	1	1
Full term	3	.....	.....	.....	1	1	1

TABLE 21.—*Interval from preceding confinement, by condition of preceding issue; births in Gary in 1916 second and later in order of issue.*

Condition of preceding issue.	Births in 1916 second and later in order of issue.													
	Total.	Interval from preceding confinement.												
		Under 11 months.		12 months, under 15.		15 months, under 18.		18 months, under 24.		24 months and over.		Not reported.		
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	
Total	1,135	42	3.7	97	8.5	142	12.5	309	27.2	522	46.0	23	2.0	
Miscarriage	49	9	.....	6	.....	3	.....	5	.....	13	.....	13	.....	
Stillbirth	35	5	.....	11	.....	8	.....	6	.....	5	.....	.....	.....	
Live birth	1,049	28	2.7	80	7.6	131	12.5	298	28.4	504	48.0	8	0.8	
Survival	936	15	1.6	55	5.9	114	12.2	283	30.2	464	49.6	5	0.5	
Infant death	113	13	11.5	25	22.1	17	15.0	15	13.3	40	35.4	3	2.7	
Condition not reported	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	

[1] Not shown where base is less than 100.

TABLE 22.—*Employment of chief breadwinner, by color and nativity of mother and earnings of chief breadwinner; births in Gary in 1916.*

Employment of chief breadwinner and color and nativity of mother.	Births in 1916.								
	Total.		Annual earnings of chief breadwinner.						No earnings, no chief breadwinner, and not reported.[1]
			Under $1,050.		$1,050 under $1,850.		$1,850 and over.		
	Number.	Per cent distribution.[1]	Number.	Per cent distribution.[1]	Number.	Per cent distribution.[1]	Number.	Per cent distribution.[1]	
All mothers	1,393	100.0	403	100.0	727	100.0	185	100.0	[2] 78
Employer	106	7.6	14	3.5	31	4.3	42	22.7	19
Own account	62	4.5	15	3.7	25	3.4	12	6.5	10
Professional	8	0.6	1	0.2	.....	.....	7	3.8	.....
Other	54	3.9	14	3.5	25	3.4	5	2.7	10
Wage earner	1,210	86.9	372	92.3	671	92.3	131	70.8	36
Steel	916	65.8	277	68.7	507	69.7	112	60.5	20
Other	291	20.9	95	23.6	162	22.3	19	10.3	15
Not reported	3	0.2	.....	.....	2	0.3	.....	.....	1
Not reported whether employer or wage earner	15	1.1	2	0.5	.....	.....	.....	.....	13
Native white mothers	394	100.0	41	.....	225	100.0	104	100.0	24
Employer	33	8.4	1	.....	9	4.0	18	17.3	5
Own account	14	3.6	3	.....	6	2.7	5	4.8	.....
Professional	5	1.3	.....	.....	.....	.....	5	4.8	.....
Other	9	2.3	3	.....	6	2.7	.....	.....	.....
Wage earner	343	87.1	37	.....	210	93.3	81	77.9	15
Steel	208	52.8	17	.....	120	53.3	64	61.5	7
Other	135	34.3	20	.....	90	40.0	17	16.3	8
Not reported whether employer or wage earner	4	1.0	.....	.....	.....	.....	.....	.....	4
Foreign-born white mothers	987	100.0	358	100.0	495	99.9	80	.....	54
Employer	73	7.4	13	3.6	22	4.4	24	.....	14
Own account	47	4.8	11	3.1	19	3.8	7	.....	10
Professional	3	0.3	1	0.3	.....	.....	2	.....	.....
Other	44	4.5	10	2.8	19	3.8	5	.....	10
Wage earner	856	86.7	332	92.7	454	91.7	49	.....	21
Steel	700	70.9	260	72.6	380	76.8	47	.....	13
Other	153	15.5	72	20.1	72	14.5	2	.....	7
Not reported	3	0.3	.....	.....	2	0.4	.....	.....	1
Not reported whether employer or wage earner	11	1.1	2	0.6	.....	.....	.....	.....	9
Negro mothers	12	.....	4	.....	7	.....	1	.....	.....
Own account	1	.....	1	.....	.....	.....	.....	.....	.....
Other	1	.....	1	.....	.....	.....	.....	.....	.....
Wage earner	11	.....	3	.....	7	.....	1	.....	.....
Steel	8	.....	.....	.....	7	.....	1	.....	.....
Other	3	.....	3	.....	.....	.....	.....	.....	.....

