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ANNOUNCEMENT

STATE AND TERRITORIAL HEALTH OFFICERS' CONFERENCE

The forty-fourth annual conference of State and Territorial health officers with the United States Public Health Service will be held April 8, 9, 10, and 11 in the Public Health Service building, Nineteenth Street and Constitution Avenue, Washington, D. C. All State and Territorial health authorities are urged to attend. General sessions are open to all interested persons.

THE INCIDENCE OF POLIOMYELITIS AND ITS CRIPPLING EFFECTS, AS RECORDED IN FAMILY SURVEYS [1]

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CONTENTS

The most dreaded diseases are not those with the greatest frequency. Diseases, like other situations, lose their awe-inspiring character when they become familiar. The spectacular affections that occur rarely but attack quickly and severely are the most feared. Poliomyelitis has several characteristics that make it a dreaded malady. Its exact method of transmission is unknown but it strikes swiftly and has a long duration of severe and painful symptoms with frequent residual crippling which may last throughout life.

[1] From the Division of Public Health Methods.

[2] The author is indebted to Dr. Mary Gover for assistance in the preparation of this paper.

More than 19,000 cases of poliomyelitis were reported in the United States in 1944 and nearly 14,000 in 1945. The 1944 total was considerably above that of any preceding year except 1916 when 29,000 cases were reported, of which 23,000 occurred in the 9 Northeastern States (*8*). The reported incidence in 1944 was 14 cases per 100,000 population, as compared with rates in 1916 of 28 for the country as a whole and 79 for the Northeast. But the 1916 epidemic was more severe than is indicated by these comparisons, since most of the cases were paralytic and the fatality was far greater than in 1944.

GEOGRAPHIC DISTRIBUTION, 1930 TO 1945

The monthly incidence of poliomyelitis as reported to health departments during the past 15 years is shown in figure 1 for the total United States and nine geographic sections (*12*). Considering first the case rates for the whole country (top of chart) it appears that epidemics occur nearly every year with an occasional one with exceptionally high rates. The high years stand out as 1931, 1935, 1937, 1940, 1943, and 1944. The 2 latter years had higher case rates than 1930 and 1931 when a similar 2-year wave of poliomyelitis spread over the country.

The incidence for the country as a whole is a composite of what has occurred in the various geographic sections during this 15-year period. Each region may be considered separately. The pictures for the New England and Middle Atlantic sections are reasonably similar. The only marked differences are that (*a*) in 1932 little poliomyelitis was reported in New England but there was a considerable amount in the Middle Atlantic States, and (*b*) the New England peak was slightly higher in 1943 than in 1944 but there was not much poliomyelitis in the Middle Atlantic region in 1943, the large epidemic in that section coming in 1944. The peaks in the East and West North Central sections are remarkably similar in chronology and size, although the East North Central is more urban than the West North Central. This similarity does not extend to the South; the East and West South Central curves are rather different, and the South Atlantic is different from both South Central sections and also from the Middle Atlantic. With the exception of a moderate peak in the West South Central region in 1930, not much poliomyelitis was reported in any of the three southern sections prior to 1935 when the South Atlantic and the East South Central regions had fairly high rates. Since that time these southern sections have had some rather large epidemics. The Mountain and Pacific regions are similar in the chronology of the epidemics but not in the heights of the peaks.

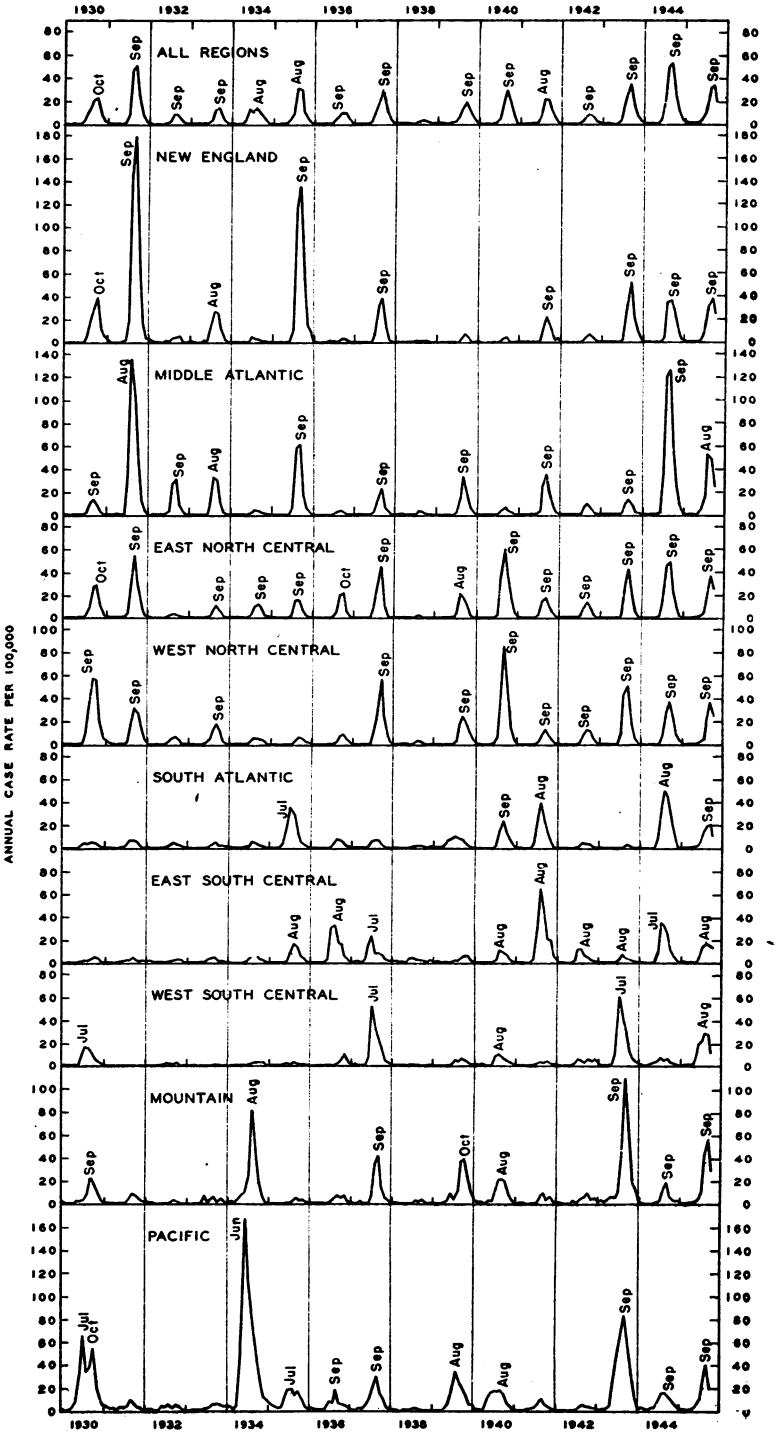

FIGURE 1.—Monthly incidence (annual basis) of reported cases of poliomyelitis per 100,000 population in each geographic section of the United States, January 1930–October 1945.

TABLE 1.—*Reported case and registered death [1] rates from poliomyelitis, by geographic [2] sections of the United States, 1930–44*

Calendar year	All sections	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central [3]	Mountain	Pacific
	Number	Annual reported case rate per 100,000 population								
Average [4] 1930–44	8,662	6.71	8.55	8.04	6.26	7.05	4.57	4.88	3.96	7.01	11.66
1930	9,246	7.51	9.84	3.69	7.40	15.97	2.61	2.11	5.59	6.76	23.26
1931	15,921	12.84	37.20	28.42	11.20	9.12	2.64	1.93	.90	3.31	4.71
1932	3,811	3.05	2.35	6.73	1.88	2.32	2.06	1.75	1.24	1.64	3.51
1933	5,062	4.03	7.09	7.53	3.00	4.92	1.84	2.01	.92	2.77	3.48
1934	7,527	5.96	1.62	1.55	3.66	2.56	2.12	2.67	1.71	17.92	48.23
1935	10,839	8.52	29.31	13.30	4.11	2.19	10.04	4.84	1.76	2.25	10.55
1936	4,523	3.53	1.50	1.29	4.94	2.73	2.78	9.64	2.26	3.21	5.63
1937	9,511	7.38	7.97	4.15	8.32	11.15	3.09	6.58	12.43	9.87	9.11
1938	1,705	1.31	.90	.87	1.05	1.26	1.75	2.32	1.39	1.64	1.60
1939	7,343	5.61	1.81	6.24	5.33	7.00	5.07	2.58	2.82	12.11	11.40
1940	9,826	7.45	1.21	1.59	13.66	17.42	6.06	3.40	3.84	8.68	9.94
1941	9,086	6.83	5.19	8.01	5.02	3.82	10.51	16.45	2.37	3.59	3.94
1942	4,033	3.01	2.11	2.45	3.50	4.05	1.97	4.02	3.62	3.95	2.37
1943	12,449	9.29	10.42	3.34	8.51	11.50	1.27	2.29	14.87	22.57	29.51
1944	19,029	14.37	9.71	31.48	12.35	9.70	14.73	10.62	3.70	4.89	7.66
		Annual death rate per million population									
Average [4] 1930–44	1,017	7.9	6.6	7.6	6.7	9.1	6.4	9.1	10.0	10.4	9.5
1930	1,412	11.5	11.8	7.3	10.4	18.7	7.3	8.6	14.4	15.9	21.3
1931	2,102	16.9	30.8	34.2	12.9	11.9	8.3	9.3	9.0	12.0	8.6
1932	854	6.8	4.4	9.5	4.4	5.7	6.7	7.9	9.1	8.0	5.0
1933	812	6.5	6.3	8.2	4.2	7.7	5.0	8.1	8.9	4.7	4.0
1934	859	6.8	2.1	3.0	5.1	5.9	6.0	10.9	8.2	16.5	19.9
1935	987	7.8	16.1	7.6	4.3	4.4	10.4	8.4	7.1	8.0	10.8
1936	741	5.8	1.8	1.7	6.5	4.3	6.1	13.3	8.7	9.7	7.1
1937	1,433	11.1	6.3	4.7	10.0	18.8	6.7	13.1	25.1	19.1	10.1
1938	478	3.7	1.9	1.8	2.2	3.5	4.4	8.2	7.3	6.0	2.8
1939	756	5.8	1.2	4.5	3.6	9.1	5.3	7.4	8.1	9.8	9.2
1940	1,004	7.6	1.5	1.9	11.4	14.5	7.2	7.4	7.3	9.9	9.7
1941	826	6.2	2.4	4.8	4.4	5.9	7.4	15.2	8.6	5.1	3.9
1942	534	4.0	1.8	2.7	3.4	6.1	2.6	7.7	6.3	4.8	3.4
1943	1,115	8.3	6.3	2.5	8.8	12.1	2.2	3.5	16.3	19.7	18.7
1944	1,353	10.1	5.0	19.1	8.5	7.7	10.4	7.8	6.0	6.5	7.6
		Reported cases per death									
Average [4] 1930–44		8.5	13.0	10.6	9.3	7.7	7.1	5.4	4.0	6.7	12.3
1930		6.5	8.4	5.1	7.1	8.5	3.6	2.5	3.9	4.3	10.9
1931		7.6	12.1	8.3	8.7	7.7	3.2	2.1	1.0	2.8	5.5
1932		4.5	5.3	7.1	4.2	4.1	3.1	2.2	1.4	2.1	7.0
1933		6.2	11.2	9.1	7.1	6.4	3.7	2.5	1.0	5.8	8.7
1934		8.8	7.9	5.1	7.2	4.4	3.5	2.4	2.1	10.9	24.2
1935		11.0	18.2	17.6	9.7	5.0	9.7	5.8	2.5	2.8	9.7
1936		6.1	8.4	7.7	7.6	6.3	4.5	7.3	2.6	3.3	7.9
1937		6.6	12.7	8.9	8.4	5.9	4.6	5.0	5.0	5.2	9.0
1938		3.6	4.8	4.9	4.7	3.6	4.0	2.8	1.9	2.8	5.8
1939		9.7	15.3	13.9	15.0	7.7	9.5	3.5	3.5	12.4	12.4
1940		9.8	7.8	8.6	12.0	12.0	8.4	4.6	5.3	8.8	10.3
1941		11.0	22.0	16.6	11.5	6.5	14.1	10.8	2.8	7.1	10.0
1942		7.6	12.0	9.1	10.3	6.6	7.6	5.2	5.7	8.2	7.0
1943		11.2	16.5	13.5	9.7	9.5	5.8	6.5	9.1	11.4	15.7
1944		14.1	19.6	16.5	14.5	12.6	14.2	13.6	6.2	7.6	10.1
		Recorded case fatality (percent)									
Average [4] 1930–44		11.8	7.7	9.5	10.7	12.9	14.0	18.6	25.3	14.8	8.1

See footnotes on following page.

If the analysis is carried to States, there were some in every section that were little affected by epidemics which were severe in other States in the same region. Dauer (4) has for many years carried the analysis to counties and has shown that a rather severe epidemic is frequently confined to groups of counties within one or two States, with rather low rates in other counties in the same State.

This discussion thus far has related to chronological variation within adjacent sections. Figure 1 may be viewed also from the point of view of given epidemics in the nine regions. For this purpose, adjacent years may be considered often as representing a single outbreak. In the 1943 and 1944 epidemics the Pacific, Mountain, and West South Central sections had large peaks in 1943, with the 1944 peak almost negligible in comparison. On the other hand, in the East South Central, South Atlantic, and Middle Atlantic sections the 1943 peaks were negligible and the large epidemics occurred in 1944. In the East and West North Central and New England regions the 2 years had peaks of roughly the same height. Other years show similar variations. In the 1930 and 1931 epidemics, the western regions (including the West North Central) had large peaks in 1930, but in the more eastern sections the 1931 peaks were much higher. Again in 1934 and 1935 the large peaks in the West came in 1934, but in the East the epidemic year was 1935. Because the East represents much the greater proportion of the total population of the country, the chronology of the epidemics as reflected in the graph for all regions (top of fig. 1) is more similar to that in the eastern than in the western sections of the country.

It may be seen in figure 1 that the peak months are frequently earlier in the South than in other sections. Computing from weekly data, the median date of the peak week in the 15 years 1930–44 is

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(Footnotes from p. 330)

[1] Deaths and cases as reported to the U. S. Public Health Service by State health departments and as plotted by month in fig. 1. Death data from the U. S. Bureau of the Census are not available by month and geographic section. Figures from Annual Summaries of Notifiable Diseases in States (*12*) supplemented by unpublished data, U. S. Public Health Service.

[2] U. S. Bureau of the Census geographic sections are used.

[3] Poliomyelitis was reportable in all States throughout this 15-year period with the possible exception of Texas.

The Biennial Report of the Texas State Department of Health for 1927–28 states that all communicable diseases are reportable in Texas, and shows a tabulation of reported poliomyelitis cases by months. However, poliomyelitis does not appear to have been listed by name in the Texas statutes as a reportable disease until some time after 1936.

The exclusion of Texas from the West South Central section in the computation of case and death rates increases the cases per death (based on averages of case and of death rates) for that section by 24 percent (2.9 to 3.6 cases per death) for 1930–38 when the disease was not listed in the statutes as reportable, as compared with an increase of 20 percent (5.9 to 7.1 cases per death) for 1939–44, when it was presumably listed in the statutes by name. It appears that reporting in Texas in both periods was somewhat less complete than in the West South Central section as a whole, but that the small difference between the two periods hardly justifies its exclusion from the tabulation for 1930–38.

In the earlier years covered by this table, several States reported fewer cases of poliomyelitis than there were deaths registered. In the years 1930–33 this situation occurred twice in Texas, Arkansas, Kentucky, Georgia, and Florida, and once in Oklahoma and Colorado.

The various data summarized above seemed to indicate that reporting in Texas was about as good as in adjacent States so Texas is included along with the other States.

The cases per death for the West South Central section exclusive of Texas were as follows: 4.9, 1.2, 1.7, 1.4, 2.0, 4.0, 3.4, 5.1, 2.5, 3.8, 5.9, 3.0, 7.0, 14.0, and 9.4 for 1930 to 1944, respectively.

[4] For case and death rates the 1930–44 figure is a simple average of the 15 annual rates. For cases per death and case fatality, the 1930–44 figures are ratios computed from the simple averages of the rates.

4 weeks earlier in the South (centering about August 15) than in the North and West (centering about September 12). It must be remembered that there is a lag of at least a week between the peak week in terms of the onset of the case and the peak week of reporting.

No table of monthly rates as plotted in figure 1 is included, but table 1 shows by geographic region annual case rates, death rates, and reported cases per death for each of the 15 years.

HISTORY OF POLIOMYELITIS AS OBTAINED BY A FAMILY SURVEY

It is of interest to compare the poliomyelitis situation as indicated by reported cases and deaths with information obtained by house-to-house canvass. Early in 1936 some 200,000 families in 28 large cities (*3*) were canvassed to obtain data on the acute communicable diseases, including poliomyelitis. It has been found in other surveys (*1*) that mothers give a reasonably accurate account of which of the communicable diseases each of their children has had. Since infantile paralysis is a dangerous disease which is known and feared by most mothers, it was felt that reasonably complete histories of its occurrence could be obtained. In this communicable disease study each family informant, usually the mother, was questioned about attacks of infantile paralysis at any time since birth among the children of the household head; such data were recorded for persons under 25 years of age at the time of the survey.

In the tabulation of the history data the period since birth was divided into the "study year," defined as the 12 months immediately preceding the interview, and the time prior to that year. Therefore, the history data here presented represent attacks prior to the early months of 1935 and ages are stated as of January 1, 1935. To avoid language difficulties, the tabulations of prior histories all refer to children of native white household heads. It was found that some foreign-born parents were unfamiliar with the English names of childhood diseases and consequently the reports for their children were not as complete as those for children of native parents.

Age-sex differences.—Table 2 shows history rates per 1,000 living children of the different age groups for both sexes and for boys and girls separately. All of the rates increase with age because history data of this kind are cumulative in nature; that is, such a rate for persons 15-19 years of age represents attacks over the whole 15 to 19 years of each individual's life and would, therefore, be higher than such histories for children under 5 years of age who have had less than 5 years of exposure to attack.

The history among the living of all types of poliomyelitis rises from 1.1 per 1,000 children under 5 years of age to 5.7 for children 15–19 years of age at the time of the survey. Since the survey data pertain to 1935, few of the children who were under 20 years of age were

born prior to the great 1916 poliomyelitis epidemic, but those who were over 20 had all lived through that epidemic as well as other less extensive outbreaks since 1916. Thus the history of infantile paralysis for the 20–24-year group is 9.4 per 1,000 living persons, or about 65 percent above that for the next younger age group.

TABLE 2.—*History of poliomyelitis at any time since birth among persons of specific ages for each sex—children of native white parents [1] in 28 surveyed cities, 1935–36*

	Living resident and nonresident children of native white parents [1]						Living resident, nonresident, and dead children of native white parents [1]					
	Under 5	5–9	10–14	15–19	20–24	Number with history, 0–24 years [2]	Under 5	5–9	10–14	15–19	20–24	Number with history, 0–24 years [2]
	History [3] of poliomyelitis at any time since birth per 1,000 persons of specific ages [4]											
All poliomyelitis:												
Both sexes	1.07	3.69	5.64	5.70	9.37	809	1.14	3.93	6.01	6.17	11.01	897
Male	.86	3.44	5.79	6.25	8.51	403	.96	3.68	6.04	6.74	10.39	449
Female	1.29	3.94	5.48	5.19	10.28	406	1.34	4.18	5.99	5.62	11.68	448
All paralytic [5] cases:												
Both sexes	.79	2.37	4.04	4.46	6.61	582	.87	2.60	4.40	4.95	8.29	668
Male	.70	2.10	4.11	4.97	5.71	287	.80	2.34	4.32	5.50	7.62	332
Female	.89	2.66	3.97	3.97	7.58	295	.94	2.81	4.49	4.42	9.01	336
Paralytic with residual effects: [5]												
Both sexes	.55	1.54	3.04	2.97	4.81	409	.63	1.79	3.41	3.50	6.42	494
Male	.54	1.55	3.17	3.15	4.45	208	.64	1.84	3.39	3.72	6.29	253
Female	.56	1.54	2.92	2.81	5.19	201	.61	1.74	3.44	3.28	6.55	241
Fatal cases:												
Both sexes	------	------	------	------	------	------	.08	.20	.40	.56	1.58	80
Male	------	------	------	------	------	------	.11	.25	.29	.65	1.72	43
Female	------	------	------	------	------	------	.06	.15	.50	.47	1.43	37
	Number of persons [2] covered by survey											
Both sexes	36,531	39,579	40,102	36,986	19,962	173,160	36,734	39,688	40,423	37,747	20,258	174,850
Male	18,647	20,036	20,206	18,092	10,336	87,317	18,760	20,097	20,378	18,539	10,494	88,268
Female	17,884	19,543	19,896	18,894	9,626	85,843	17,974	19,591	20,045	19,208	9,764	86,582

[1] Own, step, and adopted children of white native-born household heads.
[2] Case histories for nonresident and dead children are counted only to the time they left the household, and the persons considered are expressed as equivalent full-time persons.
[3] Histories include attacks from birth until the beginning of the study year (spring 1935). Cases during the year immediately preceding the family interview are tabulated as current incidence (tables 6, 9, and 11).
[4] Ages of living persons are expressed as the attained age (last birthday) at the beginning of the study year. Ages of nonresident and dead persons represent the age they would have attained at the time of the survey. This method is equivalent to classifying all persons according to year of birth—thus ages 20–24 years (living resident, nonresident, and dead) all represent persons born in the years 1911 to 1915, and ages 10–14 represent children born in the years 1921–25.
[5] All fatal cases are assumed to be paralytic and are classified with the most severe type—paralytic with residual effects. However, a few dead children had a history of nonfatal poliomyelitis with death at a later date from another cause; such cases were tabulated as the type specified by the informant.

Only a limited number of the nonparalytic cases would be known and reported in this survey. The history of paralytic cases rises from 0.8 per 1,000 living children under 5 years to 4.5 for persons 15–19 years old and 6.6 at 20–24 years. Paralytic cases with residual effects amount to 0.6 per 1,000 children under 5 and to 3.0 and 4.8 at 15–19 and 20–24 years, respectively.

In the milder childhood diseases, the few fatal cases can be neglected in tabulating the proportion of children with a history of the disease. However, the 5 to 10 percent of poliomyelitis cases that are fatal

seems too much to neglect. To obtain records for approximately all of the children under 25 years of age who live or have grown up together in a family, the household census was expanded to include all children of the head who were born within 25 years of the date of the survey, including the dead and those who were no longer residing at home. The usual facts such as age, sex, nativity, and color were entered on the schedule for all dead and nonresident as well as resident children; if any child of any of these categories had had either a fatal or nonfatal attack of infantile paralysis at any time from birth to the time he left the household, that information was also entered. In making the tabulation the dead and nonresident children were counted as under observation only for the years during which they were actually living at home with the family. Thus for the cohort born in 1916–20 (15 to 20 years prior to these 1935 data) the individuals living at home would have spent an average of 17.5 years in the household; for the dead and nonresident in this cohort the aggregate years of life spent in the home was divided by 17.5 to obtain the equivalent in terms of individuals in this cohort who had lived in the family the whole time since their birth. With this population base for each of the cohorts which, among the living, represents persons of each 5-year age group at the time of the survey, rates per 1,000 persons were computed for histories of (*a*) all attacks (nonparalytic and paralytic), (*b*) all paralytic attacks, (*c*) paralytic attacks with residual effects (deformity, crippling, or death), and (*d*) fatal cases.

Figure 2 shows these data on the history of nonfatal and fatal poliomyelitis as a bar chart hatched in such a way that the rates per 1,000 for each of the 4 categories can be seen on the chart. This figure can be considered as representing in a rough way what happens to a group of 1,000 children born at a given time and followed until 25 years of age to record cases (nonfatal and fatal) of poliomyelitis that occurred among them. However, poliomyelitis occurs in rather large epidemics and these observed poliomyelitis histories may deviate considerably from average rates such as might be computed by graduating the data as in life tables.

According to these family reports, 6.2 per 1,000 children of the ages 15–19 had a history of poliomyelitis at some time since birth, of which 5.0 were paralytic and 3.5 had some residual paralysis or died from the disease. The histories of fatal cases amounted to 0.56 per 1,000 persons 15–19 years old at the time of the survey. The proportions for persons 20–24 years of age are much higher than those for 15–19 years. As noted above, this sudden increase presumably is caused by the fact that children who at the time of the survey were 20–24 years of age had lived through the great 1916 epidemic of poliomyelitis.