[1] Per cent not shown where base is less than 100.
[2] Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 23.—*Aggregate family earnings, by earnings supplementary to those of chief breadwinner; births in Gary in 1916.*

Supplementary earnings.	Births in 1916.								
	Total.	Aggregate family earnings.							
		Under $1,050.		$1,050 under $1,850.		$1,850 and over.		Not reported.	
		Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]	Number.	Per cent.[1]
Total	1,393	320	23.0	738	53.0	257	18.4	78	5.6
No supplementary earnings	889	224	25.2	484	54.4	134	15.1	47	5.3
Supplementary earnings	448	81	18.1	242	54.0	117	26.1	8	1.8
Not reported	56	15	.....	12	.....	6	.....	23	.....

[1] Not shown where base is less than 100.

TABLE 24.—*Employment of mother, by color and nativity of mother and earnings of chief breadwinner; births in Gary in 1916.*

Employment and color and nativity of mother.	Births in 1916.								
	Total.		Annual earnings of chief breadwinner.						
			Under $1,050.		$1,050, under $1,850.		$1,850 and over.		No earnings, no chief breadwinner, and not reported.[1]
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
All mothers	1,393	100.0	403	100.0	727	100.0	185	100.0	[2] 78
Employed	475	34.1	165	40.9	226	31.1	54	29.2	30
Not employed	917	65.8	237	58.8	501	68.9	131	70.8	48
Not reported	1	[3]	1	.2	.....	.....	.....	.....	.....
Native white	394	100.0	41	.....	225	100.0	104	100.0	24
Employed	117	29.7	18	.....	64	28.4	29	27.9	6
Not employed	277	70.3	23	.....	161	71.6	75	72.1	18
Foreign-born white	987	100.0	358	100.0	495	100.0	80	.....	54
Employed	352	35.7	145	40.5	159	32.1	24	.....	24
Not employed	634	64.2	212	59.2	336	67.9	56	.....	30
Not reported	1	.1	1	.3	.....	.....	.....	.....	.....
Negro	12	.....	4	.....	7	.....	1	.....	.....
Employed	6	.....	2	.....	3	.....	1	.....	.....
Not employed	6	.....	2	.....	4	.....	.....	.....	.....

[1] Per cent not shown where base is less than 100.
[2] Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."
[3] Less than one-tenth of 1 per cent.

TABLE 25.—*Employment of mother, by annual earnings and color and nativity of mother; births in Gary in 1916.*

Employment and color and nativity of mother.	Births in 1916.								
	Total.		Mother's annual earnings in 1917.						
			None.		Under $200.		$200 and over.		Not reported.
	Number.	Per cent distribution.[1]	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
All mothers	1,393	100.0	917	100.0	225	100.0	191	100.0	60
Not employed	917	65.8	917	100.0	.....	.....	.....	.....	.....
Employed	475	34.1	.....	.....	225	100.0	191	100.0	59
Lodgers	409	29.4	.....	.....	197	87.6	179	93.7	33
Other work only	66	4.7	.....	.....	28	12.4	12	6.3	26
Not reported	1	(2)	.....	.....	.....	.....	.....	.....	1
Native white mothers	394	100.0	277	100.0	67	.....	35	.....	15
Not employed	277	70.3	277	100.0	.....	.....	.....	.....	.....
Employed	117	29.7	.....	.....	67	.....	35	.....	15
Lodgers	93	23.6	.....	.....	57	.....	31	.....	5
Other work only	24	6.1	.....	.....	10	.....	4	.....	10
Foreign-born white mothers	987	100.0	634	100.0	155	100.0	154	100.0	44
Not employed	634	64.2	634	100.0	.....	.....	.....	.....	.....
Employed	352	35.7	.....	.....	155	100.0	154	100.0	43
Lodgers	313	31.7	.....	.....	139	89.7	147	95.5	27
Other work only	39	4.0	.....	.....	16	10.3	7	4.5	16
Not reported	1	.1	.....	.....	.....	.....	.....	.....	1
Negro mothers	12	.....	6	.....	3	.....	2	.....	1
Not employed	6	.....	6	.....	.....	.....	.....	.....	.....
Employed	6	.....	.....	.....	3	.....	2	.....	1
Lodgers	3	.....	.....	.....	1	.....	1	.....	1
Other work only	3	.....	.....	.....	2	.....	1	.....	.....

[1] Per cent not shown where base is less than 100.
[2] Less than one-tenth of 1 per cent.