The right half of figure 2 shows the same types of histories of poliomyelitis among males and females of the several age groups; there

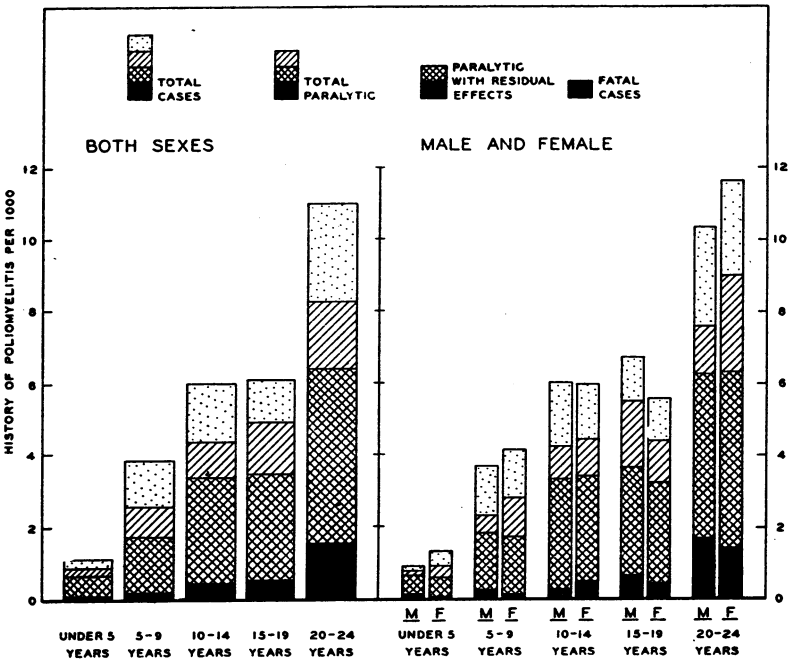

FIGURE 2.—History of poliomyelitis of various types at any time since birth among persons of specific ages at the time of the canvass—resident, nonresident, and dead children of native white household heads in 28 large cities, 1935-36.

appear to be no consistent differences of any importance between boys and girls. Particularly is this true of poliomyelitis with residual effects which would be the most accurate data. Presumably the recorded histories of nonparalytic cases represent only a small proportion of the total nonparalytic cases since many would occur without being diagnosed as poliomyelitis.

Geographic variation.—Table 3 and figure 3 show by age the histories for northern cities (Northeast and North Central) as compared with southern cities (South and Intermediate). Although the differences are not large, the South shows rather consistently lower history rates than the North.

Table 4 shows for five geographic regions the average of the rates for the history of poliomyelitis for the four 5-year age groups under 20 years, and the average for the two 5-year age groups from 10 to 20 years which represents about the asymptote of the history curves when the abnormally high rates at 20–24 years are disregarded. Because of small numbers, data for each age group are not presented.

Averages for both age groups for the living and dead for all poliomyelitis (paralytic and nonparalytic) shows higher history rates in the West than in any other section, the Northeast and North Central coming next, and the South having the lowest rates. However, the excess for the West is not large for paralytic cases, and for paralytic

TABLE 3.—*History of poliomyelitis at any time since birth among persons of specific ages in 15 northern and 8 southern surveyed cities—children of native white parents,*[1] *1935–36*

Geographic section [6]	Living resident and nonresident children of native white parents [1]						Living resident, nonresident, and dead children of native white parents [1]					
	Under 5	5–9	10–14	15–19	20–24	Number with history, 0–24 years [2]	Under 5	5–9	10–14	15–19	20–24	Number with history, 0–24 years [2]
	History [3] of poliomyelitis at any time since birth per 1,000 persons of specific ages [4]											
All poliomyelitis:												
Northern cities	1.25	3.91	5.46	5.54	10.40	461	1.38	4.20	5.77	6.01	12.00	510
Southern cities	.57	2.17	4.36	5.61	7.06	208	.57	2.16	4.69	6.08	8.59	231
All paralytic [5] cases:												
Northern cities	.89	2.54	3.97	4.43	6.75	327	1.02	2.83	4.30	4.93	8.40	376
Southern cities	.48	1.52	3.62	4.31	5.86	165	.47	1.52	3.88	4.80	7.41	187
Paralytic with residual effects: [5]												
Northern cities	.54	1.72	3.02	3.28	4.87	236	.67	2.02	3.36	3.79	6.46	284
Southern cities	.48	1.04	3.03	2.68	4.36	121	.47	1.04	3.37	3.20	5.78	143
	Number of persons [2] covered by survey											
Northern cities	22,345	23,248	22,160	19,843	10,669	98,265	22,466	23,313	22,343	20,293	10,826	99,241
Southern cities	10,465	12,457	13,538	12,307	6,653	55,420	10,527	12,491	13,640	12,503	6,748	55,909

[1–5] See notes on table 2.

[6] Northern cities include Northeast and North Central, and Southern cities include Intermediate and South as listed in the note to table 4.

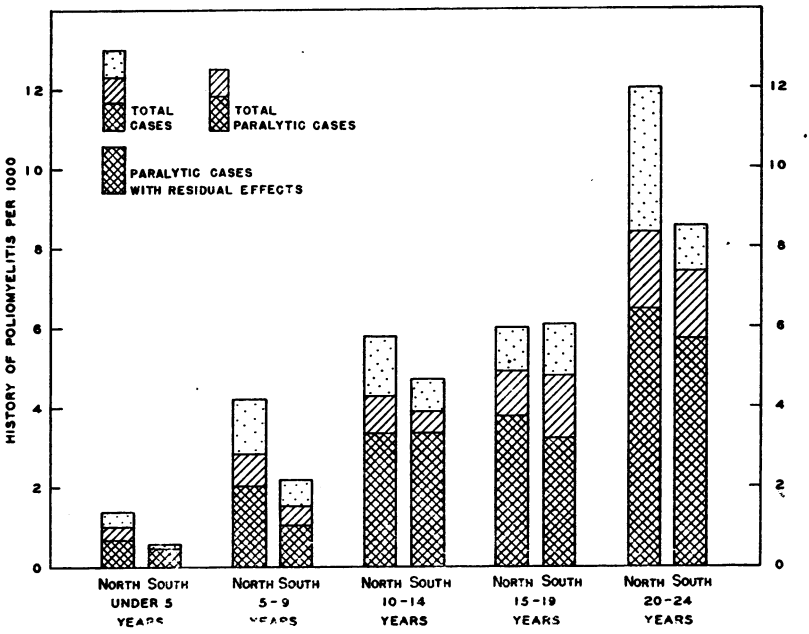

FIGURE 3.—History of poliomyelitis of various types at any time since birth among persons of specific ages at the time of the canvass—resident, nonresident, and dead children of native white household heads in 15 northern and 8 southern cities, 1935–36.

cases with residual crippling effects the North Central is actually above the West. It appears, therefore, that the excessively high rates reported in the West may be caused by the inclusion of more nonparalytic cases than in other sections.

It is of interest to compare the history rates with those for currently reported cases. The average annual poliomyelitis incidence as reported to the health departments of the 28 surveyed cities during the 15 years preceding the survey was 5.65 cases per 100,000 total population. In survey data to be presented later (table 6), it was found that in 1935 the poliomyelitis case rate for white persons under 15 years of age was 3.6 times the rate for all ages; if this ratio is assumed to apply to the reported case rate of 5.65, it can be estimated that the rate for children under 15 years of age was 20.3 per 100,000 population of this age group. As this figure represents the average annual rate for children under 15 years of age, a group of children passing from birth through the fourteenth year of age would be expected to cumulate histories amounting to 15 times this rate, or 304 per 100,000 persons, or about 3.0 per 1,000 persons. This 3.0 per 1,000 is, therefore, roughly comparable with 6.1 per 1,000 as found by questioning the family informant. Thus the survey method in this study yielded twice as many histories as would be expected from the reported cases of poliomyelitis during the period under consideration.

At least part of this large discrepancy may be due to the inclusion of more nonparalytic [2] cases in the data reported in the family canvasses. When nonparalytic cases are excluded, the survey data indicate a history of 4.7 per 1,000 persons at roughly 15 years of age, and of these 3.5 per 1,000 had residual crippling effects or were fatal. When the dead are excluded and the history rate based on persons living at the time of the survey, the estimate of 3.0 based on reported cases is identical with the survey history rate among 15-year-old children; however, reported cases include fatal cases so there seems to be no good reason for excluding deaths from the computation.

A comparison of the history data in table 4 with currently reported case rates in figure 1 and table 1 are of interest as explaining some of the differences between the geographic sections. Histories of poliomyelitis cases at any time since birth, as shown in table 4, represent records as of the early months of 1935. It is seen in figure 1 that

[2] From data included in Dauer's report for 1944 (*4*), it appears that roughly two-thirds of the reported cases of poliomyelitis in 1943 and 1944 were paralytic. Data on reported cases for 8 to 11 States which from 1936 to 1940 recorded paralytic and nonparalytic cases separately indicate that about 80 percent of the cases were paralytic (*12*). In both instances there was much variation in the percentages from city to city and State to State.

In the canvassed population under 25 years of age, 74 percent of the total recorded histories were paralytic including the 9 percent that were fatal; of the paralytic cases, 74 percent had residual crippling effects including the 12 percent that were fatal; of the nonfatal paralytic cases, 70 percent had residual crippling effects (table 13).

the West (Mountain and Pacific regions) had its large epidemic in 1934 which would tend to increase the proportion of children with a history of poliomyelitis as of early 1935. However, in the Northeast (New England and Middle Atlantic) and in the South Atlantic, the 1934 rates were rather small and the large epidemic came in the summer of 1935 a few months after the date to which the histories in table 4 pertain. Moreover, the 1934 epidemic in the West included more than the average number of nonparalytic cases (*5*, *9*). These facts explain some of the excessively high history rates for total cases and the absence of any large excess for paralytic cases in the West, as recorded in the family survey (table 4).

TABLE 4.—*History of poliomyelitis at any time since birth among persons of certain ages in different geographic sections at the time of the survey—children of native white parents* [1] *in 28 surveyed cities, 1935–36*

Geographic section [6]	Living resident and nonresident children of native white parents [1]				Living resident, nonresident, and dead children of native white parents [1]			
	All poliomyelitis	All paralytic cases [5]	Paralytic [5] with residual effects	Number of persons covered by survey [2]	All poliomyelitis	All paralytic cases [5]	Paralytic [5] with residual effects	Number of persons covered by survey [2]
	History [3] of poliomyelitis at any time since birth per 1,000 children [2] under 20 years [7] of age [4]							
Northeast	3.8	2.8	1.9	48,178	4.1	3.1	2.2	48,641
North Central	4.3	3.1	2.5	39,418	4.6	3.4	2.8	39,774
Intermediate	3.2	2.5	1.8	26,301	3.4	2.8	2.1	26,548
South	3.2	2.4	1.8	22,466	3.3	2.6	1.9	22,613
West	6.4	4.0	2.1	16,835	6.9	4.4	2.6	17,016
All sections	4.0	2.9	2.0	153,198	4.3	3.2	2.3	154,592
	History [3] of poliomyelitis at any time since birth per 1,000 children [2] 10–19 years [8] of age [4]							
Northeast	4.9	3.8	2.6	23,219	5.3	4.2	3.0	23,568
North Central	6.2	4.6	3.8	18,784	6.6	5.1	4.2	19,068
Intermediate	5.3	4.2	3.1	13,856	5.8	4.8	3.7	14,049
South	4.6	3.6	2.5	11,989	4.9	3.8	2.8	12,094
West	8.5	5.3	2.8	9,240	9.2	6.0	3.4	9,391
All sections	5.7	4.2	3.0	77,088	6.1	4.7	3.5	78,170

[1–5] See notes on table 2.

[6] Cities in each section: *Northeast:* Boston, Fall River, Buffalo, Syracuse, Newark, Trenton, Philadelphia, Pittsburgh; *North Central:* Cleveland, Columbus, Detroit, Flint, Grand Rapids, Chicago, St. Paul; *Intermediate:* Baltimore, Richmond, St. Louis; *South:* Atlanta, Birmingham, New Orleans, Dallas, Houston; *West:* Salt Lake City, Oakland, Portland, Seattle, Spokane.

[7] Simple average of rates for the four 5-year age groups.

[8] Simple average of the rates for the two 5-year age groups.

Comparison with other diseases.—The frequency of poliomyelitis may be compared with that of other of the more rare communicable diseases. Figure 4 shows by age the history of poliomyelitis and rheumatic fever among children (living and dead) of native white household heads. It should be noted that no inquiry was made about the presence of rheumatic heart disease, so a history of rheumatic fever

means that the person had suffered a frank attack at some time since birth. The data indicate much less rheumatic fever than poliomyelitis among children under 5 years of age. At the other ages under 20 years the rheumatic fever history rates are greater than those for paralytic poliomyelitis but about the same as for all poliomyelitis. At 20–24 years the poliomyelitis rate is higher, for reasons already discussed.

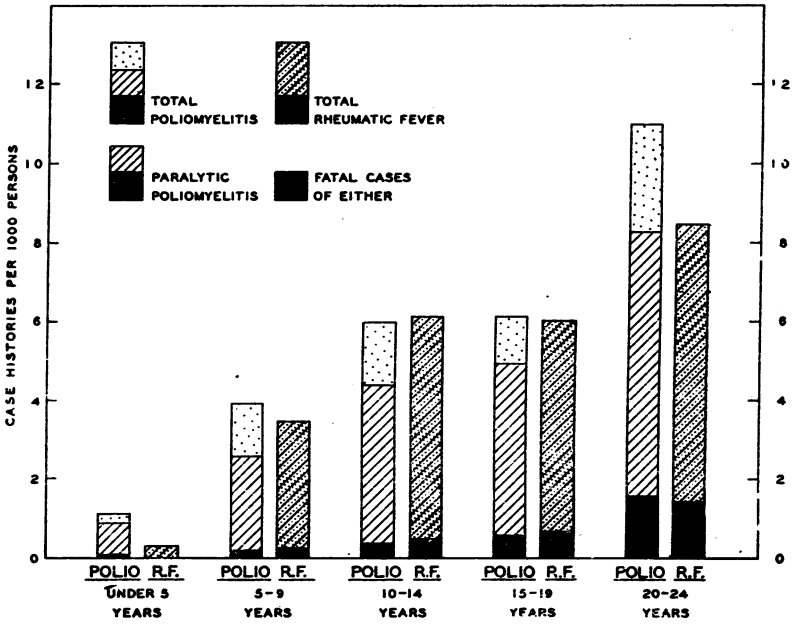

FIGURE 4.—Comparison of history rates at any time since birth of poliomyelitis and rheumatic fever among persons of specific ages at the time of the canvass—resident, nonresident, and dead children of native white household heads in 28 large cities, 1935-36.

Little satisfactory information was obtained on the history of meningitis in the Communicable Disease Study, but a tabulation of reported cases and deaths in the United States for the period 1930–44 indicates an average annual incidence of 6.7 cases per 100,000 for poliomyelitis (table 1) and 4.6 for meningococcus meningitis (*6*). The death rates per million were 7.9 for poliomyelitis and 17.1 for meningitis. The case fatality was obviously much lower for poliomyelitis than for meningitis, but since about 1937 the fatality of meningitis has decreased greatly (*6*).

In the 15 years 1921–35 just preceding the family survey, the reported annual case rates in the 28 large cities were 5.6 per 100,000 for poliomyelitis and 5.8 or about the same for meningitis; corresponding death rates were 8.1 per million for poliomyelitis and 29.3 for meningitis.

PREVALENCE AND CHARACTER OF CRIPPLING EFFECTS

In the Communicable Disease Study (*3*) made in 28 large cities in the spring of 1936, the family informant was asked specifically whether anyone in the family under 25 years of age at the time of the survey had ever had poliomyelitis. If anyone reported an attack, it was recorded as nonparalytic, paralytic with complete recovery, or paralytic with residual effects. This method of questioning revealed that 2.4 per 1,000 living white children (of native household heads) under 25 years of age at the time of the survey had suffered attacks of poliomyelitis from which there were residual effects. The larger National Health Survey (*11*) made in 1935–36 recorded disabling and chronic diseases in 27 of the 28 Communicable Disease Study cities and also in 4 other large cities and many smaller towns.[3] Although this survey included no specific inquiry about poliomyelitis, the informant was asked whether anyone in the household was paralyzed, deformed, or crippled. If there was a person in the household with any such orthopedic impairment, the disease or the type of accident which caused the condition was recorded in some detail. This method of questioning revealed that 1.6 per 1,000 living white persons under 25 years of age had an orthopedic impairment which was the result of a prior attack of poliomyelitis (table 5). This figure of 1.6 per 1,000 persons under 25 years of age is comparable with the rate of 2.4 for the Communicable Disease Study where special inquiry was made about poliomyelitis. The corresponding rates for persons under 15 years of age were 1.2 per 1,000 for the National Health Survey and 1.7 for the Communicable Disease Study. The specific inquiry would be expected to find more cases than the general inquiry, but the difference is rather large. At each of the age groups under 25 years the more general question asked in the National Health Survey revealed relatively fewer cases than the specific question about poliomyelitis. It should be noted, however, that a paralytic case was defined in the Communicable Disease Study to include any with muscular weakness whether or not there was complete paralysis.

Since the National Health Survey recorded all types of orthopedic impairments, the proportion of all crippling cases that were due to poliomyelitis can be computed. Among all persons under 25 years of age with orthopedic impairments (exclusive of lost members), 30 percent reported the impairment as caused by poliomyelitis. If impairments of major members only (excluding fingers and toes) are considered, 32 percent of all persons under 25 years of age with such impairments reported them as due to poliomyelitis. Among children under 15 years of age, 28 percent of those with major impair-

[3] No blocks in any community were canvassed by both surveys.

ments reported the cause as poliomyelitis; the figures were 14 percent for children under 5, 30 percent at ages 5–9, and 31 percent at 10–14 years.

TABLE 5.—*Orthopedic impairments* [1] *resulting from prior cases of poliomyelitis among persons in 83 cities in 18 States, National Health Survey, 1935–36*

	All known ages	Age								
		Under 25	Under 15	Under 5	5–9	10–14	15–24	25–44	45–64	65 and over
Persons with impairments due to poliomyelitis per 1,000 canvassed population	1.30	1.62	1.16	0.31	1.28	1.72	2.24	1.40	0.66	0.47
Percent of impaired [2] persons in which the orthopedic defect was due to poliomyelitis	11.0	30.1	27.1	13.8	29.2	29.7	32.6	14.3	3.6	1.0
Percent of seriously impaired [2] persons in which the orthopedic defect [3] was due to poliomyelitis	11.9	31.8	28.3	14.4	30.0	31.4	34.7	15.9	3.9	1.1
Distribution of persons [4] impaired by poliomyelitis according to parts of the body affected:										
Any part of the body	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 foot or leg	55.8	55.2	56.0	52.1	58.9	54.7	54.7	56.7	56.8	50.0
Both feet or legs	16.4	15.6	14.5	25.0	15.7	12.5	16.2	17.9	15.9	15.6
1 hand or arm and 1 foot or leg	11.0	9.9	10.9	6.2	8.5	13.0	9.3	11.0	14.0	23.4
1 hand or arm	7.6	9.3	9.5	8.3	8.0	10.6	9.1	6.0	4.9	7.8
Both hands or arms	.5	.5	.5	------	------	.8	.5	.5	1.0	------
3 or more major members or entire body	3.2	3.6	4.0	4.2	3.4	4.3	3.4	2.8	2.3	1.6
Spine, back, or trunk	4.9	5.5	4.3	2.1	5.1	4.1	6.3	4.4	4.5	1.6
Fingers and toes only	.6	.4	.3	2.1	.4	------	.5	.7	.6	------
Number of persons with impairments due to poliomyelitis	3,237	1,698	699	55	259	385	999	1,149	323	67
Number of persons canvassed (in thousands)	2,498	1,049	603	176	203	224	446	821	486	142

[1] Unpublished data from National Health Survey (*7, 11*).
[2] "Impaired" as here used does not include lost members.
[3] Severe impairments include all orthopedic defects (excluding losses) except of the fingers and toes.
[4] For 142 persons impaired by poliomyelitis the part of the body affected was not stated; in computing these percentages these unknowns are eliminated. The unknowns were distributed by age as follows: Under 5=7; 5–9=23; 10–14=16; 15–24=31; 25–44=47; 45–64=15; 65 and over=3.

It is probable that more minor residual effects were recorded in the Communicable Disease Study than in the National Health Survey. However, it was only in the latter that the site and extent of the crippling or paralysis was recorded. The proportions of persons with residuals of poliomyelitis that affect different parts of the body are shown by age in table 5. The percentages of the cases with crippling of various members of the body do not differ radically with age, although there is some variation; for convenience children under 15 years at the time of the survey will be discussed here. In this age group 56 percent of the crippling from poliomyelitis involved one foot or leg, with 15 percent more that involved both feet or legs; 11 percent affected one foot or leg and one hand or arm, and 4 percent involved three or more major members or the entire body. Another 4 percent involved the spine, back, or trunk and in many of these cases the legs must have been affected. Paralysis involving only the arms or hands was much less frequent, 9 percent of the

cases affecting one hand or arm, and 0.5 percent involving both hands or arms. Only 0.3 percent of the cases reported paralysis or crippling of only the fingers or toes. To summarize, in 85 percent of the children under 15 years of age with residuals of poliomyelitis, the crippling involved the feet or legs (with or without other parts of the body), as compared with 25 percent which involved the hands or arms (with or without other members).[4]

VARIATION IN POLIOMYELITIS INCIDENCE AND MORTALITY

Because of the relative infrequency of poliomyelitis, it has been impracticable to collect data on the age and sex incidence of the disease by house-to-house canvass except during sizable epidemics (*5*, *8*, *9*). The National Health Survey of 1935–36 and the supplementary Communicable Disease Study of the spring of 1936 covered 917,000 white and colored urban households. The National Health Survey schedule included an inquiry about all illness within the preceding year (roughly 1935) which caused inability to attend school, work, or pursue other usual activities for 7 consecutive days or longer. The Communicable Disease Study included a specific inquiry about all cases of poliomyelitis which occurred within the year preceding the interview. The two surveys covered a total of 2,923,000 white persons and recorded for this population 424 cases [5] of poliomyelitis with onset within the study year. Figure 5 shows age-specific rates for this population group.

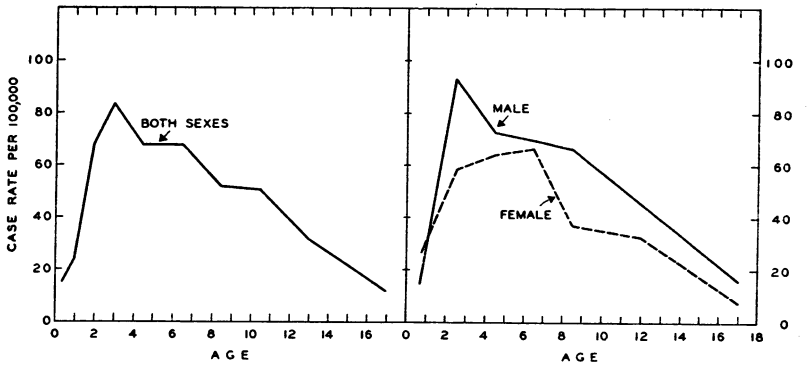

FIGURE 5.—Age incidence of poliomyelitis during the study year among persons of each sex—canvassed white families in 84 cities and towns in 19 States, 1935-36.

[4] Of the 277 cases under 15 years of age with onset during the study year, only 43 of the records specified the parts of the body currently affected. These may be compared with the old cases with residual effects. The feet or legs (with or without other parts of the body) were affected in 79 percent of the current cases, as compared with 85 percent for the old residual effects. The hands or arms (with or without other parts) were affected in 16 percent of the current cases, as compared with 25 percent for the old residuals. Thus the two series agree in that the feet and legs were most frequently affected.

[5] In the smaller Communicable Disease Study the cases were recorded as paralytic and nonparalytic, but in the larger National Health Survey no such distinction was made. Every case represents at least 7 days of inability to pursue usual activities.

Variation with age.—The highest incidence in these data for approximately 1935 occurred at 3 years of age, after which there was a more or less regular decline as age increased. It is not possible to say with this number of cases whether the slackening of the decline at about the age of school entrance is significant, but the poliomyelitis death rate for the total United States in 1939–41 (table 7) is slightly higher at ages 5–9 than at 4 years.