TABLE 26.—*Infant mortality rates, by literacy and color and nationality of mother; births in Gary in 1916.*

Literacy and color and nationality of mother.	Total births.	Live births.	Infant deaths	Infant mortality rate.[1]
All mothers	1,393	1,353	169	124.9
Literate	1,029	1,001	120	119.9
Illiterate	363	351	49	139.6
Not reported	1	1	.....	.....
Native white mothers	394	383	37	96.6
Literate	392	381	36	94.5
Illiterate	2	2	1	.....
Foreign-born white mothers	987	959	128	133.5
Literate	625	609	80	131.4
Illiterate	361	349	48	137.5
Not reported	1	1	.....	.....
Polish	275	263	39	148.3
Literate	168	160	20	125.0
Illiterate	107	103	19	184.5
Serbian and Croatian	162	158	20	126.6
Literate	74	74	10	.....
Illiterate	87	83	10	.....
Not reported	1	1	.....	.....
Slovak	135	132	15	113.6
Literate	99	97	9	.....
Illiterate	36	35	6	.....
All other	415	406	54	133.0
Literate	284	278	41	147.5
Illiterate	131	128	13	101.6
Negro mothers	12	11	4	.....
Literate	12	11	4	.....

[1] Not shown where base is less than 100.

TABLE 27.—*Infant mortality and stillbirth rates, by earnings of chief breadwinner and literacy of mother; births in Gary in 1916.*

Annual earnings of chief breadwinner and literacy of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.[1]
		Number.	Per cent.[1]			
Total	1,393	40	2.9	1,353	169	124.9
Under $1,050	403	11	2.7	392	54	137.8
$1,050, under $1,850	727	19	2.6	708	90	127.1
$1,850 and over	185	6	3.2	179	16	89.4
No earnings, no chief breadwinner, and not reported	[2] 78	4	.....	74	9	.....
Literate mothers	1,029	28	2.7	1,001	120	119.9
Under $1,050	245	8	3.3	237	37	156.1
$1,050, under $1,850	555	14	2.5	541	62	114.6
$1,850 and over	176	5	2.8	171	15	87.7
No earnings, no chief breadwinner, and not reported	53	1	.....	52	6	.....
Illiterate mothers	363	12	3.3	351	49	139.6
Under $1,050	158	3	1.9	155	17	109.7
$1,050, under $1,850	171	5	2.9	166	28	168.7
$1,850 and over	9	1	.....	8	1	.....
No earnings, no chief breadwinner, and not reported	25	3	.....	22	3	.....
Literacy not reported	1	.....	.....	1	.....	.....
$1,050, under $1,850	1	.....	.....	1	.....	.....

[1] Not shown where base is less than 100.
[2] Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 28.—*Literacy and nationality of mother, by age at 1916 confinement; births in Gary in 1916 to foreign-born white mothers.*

Literacy and nationality of mother.	Births in 1916 to foreign-born white mothers.							
	Total.	Age of mother.						
		Under 20 years.	20 years, under 25 years.	25 years, under 30 years.	30 years, under 35 years.	35 years, under 40 years.	40 years, and over.	No report.
Total	987	50	304	274	216	80	33	30
Literate	625	38	219	173	126	41	18	10
Illiterate	361	12	85	100	90	39	15	20
Not reported	1	.....	.....	1	.....	.....	.....	.....
Polish	275	16	92	73	[1] 54	25	9	6
Literate	168	[1] 9	[1] 64	43	34	12	4	2
Illiterate	107	7	28	30	[1] 20	13	5	4
Serbian and Croatian	162	6	49	46	33	13	8	7
Literate	74	4	29	[1] 19	[1] 14	4	2	2
Illiterate	87	2	20	26	19	[1] 9	6	5
Not reported	1	.....	.....	1	.....	.....	.....	.....
Slovak	135	7	41	38	28	11	3	7
Literate	99	6	30	30	23	6	1	3
Illiterate	36	1	11	8	5	5	2	4
Magyar	64	8	20	12	18	2	3	1
Literate	59	8	18	12	15	2	3	1
Illiterate	5	.....	2	.....	3	.....	.....	.....
Italian	60	4	17	15	14	6	2	2
Literate	31	3	13	[1] 8	3	2	2	.....
Illiterate	29	1	4	7	[1] 11	4	.....	[1] 2
Lithuanian and Lettish	54	2	9	19	12	8	2	2
Literate	19	2	4	5	4	2	1	1
Illiterate	35	.....	5	14	8	6	1	1
German	41	.....	16	11	8	4	2	.....
Literate	37	.....	15	10	[2] 7	4	1	.....
Illiterate	4	.....	1	1	1	.....	1	.....
All other	196	7	60	60	49	11	4	5
Literate	138	[1] 6	[1] 46	46	26	[1] 9	4	1
Illiterate	58	1	14	[1] 14	[3] 23	2	.....	[1] 4

[1] Includes one twin birth.
[2] Includes one twin birth resulting from second confinement in 1916.
[3] Includes one birth resulting from second confinement in 1916.