TABLE 6.—*Age and sex incidence (new cases) of poliomyelitis per 100,000 population during the study year* [1]*—2,923,309 persons in canvassed white families in 84 cities and towns in 19 States, 1935–36*

Age last birthday at end of study year [1]	Annual case rate per 100,000					Number of cases					Total surveyed population, all areas [3]
	All surveyed areas			Both sexes		All surveyed areas			Both sexes		
	Both sexes	Male	Female	Northeast (epidemic)	All other sections (non-epidemic)	Both sexes	Male	Female	Northeast (epidemic)	All other sections (non-epidemic)	
All ages [2]	14.5	17.1	12.1	24.0	8.7	424	241	183	266	158	2,923,309
Ages under 15	51.7	58.6	44.8	89.1	28.0	350	200	150	234	116	676,467
Under 1	15.2	14.8	26.8	26.9	8.1	3	1	2	2	1	19,771
1	24.0			32.7	18.9	8	3	5	4	4	33,348
2	68.4	93.0	57.8	115.3	38.6	29	23	6	19	10	42,370
3	33.0			189.0	15.5	35	17	18	31	4	42,150
4–5	68.1	71.6	64.4	129.1	29.6	60	32	28	44	16	88,142
6–7	67.8	69.3	66.2	113.0	39.2	62	32	30	40	22	91,466
8–9	52.3	67.0	37.2	96.5	23.6	51	33	18	37	14	97,589
10–11	50.5	59.3	41.8	73.5	35.8	51	30	21	29	22	100,917
12–14	31.7	36.0	27.5	44.7	23.5	51	29	22	28	23	160,714
Under 5	60.3	62.0	58.6	123.1	21.5	109	57	52	85	24	180,742
5–9	59.4	71.1	47.4	100.8	32.9	139	84	55	92	47	234,094
10–14	39.0	44.9	33.0	55.8	28.2	102	59	43	57	45	261,631
15–19	11.8	15.9	8.1	16.4	8.8	31	20	11	17	14	262,162
20–24	7.3	6.7	7.8	7.1	7.5	19	8	11	7	12	259,135
25–34	2.8	3.0	2.6	2.8	2.8	14	7	7	5	9	498,910
35 and over	.8	1.0	.6	.7	.9	10	6	4	3	7	1,221,906
Surveyed population, all ages (in thousands)						2,923	1,411	1,512	1,108	1,815	

[1] Study year refers to the 12 months immediately preceding the single interview of the family informant by which the sickness data were obtained. Age is recorded as last birthday at time of interview.
[2] The total for all ages includes a few of unknown age.
[3] The population used for under 1 year of age represents one-half of the persons born during the study year since the time they were under observation would average one-half year.

The data on cases in the surveyed population may be supplemented by recorded deaths in the United States. Because of the inaccuracy of age-specific population estimates at intercensal periods, the deaths for the 3 years 1939–41 and the 1940 census have been used for computing rates. The data include both urban and rural areas and are, therefore, not strictly comparable with the urban survey case data. Unlike most diseases, there is less relative variability with age in poliomyelitis death rates than in case rates. The death rate under 1 year of age is somewhat less than at the maximum which occurs

among 1-year-old children. After this peak there is a moderate decline to 4 years, with the rate at 5–9 years slightly above that at 4 years and about equal to the rate at 3 years of age. Poliomyelitis death rates at 10–14 and 15–19 years are less than at 5–9 years, but the relative decline is not as great as in the case incidence. Translated into case fatality, this would mean that a higher percentage of the cases among adults would be fatal than among children under 15 years, and this is what was found when the few deaths in the surveyed population were related to cases of the same ages.

TABLE 7.—*Annual mortality from poliomyelitis per million population of specific ages—continental United States, 1939–41*

Age	Annual death rate per million	Number of deaths	Age	Annual death rate per million	Number of deaths
All ages [1]	6.6	2,606	Under 5	18.6	587
			5–9	15.5	496
All ages under 15	15.3	1,515	10–14	12.3	432
			15–19	9.6	355
Under 1 [2]	18.9	135	20–24	6.3	220
1	23.2	143	25–34	4.5	287
2	18.7	123	35–44	2.3	127
3	15.3	97	45–54	.9	44
4	13.8	89	55 and over	1.0	57

[1] The total for all ages includes a few of unknown age.
[2] The rate for under 1 year is based on the number of live births instead of the enumerated population; all other rates are based on the census population of 1940.

Sex differences.—Figure 5 also shows the incidence of poliomyelitis during the study year among boys as compared with girls. At every age except under 2 years the rate is definitely lower for girls than boys. This is the opposite of diphtheria incidence in this group which was consistently higher for females than males above 4 years of age although slightly lower for females under that age. It is also unlike scarlet fever incidence which was practically identical for boys and girls.

TABLE 8.—*Annual poliomyelitis death [1] rates per million white male and female residents of each geographic [2] section, with rates for colored in the South—United States, 1939–41*

Geographic section [2]	Annual death rate per million		Number of deaths		Geographic section [2]	Annual death rate per million		Number of deaths	
	Male	Female	Male	Female		Male	Female	Male	Female
All sections	8.3	5.1	1,473	891	South Atlantic:				
					White	9.3	6.2	184	122
New England	3.1	1.1	38	14	Colored	7.1	5.5	49	40
Middle Atlantic	5.2	2.8	203	110	East South Central:				
East North Central	9.1	4.5	353	169	White	10.9	9.5	131	113
West North Central	12.8	7.4	254	144	Colored	7.4	6.5	30	28
Mountain	9.5	7.5	59	43	West South Central:				
Pacific	9.1	5.9	130	82	White	7.6	6.0	121	94
					Colored	9.0	4.2	33	16

[1] Deaths are allocated to the residence of the deceased.
[2] U. S. Bureau of the census sections are used.

Death rates from poliomyelitis are shown in table 8 for white males and females in each of the nine geographic sections of the United States for the years 1939–41. In all sections combined the annual death rate for white males of all ages was 8.3 per million as compared with 5.1 for white females. In every section the rate for white males was higher than for white females, and in each of the three southern sections the poliomyelitis death rate for colored males was higher than for colored females. Deaths for colored in the other sections were too few for reliable rates.

Racial variation.—A considerable colored population was covered in the two sickness surveys (table 9). There is the possibility, however, that reports from the colored were not as complete or in other respects were not comparable with those from the white. The 20 cases of poliomyelitis recorded for the colored during the study year amounted to an incidence of 6.2 per 100,000 as compared with 14.5 for white persons. Of the colored cases 17 were under 15 years of age which gives a rate of 19.5 for the colored as compared with 51.7 per 100,000 white persons of those ages. However, most of the colored people lived in the South and Intermediate cities and rates were computed for white and colored in those places only; the case incidence for colored children under 15 years of age was 17.9 as compared with 22.1 per 100,000 for white. Thus the difference between the rates is not so large when the comparison is limited to the South.

TABLE 9.—*Incidence of poliomyelitis per 100,000 white and colored population during the study year* [1]*—canvassed families in 84 cities and towns in 19 States, 1935–36*

	All canvassed areas				Under 15 years			
	All ages [2]		Under 15 years		Northeast		South and Intermediate	
	White	Colored	White	Colored	White	Colored	White	Colored
Annual case rate per 100,000	14.5	6.2	51.7	19.5	89.1	22.8	22.1	17.9
Number of cases	424	20	350	17	234	4	35	9
Number of persons canvassed	2,923,309	321,707	676,467	87,036	262,482	17,578	158,416	50,364

[1] Study year refers to the 12 months immediately preceding the single interview of the family informant by which the sickness data were obtained. Age is recorded as last birthday at time of interview.
[2] The total for all ages includes a few of unknown age.

In the South, poliomyelitis death rates for 1939–41 were lower for colored than for white persons (table 8). This was true for both males and females except for males in the West South Central region. In both urban (2,500 or over) and rural parts of the three southern sections combined, poliomyelitis death rates in 1940–41 for colored were less than those for white.[6]

[6] Data for 1939 are omitted from computations by size of city and for urban-rural classifications because 1939 deaths are classified by size of city in 1930.

Variation with size of city.—Poliomyelitis death rates for the 2-year period 1940–41 were computed for cities of different sizes in the whole country.[6] Table 10 shows for five geographic regions death rates from poliomyelitis among residents of four city-size classes. In the total United States the annual death rate per million in cities of 100,000 or more population was 4.5, the lowest for any of the 4 city-size categories. The rate for moderate-sized cities (10,000 to 100,000) was larger (6.8), and the rate for towns 2,500 to 10,000 was still larger (10.0), but for places under 2,500 and rural areas the rate was less, 8.0 per million. Thus the lowest death rate occurred in the largest cities with a consistent increase in the rate as size of city decreased, but with a rate in rural areas that was lower than in small towns but not as low as in large cities. This pattern is repeated consistently in each of the 5 geographic sections except that in the West and the West North Central regions the rural rate was about the same as the rate for large cities, and in the West the rate for small towns was less than for towns of 10,000 to 100,000. For both white and colored persons in the South, the poliomyelitis death rate in rural areas was higher than in urban areas (2,500 or over).

TABLE 10.—*Annual poliomyelitis death*[1] *rates per million residents of cities of different sizes, by geographic sections*[2] *of the United States, 1940–41*

Size of city in 1940 census	Annual poliomyelitis death rate per million						Number of deaths from poliomyelitis					
	All sections	Northeast	East North Central	West North Central	South[3]	West	All sections	Northeast	East North Central	West North Central	South	West
100,000 or over	4.5	2.1	5.1	9.2	6.4	6.6	515	121	127	83	97	87
10,000–100,000	6.8	3.4	8.3	11.6	8.0	8.8	455	89	114	60	126	66
2,500–10,000	10.0	5.7	13.8	15.7	10.0	7.6	318	51	77	54	93	43
Rural[4]	8.0	4.4	9.9	9.1	8.6	6.5	1,318	121	218	204	645	130

[1] Deaths are allocated to the residence of the deceased; 1939 data are omitted because deaths in that year are classified by size of city in 1930.
[2] U. S. Bureau of the Census sections are used except: *Northeast*=New England and Middle Atlantic, South=South Atlantic and East and West South Central; *West*=Mountain and Pacific.
[3] Poliomyelitis death rates per million residents of the South: White, urban (2,500 or over) 8.4, rural 9.1; colored, urban 5.9, rural 7.0.
[4] Rural includes villages with less than 2,500 population and open country.

Relative age curves for other communicable diseases.— The poliomyelitis epidemics covered by the surveys described in this paper were rather largely confined to the New England and Middle Atlantic States, designated here as the Northeast. In the surveyed cities of those States the case incidence among white children under 15 years of age was 89 per 100,000 persons, as compared with 28 for the cities in all other sections. Figure 6 shows in terms of the ratio of the rate for each age group to the rate under 15 years, the relative age curve for the Northeast where the disease was epidemic and for all other regions combined. Insofar as the small numbers of cases indicate,

[6] Data for 1939 are omitted from computations by size of city and for urban-rural classifications because 1939 deaths are classified by size of city in 1930.

the incidence in the epidemic region was relatively higher in the younger ages.

In the same surveys similar data were collected on other communicable diseases. Figure 6 shows relative age curves for poliomyelitis, diphtheria, scarlet fever, and whooping cough incidence. Actual rates for these diseases vary widely. For the ages under 15 years case rates per 100,000 were: Poliomyelitis 52, diphtheria 111, scarlet fever 1,080, and whooping cough 1,599. These curves are plotted in terms of the ratio of the rate for each age to the rate under 15 years. The curve for poliomyelitis is rather similar to that for diphtheria; both rise rapidly to 3 years, after which poliomyelitis declines rather

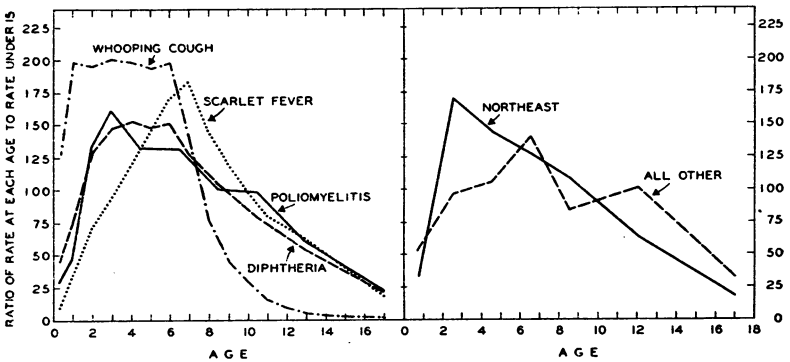

FIGURE 6.—Relative age incidence during the study year of poliomyelitis and certain other communicable diseases; and relative age incidence of poliomyelitis in the epidemic Northeast as compared with the other (nonepidemic) sections of the United States—canvassed white families in 94 cities and towns in 19 States, 1935-36.

gradually as age increases but diphtheria remains high until after 6 years of age. Scarlet fever, on the other hand, rises more slowly to a peak at 7 years, with a rapid decline thereafter. Whooping cough incidence is relatively low under 1 year of age, but is almost identical from 1 to 6 years, after which it declines more rapidly than any other disease on the chart. It should be noted that the data for large cities predominate in this surveyed group, although many smaller towns are included. The numbers of cases of poliomyelitis are not sufficient to compare the age incidence in small and large cities.

Variation with family income.—Family income during the study year was recorded in broad classes in both surveys. Table 11 shows poliomyelitis case rates by income and age for children less than 15 years old. As in other communicable diseases, high rates occur at earlier ages in the lower economic levels, presumably due to more contact in the crowded areas of the city. In this study the rates for children under 5 years decrease regularly as income increases, but the income differences are less in the other two age groups. In the lower income brackets the rates decrease regularly as age increases,

but the few cases in the higher income levels suggest higher rates between 5 and 15 years than in the youngest age group.

TABLE 11.—*Age incidence (new cases) of poliomyelitis per 100,000 population during the study year*[1]*—white children in families of different income levels in 84 surveyed cities in 19 States, 1935–36.*

Age	All surveyed areas					Northeast				
	All on relief	Annual family income for non-relief households				All on relief	Annual family income for non-relief households			
		Under $1,000	$1,000–$1,500	$1,500–$3,000	$3,000 or over		Under $1,000	$1,000–$1,500	$1,500–$3,000	$3,000 or over
	Annual case rates per 100,000 population									
All under 15	67	52	42	47	50	101	99	73	87	78
Under 5	81	74	53	49	28	140	179	125	84	76
5–9	75	51	41	64	45	119	81	64	126	50
10–14	50	38	34	32	65	58	59	42	56	102
	Number of cases									
Under 5	33	26	25	23	2	25	21	22	15	2
5–9	39	22	24	41	5	28	12	14	31	2
10–14	29	18	21	24	9	15	10	10	16	5

[1] Study year refers to the 12 months immediately preceding the single invteriew of the family informant by which the sickness and income data were obtained. Age is recorded as last birthday at time of interview.

REPORTED CASES AND CASE FATALITY

It is rather commonly assumed that a severe disease like the paralytic form of poliomyelitis is fairly completely reported to health departments. However, there is considerable evidence that by no means all of the cases come to the attention of the health authorities.

In the 28 large cities covered by the Communicable Disease Study, cases recorded in the family canvasses with onset within the study year were checked by name with the files of cases reported to the city health department by attending physicians, clinics, and hospitals. Table 12 shows the results of this check for poliomyelitis and 3 other communicable diseases. The proportion of poliomyelitis cases that were reported (74 percent) is not much above the figure for diphtheria (70 percent) and scarlet fever (73 percent) but is far above the more frequent childhood diseases represented by whooping cough with only 26 percent reported to health departments.

The results of such a check of individual names represents a minimum estimate of the completeness of reporting. Any name that was wrongly recorded on either the family survey or the physician's report to the health department may have resulted in counting the case as unreported. Moreover, a report on the family survey of a case that was not poliomyelitis and consequently not reported by the attending physician would also cut down the estimate of the percentage of cases reported.

TABLE 12.—*Percentage of cases of poliomyelitis and certain other communicable diseases recorded in the family survey that were located by name in the city health department files of reported cases—canvassed households in 28 large cities,*[1] *1935–36*

Geographic section	Percentage of cases reported to health department						Total number of cases recorded in the family survey					
	Poliomyelitis			Diphtheria	Scarlet fever	Whooping cough	Poliomyelitis			Diphtheria	Scarlet fever	Whooping cough
	All types	Paralytic	Nonparalytic				All types	Paralytic	Nonparalytic			
All cities	74	73	77	70	73	26	86	51	35	227	2,315	4,065
Northeast	81	75	91	78	76	24	54	32	22	45	874	1,344
All other	62	68	54	68	72	26	32	19	13	182	1,441	2,721

[1] For list of 28 large cities included, see note 6 to table 4. Cases recorded in the canvass as occurring outside of the city (while on vacation, prior to coming to the city, etc.) are excluded from the computation, as are also cases in cities in which no file of cases was available for checking (whooping cough in Atlanta and Richmond). Whooping cough and poliomyelitis were not reportable in Dallas and Houston in 1935–36 but both are now reportable; no cases of poliomyelitis were recorded in the canvassed sample of those cities.

Another method of calculating completeness of reporting is to estimate the total cases in the surveyed cities from the canvassed family data and compare this figure with the actual reports for the whole of the cities. The cases from the Communicable Disease Study and the National Health Survey may be combined for this purpose. The National Health Survey covered 27 of the 28 large cities included in the Communicable Disease Study with samples that were roughly twice the size of the Communicable Disease samples;[7] in addition the Health Survey included samples from four other large cities—New York, Cincinnati, Minneapolis, and Los Angeles.

In the Northeast,[8] 8.44 percent of the total estimated population of the 9 large surveyed cities was covered. On the basis of the 249 new cases of poliomyelitis recorded in the family surveys in these cities, it was estimated that 2,950 cases occurred in the total population of these 9 cities. The actual number of cases reported to the health departments in these cities in 1935 (the approximate year of the survey[9]) was 2,799, which was 95 percent of the expected cases. Nonresident cases were eliminated from the number actually reported to the health departments in the cities where nonresident data were available, but, insofar as nonresidents were included, the figure of 95 percent reported would be too high since only resident cases were counted in the name check data shown in table 12. Moreover, New

[7] No blocks were canvassed by both surveys, so there is no duplication of cases when the two studies are combined. Baltimore was included in the Communicable Disease Study but not in the Health Survey tabulations.

[8] Northeast comprises New England and Middle Atlantic geographic sections as used in the Federal censuses.

[9] The National Health Survey was made between October 1935 and April 1936, and the Communicable Disease Study between March and June 1936. Since the first 5 months of the calendar year have the lowest incidence of poliomyelitis, the calendar year 1935 approximates the study year of 12 months preceding the interview in numbers of cases reported.

York City was not in the name check but contributed a larger number of well-reported cases to the other computation. Thus, the 95 percent is a liberal estimate of the maximum completeness of reporting in the Northeast, with the 81 percent obtained by the name check as a minimum.

Applying the same method to the 23 large cities in other geographic sections where poliomyelitis rates were lower, 11.64 percent of the population of these cities covered by the canvass yielded 141 new cases, with an estimate of 1,211 cases in the total population of these cities. The actual number of cases reported to the health departments was 789 which would indicate that 65 percent of the cases were reported. This figure may be compared with 62 percent found in the name check.

Adding the 2 areas, the estimate for the whole population of all 32 large cities was 4,161 new poliomyelitis cases, of which 3,588 or 86 percent were reported to the health departments, as compared with 74 percent found by the name check.

No data are available as to whether the reported cases were paralytic or nonparalytic, so no separate estimate can be made for paralytic cases. However, in the check of names the proportion of nonparalytic cases that was reported to health departments in the epidemic Northeast was 91 percent as compared with 75 percent for paralytic cases. In the other (nonepidemic) regions the few nonparalytic cases recorded in the family surveys were less frequently reported to health departments than was true of paralytic cases.

The figure of 75 percent of paralytic cases being reported to health departments in the large northeastern cities, as determined by a name check on this survey for 1935, may be compared with the finding of Nelson and Aycock (*10*) of 77 percent of paralytic cases in Massachusetts being reported to health departments. That study was based on a similar name check of 2,263 paralytic cases that were treated by the Harvard Infantile Paralysis Commission during the period 1928–41. In the 2 epidemic years of 1931 and 1935, 82 percent of the cases were reported, as compared with 69 percent for definitely nonepidemic years, and 73 percent for the intermediate year of 1930.

The fact that there is more complete reporting when the disease is epidemic is confirmed by other data. Considering all reported cases and all recorded deaths in the United States for each year from 1930 to 1944, as shown in table 1, it is found that the cases per death are generally higher in epidemic years. In 1935 and 1943 when case rates were exceptionally high and in 1941 when they were moderately high, there were 11 cases per death. However, the case incidence was also high in 1931 but there were only 8 cases per death. In 1938 when the case incidence was very low, there were only 4 cases per

death. In 1932, 1936, and 1942 when the case incidence was moderately low, there were 4, 6, and 8 reported cases per death, respectively.

In the epidemic year of 1935 the New England and Middle Atlantic sections, where the disease was definitely epidemic, both reported 18 cases per death, as compared with 10 or less for each of the other 7 regions, with 2 of these sections reporting only 2 to 3 cases per death. But in 1938 with the exceptionally low case rate, the Pacific section with only 6 cases per death was the highest; in the New England, Middle Atlantic, and East North Central sections there were about 5 cases per death; in the West North Central and South Atlantic there were 4 cases per death; and in the South Central and Mountain regions there were 2 to 3 cases per death. Thus, in the epidemic year of 1935, there were 18 cases per death in the sections with active epidemics and 2 to 5 cases per death in the regions most removed from the center of the outbreak. In the low year of 1938, there were only 5 to 6 cases per death in the most densely populated regions. The fact that incompleteness of reporting tends to increase with distance from the center of the epidemic suggests that a considerable part of the underreporting may be due to nonrecognition of the disease rather than to nonreporting of diagnosed cases.

Severity of cases.—Incomplete reporting of cases is reflected in abnormally high apparent case fatality rates. Relating the registered deaths in 1935 in the 32 large surveyed cities to the reported cases, the indicated fatality is 5.0 percent, with 4.2 in the epidemic Northeast and 8.0 in other sections. If the reported cases are corrected for underreporting by the method described above, the case fatalities approach the rates for the survey, 4.3 for the total of the 32 cities with 4.0 for the Northeast and 5.0 for the other regions. These fatalities are based on an estimated 4,161 cases and 180 registered deaths in these cities, excluding deaths of nonresidents where possible.

Among the 424 cases of poliomyelitis that occurred in the white canvassed population during the study year, there were 16 deaths or a case fatality of 3.8 percent. Among the 350 cases among children under 15 years of age there were 12 deaths, or 3.4 percent fatal, as compared with 4 deaths among the 74 cases that were 15 years or over, a fatality of 5.4 percent. In the Northeast where 266 cases occurred, the fatality was 3.4 percent, with 3.0 for children under 15 years and 6.2 for persons 15 and over. In the other geographic sections there were 7 deaths among the 158 cases of all ages, a fatality of 4.4 percent as compared with 3.4 in the epidemic region. Even these fatalities may be high, for if cases are unrecognized, the family is unable to report them in the household canvass, with a resulting higher apparent case fatality.

Although the numbers of deaths are too small for reliable rates, it may be worth while to consider several sets of data on the severity of the disease in the 2 sexes. The few deaths among the cases recorded in the survey indicate lower case fatality rates for girls than boys, but the difference is not statistically significant. Among the 200 cases of white males under 15 years of age there were 10 deaths, or 5.0 percent; among the 150 cases of white females of those ages there were 2 deaths, or 1.3 percent fatal.

Fatality rates may be computed from the data on the history of poliomyelitis at any time since birth (table 13). Fatal cases in these data for males who were, or if living would have been, under 25 years of age at the time of the survey amounted to 9.6 percent of the cases, as compared with 8.3 for females; the corresponding fatality rates for paralytic cases were 13.0 percent for males and 11.0 for females.

TABLE 13.—*Types of poliomyelitis histories occurring at any time since birth among persons of specific ages—children of native white parents* [1] *in 28 surveyed cities, 1935–36*

	Ages [2] as of survey year										
	All under 25			All under 15			Both sexes				
	Both sexes	Male	Female	Both sexes	Male	Female	Under 5	5–9	10–14	15–19	20–24
Number of all poliomyelitis cases	897	449	448	441	215	226	42	156	243	233	223
Number of paralytic cases	668	332	336	313	150	163	32	103	178	187	168
Percent of all cases that were paralytic	74.5	73.9	75.0	71.0	69.8	72.1	76.2	66.0	73.3	80.3	75.3
Number of paralytic cases with residual effects or death	494	253	241	232	118	114	23	71	138	132	130
Percent of all paralytic cases with residual effects or death	74.0	76.2	71.7	74.1	78.7	69.9	71.9	68.9	77.5	70.6	77.4
Number of nonfatal paralytic cases	588	289	299	286	137	149	29	95	162	166	136
Number of nonfatal paralytic cases with residual effects	414	210	204	205	105	100	20	62	123	111	98
Percent of nonfatal paralytic cases with residual effects	70.4	72.7	68.2	71.7	76.6	67.1	69.0	65.3	75.9	66.9	72.1
Number of fatal cases	80	43	37	27	13	14	3	8	16	21	32
Percent of all cases that were fatal	8.9	9.6	8.3	6.1	6.0	6.2	7.1	5.1	6.6	9.0	14.3
Percent of all paralytic cases that were fatal	12.0	13.0	11.0	8.6	8.7	8.6	9.4	7.8	9.0	11.2	19.0

[1] Own, step, and adopted children of white native-born household heads.

[2] Ages of living persons are expressed as the attained age (last birthday) at the beginning of the study year. Ages of nonresident and dead persons represent the age they would have attained at the time of the survey. This method is equivalent to classifying all persons according to year of birth—thus, ages 20–24 years (living resident, nonresident, and dead) all represent persons born in the years 1911 to 1915, and ages 10–14 represent children born in the years 1921–25.