TABLE 29.—*Infant mortality and stillbirth rates, by age of mother and order of pregnancy; births from all pregnancies.*

Age of mother and order of pregnancy.	Births, all pregnancies.					
	Total births.	Live births.	Infant deaths.	Infant mortality rate.[1]	Stillbirths.	
					Number.	Per cent.[1]
Total	4,714	4,572	637	139.3	142	3.0
Under 20 and 40 and over[2]	618	604	99	163.9	14	2.3
20 to 29	3,093	3,010	391	129.9	83	2.7
30 to 39	865	826	119	144.1	39	4.5
Not reported	138	132	28	212.1	6	4.3
First pregnancy	1,308	1,265	186	147.0	43	3.3
Under 20 and 40 and over	410	400	70	175.0	10	2.4
20 to 29	820	794	106	133.5	26	3.2
30 to 39	48	43	6	.....	5	.....
Not reported	30	28	4	.....	2	.....
Second pregnancy	1,072	1,039	129	124.2	33	3.1
Under 20 and 40 and over	122	120	20	166.7	2	1.6
20 to 29	842	815	97	119.0	27	3.2
30 to 39	74	72	7	.....	2	.....
Not reported	34	32	5	.....	2	.....
Third pregnancy	795	783	104	132.8	12	1.5
Under 20 and 40 and over	28	27	1	.....	1	.....
20 to 29	646	641	86	134.2	5	.8
30 to 39	96	90	9	.....	6	.....
Not reported	25	25	8	.....	.....	.....
Fourth pregnancy	552	536	81	151.1	16	2.9
Under 20 and 40 and over	14	13	2	.....	1	.....
20 to 29	404	392	54	137.8	12	3.0
30 to 39	118	115	22	191.3	3	2.5
Not reported	16	16	3	.....	.....	.....
Fifth pregnancy	379	371	53	142.9	8	2.1
Under 20 and 40 and over	8	8	1	.....	.....	.....
20 to 29	212	209	29	138.8	3	1.4
30 to 39	147	143	21	146.9	4	2.7
Not reported	12	11	2	.....	1	.....
Sixth and later pregnancies	608	578	84	145.3	30	4.9
Under 20 and 40 and over	36	36	5	.....	.....	.....
20 to 29	169	159	19	119.5	10	5.9
30 to 39	382	363	54	148.8	19	5.0
Not reported	21	20	6	.....	1	.....

[1] Not shown where base is less than 100.
[2] Includes 51 births, 49 live births, 7 infant deaths, and 2 stillbirths to mothers 40 and over.

TABLE 30.—*Cause of death, by month of life; deaths among infants born in Gary in 1916.*

Month of life.	Deaths among infants born in 1916.								
	Total.	Cause of death.							
		Gastric and intestinal diseases.				All other causes.			
		Total.	Breast fed.	Partly breast fed.	Artificially fed.	Total.	Breast fed.	Partly breast fed.	Artificially fed.
Total	138	[2] 66	25	29	11	[2] 72	32	27	12
First	[1] 25	10	8	.....	2	15	11	1	2
Second	16	[2] 7	4	2	.....	[2] 9	5	3	1
Third	10	5	4	1	.....	5	2	3	.....
Fourth	13	7	3	2	2	6	2	2	2
Fifth	11	5	2	2	1	6	3	.....	3
Sixth	10	6	1	3	2	4	1	2	1
Seventh	14	8	1	5	2	6	2	4	.....
Eighth	8	5	1	3	1	3	1	1	1
Ninth	7	5	1	3	1	2	1	.....	1
Tenth	9	4	.....	4	.....	5	2	3	.....
Eleventh	4	1	.....	1	.....	3	1	1	1
Twelfth	11	3	.....	3	.....	8	1	7	.....

[1] Excludes 31 infants who died not fed.
[2] Includes 1 infant for whom type of feeding was not reported.

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