Note that this method of counting ages means that data here classified as 20–24 include cases occurring from birth to 24 years of age among persons who were 20–24 years when the study was made; similarly 10–14 includes cases occurring from birth to 14 years of age. Thus these ratios do not pertain to cases occurring at specific ages but to cases among persons who were of the specific ages when the histories were recorded by the survey.

Other measures of the severity of cases also indicate that the disease is somewhat less serious for girls (table 13). Of the histories since birth of paralytic cases among males who were, or if living would have been, under 25 years of age at the time of the survey,

76 percent had some residual paralysis or died from the disease, as compared with 72 percent for girls of those ages. Of the histories since birth of nonfatal paralytic cases among boys under 25 years of age, 73 percent had some residual crippling effects, as compared with 68 percent for girls.

SUMMARY

Poliomyelitis as reported to health departments in the past 15 years shows an epidemic situation in some region of the United States during nearly every year. The periods of exceptionally high incidence usually extended over 2 years in which the western part of the country tends to have high rates in one year and the eastern part in the other. There is great variation in the heights of the peaks in the several geographic sections in terms of cases per 100,000 population. The peak rates tend to occur somewhat earlier in the South than in the North and West. The years 1943 and 1944 both had high rates and in 1945 rather large numbers of cases were reported in most of the geographic sections.

In house-to-house canvasses made a few years ago, family informants (usually mothers) reported that 5.7 per 1,000 living children 15–19 years of age had a history of poliomyelitis at some time since birth. Not all of the reported histories were paralytic; at 15–19 years of age 4.5 per 1,000 living children gave a history of a paralytic attack, and 3.0 per 1,000 had residual paralysis or muscle weakness.

History rates of poliomyelitis were reported as rather consistently higher in Northeast and North Central cities than in the South. Histories of poliomyelitis were exceptionally high in the West but when paralytic cases with residual effects are considered, the West shows lower history rates than the North Central section. Geographic variations in history rates are generally consistent with the data on reported incidence as shown in figure 1.

Data from a family survey on the character of the crippling effects of poliomyelitis indicate that the legs are most frequently affected. Crippling involved the feet or legs in 85 percent of the children under 15 years of age with residuals of poliomyelitis, as compared with 25 percent which involved the hands or arms; in a considerable proportion of the cases both the legs and arms were involved. Involvement of only the fingers or toes was negligible.

The age incidence of poliomyelitis is more similar to that of diphtheria than of scarlet fever or whooping cough. The peak rate in the survey data occurred at 3 years of age, with a fairly regular decline in incidence as age increased. Unlike most diseases, relative variation with age was greater in poliomyelitis case rates than in death rates.

Both incidence and mortality indicate somewhat lower poliomyelitis rates among girls than boys. Measures of the severity of the disease,

such as the proportion of cases that were paralytic, indicate that the disease is slightly less severe in girls than boys. This is the opposite of the showing for diphtheria and is quite different from scarlet fever in which the incidence was practically identical for girls and boys.

Poliomyelitis case and death rates were lower for colored than for white persons living in the same geographic section.

Poliomyelitis death rates in the United States among residents of cities of various sizes indicate that the rate increases as size of city decreases, but rural areas and villages under 2,500 have lower rates than small cities and higher rates than cities of 100,000 and over. This general pattern holds true in the several geographic regions.

Cases recorded in the family survey were checked by name against health department files of reported cases in each of the 28 cities included. Also total cases for whole populations of the surveyed cities were estimated from the canvassed samples and compared with cases reported to the health departments. These two methods indicate that from 74 to 86 percent of poliomyelitis cases were reported to the health departments. In the Northeast where the disease was definitely epidemic during the study year, a higher proportion of the cases was reported than in areas remote from the center of the outbreak.

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REGULAR CORPS APPOINTMENTS FOR MEDICAL OFFICERS IN THE UNITED STATES PUBLIC HEALTH SERVICE

Examinations for appointment in the Regular Corps in grades of assistant surgeon (first lieutenant) and senior assistant surgeon (captain) will be held on the dates listed below.

Regular Corps appointments are permanent in nature and provide unique opportunities to qualified doctors for a life career in one or more of a large number of fields including research, general hospitals, special hospitals, foreign duty, and public health programs. Assignments are made with all possible consideration of the officer's demonstrated abilities and experiences. There is ample opportunity for professional growth and development. Entrance pay for assistant surgeon with dependents is $3,411 a year and for senior assistant surgeon with dependents is $3,991 a year. Promotions are at regular intervals up to and including the grade of medical director which corresponds to full colonel at $7,951 a year. Retirement pay at 64 is $4,500 a year. Full medical care including disability retirement at three-fourths pay is provided. All expenses of official travel are paid by the Government. Thirty days' annual leave with pay is provided.

Examinations will be oral and written. The oral examination will be held at 9 a. m. at the several places listed below on the dates shown. The written examination will be held on May 14, 15, and 16 at places convenient to the candidate and the Service. National Board grades may be used for the assistant surgeon examination.

Applicants for the grade of assistant surgeon must be citizens of the United States, must present diploma of graduation from a recognized medical school, must have had or be in process of completing the seventh year of college or professional training or experience since high-school graduation (2 years premedical, 4 years medicine, 1 year internship), and must have a physical examination at place of oral examination by medical officers of the Service. Applicants for the grade of senior assistant surgeon must meet the above requirements and must have had four additional years of postgraduate training or experience.

Application forms may be obtained by writing to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

Places and dates of oral examinations are as follows:

Atlanta, Ga.: Malaria Control in War Areas, 605 Volunteer Bldg	April 22
Baltimore, Md.: U. S. Marine Hospital, Wyman Park Drive & 31st St	May 9
Boston, Mass.: U. S. Marine Hospital, 77 Warren St. (Brighton	May 6
Chicago, Ill.: U. S. Marine Hospital, 4141 Clarendon Ave	April 30, May 1
Cleveland, Ohio: U. S. Marine Hospital, Fairhill Road & East 124th St	May 3
Denver, Colo.: 617 Colorado Bldg	April 8
Detroit, Mich.: U. S. Marine Hospital, Windmill Pointe	May 2
Forth Worth, Tex.: U. S. Public Health Service Hospital	April 25
Kirkwood, Mo. (near St. Louis): U. S. Marine Hospital, 525 Couch Ave	April 26, 27
Los Angeles, Calif.: U. S. Public Health Service Relief Station, 406 Federal Bldg	April 9
Minneapolis, Minn.: Office of Indian Affairs, 218 Federal Office Bldg	April 29
New Orleans, La.: U. S. Marine Hospital, 210 State St	April 23, 24
New York, N. Y.: U. S. Marine Hospital, Stapleton, Staten Island	May 7, 8
Norfolk, Va.: U. S. Marine Hospital, Hampton Blvd., Larchmont	May 10
San Francisco, Calif.: U. S. Marine Hospital, 14th Ave. & Park Blvd	April 10, 11
Seattle, Wash.: U. S. Marine Hospital, Judkins St. & 14th Ave. S	April 12, 13
Washington, D. C.: U. S. Public Health Service Dispensary, Fourth and D Streets, S. W	April 4, May 13

REGULAR CORPS APPOINTMENTS FOR DENTAL OFFICERS IN THE UNITED STATES PUBLIC HEALTH SERVICE

A competitive examination for appointment in the Regular Corps in grades of assistant and senior assistant dental surgeon will be held on the dates listed below.

Regular Corps appointments are permanent in nature and provide unique opportunities to qualified dentists for a life career in the various phases of dentistry including public health administration and research. Assignments are made with all possible consideration of the officer's demonstrated abilities and experience.

Examinations will be oral and written. The oral examination will be held at the times and places designated below. The written examination will be held on June 5, 6, and 7, at places convenient to the candidate and the Service.

An applicant for the assistant grade must be a citizen of the United States, must present a diploma of graduation from an accredited dental school, must have had at least 7 years of education (exclusive of high school) and professional training or experience, and must have a physical examination made by a medical officer of the Public Health Service prior to the oral examination.

An applicant for the senior assistant grade must meet the requirements for the assistant grade and must have had an additional 4 years of postgraduate training or experience.

The written examination for the assistant grade will be in: (1) Anatomy and oral surgery; (2) pathology and bacteriology; (3) materia medica and physiology; (4) hygiene and radiology; and (5) operative and prosthetic dentistry. A practical examination consisting of clinical and laboratory demonstrations will be given following the last written examination. A candidate who has passed the examination given by the National Board of Dental Examiners may elect to have his grades used in lieu of taking the written portion of his examination; however, clinical and laboratory demonstrations will be required.

The written examination for the senior assistant grade will be in: (1) Oral surgery; (2) pathology and bacteriology; (3) hygiene; (4) operative dentistry; and (5) prosthetic dentistry. Certificates granted by the National Board of Dental Examiners do not apply to this grade.

Application forms may be obtained by writing to the Surgeon General, U. S. Public Health Service, Washington 25, D. C. (Attention: Dental Division).

Entrance pay for assistant grade with dependents is $3,411 a year and for senior assistant grade with dependents is $3,991 a year. Every 3 years an increase of 5 percent of the base pay is automatic and promotions are at regular intervals up to and including the grade of dental director. Army or Navy service is credited towards longevity pay. Retirement pay at the age of 64 is $4,500 a year. Full medical care, including disability retirement at three-fourths base pay, is provided.

All expenses of official travel are paid by the Government. Thirty days' annual leave with pay is provided.

Oral examinations will be held at 9 a. m. at the following places:

Baltimore, Md.: U. S. Marine Hospital, Wyman Park Dr. & 31st St	April 16
Chicago, Ill.: U. S. Marine Hospital, 4141 Clarendon Ave	June 1
Kirkwood, Mo. (near St. Louis): U. S. Marine Hospital, 525 Couch Ave	May 31
Los Angeles, Calif.: U. S. Public Health Service Relief Station, 406 Federal Bldg	May 21
New Orleans, La.: U. S. Marine Hospital, 210 State St	May 17

New York, N. Y.: U. S. Marine Hospital, Stapleton, Staten Island---------- April 17
San Francisco, Calif.: U. S. Marine Hospital, 14th Ave. & Park Blvd---------- May 23
Seattle, Wash.: U. S. Marine Hospital, Judkins St. & 14th Ave., S---------- May 27
Washington, D. C.: U. S. Public Health Service Dispensary, 4th & D Sts., SW---------- April 15, June 3

ANNOUNCEMENT OF EXAMINATION FOR APPOINTMENT AS ASSISTANT AND SENIOR ASSISTANT SANITARY ENGINEER (REGULAR CORPS) UNITED STATES PUBLIC HEALTH SERVICE

An examination for appointment as assistant sanitary engineer and senior assistant sanitary engineer in the Regular Commissioned Corps of the United States Public Health Service is scheduled to be held at

Atlanta, Ga.: Malaria Control in War Areas, 605 Volunteer Bldg. May 15
Chicago, Ill.: U. S. Marine Hospital, 4141 Clarendon Ave---- May 31
Cincinnati, Ohio: U. S. Public Health Service Water & Sanitation Investigation Station, East Third and Kilgour Sts---- April 19
Denver, Colo.: U. S. Public Health Service District Office, 617 Colorado Bldg---------- May 29
Los Angeles, Calif.: U. S. Public Health Service Relief Station, 406 Federal Bldg---------- May 21
New Orleans, La.: U. S. Marine Hospital, 210 State St---- May 17
New York, N. Y. (Stapleton, Staten Island): U. S. Marine Hospital---------- April 17
San Francisco, Calif.: U. S. Marine Hospital, 14th Ave. & Park Blvd---------- May 23
Seattle, Wash.: U. S. Marine Hospital, Judkins St. & 14th Ave., S---------- May 27
Washington, D. C.: U. S. Public Health Service Dispensary, Fourth and D Sts., SW---------- April 15, June 3

The oral, professional, academic, and physical examinations will be held at 9 a. m. at places and dates given above. The final written portion of the examination will be given simultaneously at the above locations beginning on June 5, 1946, and ending on June 7, 1946. The written portion of the examination may be given at certain other stations of the Service where two or more regular commissioned officers are on duty, if request is made by an applicant. The written examination will consist of questions on the following subjects:

Assistant sanitary engineer

1. Chemistry and bacteriology.
2. Mathematics, physics, and hydraulics.
3. Water and sewage treatment.
4. Design and construction of sanitary projects.
5. Industrial hygiene.
6. Sanitary science and public health.

Senior assistant sanitary engineer

1. Chemistry and biology.
2. Hygiene and epidemiology.
3. Design of sanitary projects.
4. Practices relating to water, sewage, and wastes.
5. Public health engineering, general.

REQUIREMENTS

Minimum age.—21.

Education and training.—(1) Assistant: at least 7 years of educational (exclusive of high school) and professional training or experience and a degree in engineering (sanitary engineering course); (2) senior assistant: as above, plus 4 additional years of postgraduate professional training or experience.

Compensation (including allowance for quarters and subsistence).—(1) Assistant: $3,411 with, and $2,975.50 without dependents; (2) senior assistant: $3,991 with, and $3,555.50 without dependents.

The applicant will be required to submit to the Board a recent photograph of himself, and his diploma from the professional school from which he was graduated or a certified copy thereof.

Applicants should address a letter to the Surgeon General, U. S. Public Health Service, Washington 25, D. C., at the earliest practicable date, requesting application blanks. Such letter should include a brief biographical statement relative to professional school or college attended, type of studies pursued, degrees granted, and subsequent training or experience. Applicants of foreign birth must furnish proof of United States citizenship.

Transportation expenses to and from and cost of maintenance at place of examination must be assumed by the candidate.

ANNOUNCEMENT OF EXAMINATIONS FOR THE APPOINTMENT OF NURSES TO THE REGULAR COMMISSIONED CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Examinations for the appointment of nurses to the Regular Commissioned Corps of the United States Public Health Service are announced for March and April, to be held in 15 cities throughout the Nation.

Positions are now open in Marine Hospitals of the Service for nurses in the grades of junior assistant nurse officer, comparable to the rank of Army second lieutenant; assistant nurse officer (first lieutenant); and senior assistant nurse officer (captain). Candidates will be judged on the basis of professional, general, and physical fitness. Positions are also open for nurses in public health nursing and for certain special projects of the Public Health Service.

The examinations may be taken by any registered nurse who is a citizen of the United States and has a diploma from a State accredited school of nursing connected with a hospital maintaining a daily average census of not less than 50 patients and offering experience in medicine, surgery, pediatrics and obstetrics. Nurses with degrees will be given preference. Candidates for assistant nurse officers must have at least 7 years of educational and professional training or experience, exclusive of high school. Senior assistant nurse officers must have completed at least 4 additional years of postgraduate training or experience, 11 years beyond high school.

Salaries in the Commissioned Nurse Corps are the same as for officers of comparable rank in the Army, ranging from $1,800 a year base pay with allowance for rental and subsistence to $2,400 a year base pay for the three grades mentioned. Although appointments are permanent, officers may resign at any time except during a war emergency. Uniforms are now being worn but they will probably be discontinued with the official declaration of the end of hostilities.

Oral examinations will be held at 9 a. m. at the several places listed below on the dates shown. The written examination will be held on May 14, 15, and 16 at places convenient to the candidate and the Service. Physical examinations will be given at the place of oral examination by medical officers of the Service.

The examining board has set up the following schedule:

Baltimore, Md., U. S. Marine Hospital, Wyman Park Drive & 31st St.	March 23
Boston, Mass., U. S. Marine Hospital, 77 Warren St. (Brighton)	March 19
Chicago, Ill., U. S. Marine Hospital, 4141 Clarendon Ave	March 27
Cleveland, Ohio, U. S. Marine Hospital, Fairhill Road and E. 124th St	April 2
Denver, Colo., 617 Colorado Building	April 9
Detroit, Mich., U. S. Marine Hospital, Windmill Pointe	March 28
Kirkwood, Mo. (near St. Louis); U. S. Marine Hospital, 525 Couch Ave	March 26
Los Angeles, Calif., U. S. Public Health Service Relief Station, 406 Federal Bldg	April 11
Minneapolis, Minn.; Office of Indian Affairs, Federal Office Bldg	March 29
Nashville, Tenn.; Joint University Library, Vanderbilt University	March 25
New Haven, Conn.; Yale University School of Nursing, 310 Cedar St	March 20
New York, N. Y.; U. S. Marine Hospital, Stapleton, Staten Island	March 21–22
San Francisco, Calif.; U. S. Marine Hospital, 14th Ave. & Park Blvd	April 12
Seattle, Wash.; U. S. Marine Hospital, Judkins St. & 14th Ave. S.	April 13
Washington, D. C.: U. S. Public Health Service Dispensary, 4th and D Sts., SW	March 18

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED FEBRUARY 16, 1946

Summary

For the country as a whole, only a slight decrease in the incidence of influenza was recorded for the week. Of the total of 8,411 cases reported, as compared with 8,846 last week and a 5-year median of 5,308, 10 States with reports of more than 200 cases each reported an aggregate of 7,657 cases, or 91 percent of the total. A decline of 1,259 cases in 3 of these States was nearly offset by slight increases in the 7 others. These States are as follows (last week's figures in parentheses): *Increases*—Virginia 937 (827), Tennessee 213 (57), Alabama 569 (317), Arkansas 318 (260), Oklahoma 314 (231), Arizona 203 (164), California 716 (291); *decreases*—South Carolina 961 (1,180), Louisiana 541 (1,279), Texas 2,885 (3,187). Since November 18, 1945, a total of 486,345 cases has been reported, as compared with 46,098 and 620,052, respectively, in the corresponding periods of 1944–45 and 1943–44.

Of a total of 173 reported cases of meningococcus meningitis, as compared with 175 last week and a 5-year median of 281, New York reported 12, Pennsylvania 16, California 19, and Illinois 9. The total to date is 1,468, as compared with a 5-year median of 1,697 (reported for the corresponding period last year).

Of 13,932 cases of measles reported for the week, as compared with 11,260 last week and a 5-year median of 16,334, 6,761 occurred in the Middle Atlantic and East North Central areas. A decrease was reported in New York, but increases occurred in Pennsylvania and Michigan. The total for the year to date is 53,474, as compared with a 5-year median of 80,610, and 11,091 for the same period last year.

Although the cumulative total of 313 cases of poliomyelitis is more than reported for the corresponding period of any of the past 5 years, the total of 33 cases (as compared with 32 last week) is the first weekly increase reported since October 1945.

Of 11 cases of smallpox reported, 6 occurred in the West South Central area.

A total of 10,063 deaths was recorded during the week in 93 large cities of the United States, as compared with 10,211 last week, 9,913 and 9,824, respectively, for the corresponding weeks of 1945 and 1944, and a 3-year (1943–45) average of 10,066. The total for the year to date in these cities is 74,530, as compared with 69,041 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended Feb. 16, 1946, and comparison with corresponding week of 1945 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Feb. 16, 1946	Feb. 17, 1945		Feb. 16, 1946	Feb. 17, 1945		Feb. 16, 1946	Feb. 17, 1945		Feb. 16, 1946	Feb. 17, 1945	
NEW ENGLAND												
Maine	5	1	1	4	1	2	14	2	122	1	0	0
New Hampshire	0	1	0	2	-------	-------	9	-------	3	0	0	0
Vermont	2	2	0	17	-------	-------	6	4	29	0	0	0
Massachusetts	8	5	3	-------	-------	-------	250	98	454	5	7	7
Rhode Island	0	0	1	-------	-------	-------	4	16	16	0	0	0
Connecticut	1	0	0	14	1	4	84	59	282	2	2	2
MIDDLE ATLANTIC												
New York	17	12	15	[1] 18	[1] 2	[1] 7	1,102	55	1,631	12	32	32
New Jersey	7	1	6	12	4	23	425	36	1,076	6	4	5
Pennsylvania	19	12	12	4	3	3	1,998	47	1,174	16	24	21
EAST NORTH CENTRAL												
Ohio	39	8	8	26	9	28	104	20	190	4	18	6
Indiana	17	9	9	34	10	36	340	10	175	4	6	6
Illinois	11	3	15	8	3	19	1,035	60	506	9	18	16
Michigan [2]	13	5	5	2	2	2	1,429	22	249	4	12	5
Wisconsin	4	0	1	90	16	56	328	27	769	5	3	3
WEST NORTH CENTRAL												
Minnesota	7	4	4	-------	2	2	48	13	32	7	3	3
Iowa	5	4	4	-------	-------	3	47	35	148	4	4	1
Missouri	12	6	5	5	4	4	415	15	86	7	10	6
North Dakota	4	1	1	9	20	20	3	3	28	0	3	1
South Dakota	1	3	0	-------	1	1	110	21	31	0	0	0
Nebraska	3	5	2	26	50	8	146	15	32	2	0	0
Kansas	6	6	3	13	9	14	746	13	251	4	2	2
SOUTH ATLANTIC												
Delaware	1	0	0	-------	-------	-------	8	7	8	2	0	0
Maryland [2]	16	8	6	14	8	9	113	75	75	2	4	5
District of Columbia	0	3	1	5	1	1	48	7	34	3	5	1
Virginia	10	5	6	937	559	559	257	44	378	4	7	7
West Virginia	7	5	5	10	29	53	37	8	112	2	5	3
North Carolina	8	12	12	-------	-------	48	254	45	257	2	7	7
South Carolina	2	1	4	961	687	735	122	18	64	3	5	5
Georgia	7	9	4	139	17	164	163	15	248	0	2	1
Florida	3	5	5	11	-------	5	42	11	58	2	3	2
EAST SOUTH CENTRAL												
Kentucky	8	14	5	93	10	10	371	6	54	3	14	4
Tennessee	11	5	9	213	101	101	253	65	125	6	7	7
Alabama	5	9	9	569	230	230	250	28	95	1	4	4
Mississippi [2]	4	13	6	-------	-------	-------	-------	-------	-------	3	6	4
WEST SOUTH CENTRAL												
Arkansas	2	7	5	318	145	336	60	17	150	2	10	0
Louisiana	13	16	6	541	7	21	195	24	57	5	3	3
Oklahoma	8	9	4	314	248	248	84	41	41	7	5	1
Texas	38	43	42	2,885	2,043	1,910	442	310	463	7	19	14
MOUNTAIN												
Montana	5	0	6	25	22	22	57	8	168	0	0	0
Idaho	4	0	1	39	-------	-------	73	2	38	0	1	0
Wyoming	3	0	0	2	-------	33	19	2	43	1	0	0
Colorado	1	9	7	83	60	79	191	39	206	1	3	2
New Mexico	2	2	2	2	3	2	45	6	21	0	0	0
Arizona	0	3	5	203	73	166	22	4	21	0	1	0
Utah [2]	0	0	0	19	61	61	219	82	55	2	0	0
Nevada	0	0	0	-------	-------	-------	5	1	2	0	0	0
PACIFIC												
Washington	8	5	4	-------	1	8	484	99	99	2	4	4
Oregon	7	0	2	28	7	29	144	57	137	2	1	1
California	31	38	20	716	23	103	1,331	683	621	19	17	17
Total	385	309	283	8,411	4,472	5,308	13,932	2,275	16,334	173	281	281
7 weeks	2,874	2,366	2,186	147,779	30,581	33,080	53,474	11,091	80,610	1,468	1,697	1,697

[1] New York City only.
[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended Feb 16, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [2]		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Feb. 16, 1946	Feb. 17, 1945		Feb. 16, 1946	Feb. 17, 1945		Feb. 16, 1946	Feb. 17, 1945		Feb. 16, 1946	Feb. 17, 1945	
NEW ENGLAND												
Maine	0	0	0	52	46	19	0	0	0	1	3	1
New Hampshire	0	0	0	9	2	5	0	0	0	0	0	0
Vermont	0	0	0	11	11	13	0	0	0	0	0	0
Massachusetts	0	2	0	178	312	373	0	0	0	2	3	2
Rhode Island	0	0	0	11	32	14	0	0	0	0	0	0
Connecticut	0	0	0	72	91	71	0	0	0	1	1	0
MIDDLE ATLANTIC												
New York	4	14	3	486	540	507	0	0	0	0	4	4
New Jersey	1	0	0	121	139	146	0	0	0	1	2	1
Pennsylvania	1	1	0	337	534	320	0	0	0	0	19	5
EAST NORTH CENTRAL												
Ohio	0	0	0	327	407	365	0	0	0	2	1	2
Indiana	1	1	0	111	224	179	1	1	1	0	2	2
Illinois	0	0	1	218	395	361	0	0	0	4	0	1
Michigan [3]	0	0	1	134	268	218	0	1	1	0	0	1
Wisconsin	0	0	0	130	210	219	0	1	0	0	0	0
WEST NORTH CENTRAL												
Minnesota	1	0	0	41	83	82	0	0	0	0	1	0
Iowa	1	0	0	60	59	75	1	0	1	0	0	0
Missouri	0	2	0	82	203	87	0	1	1	2	1	1
North Dakota	0	1	0	14	23	23	0	0	0	0	2	0
South Dakota	0	0	0	22	12	21	0	0	0	0	0	0
Nebraska	0	0	0	85	88	45	0	0	0	0	0	0
Kansas	0	0	0	91	123	89	0	0	0	0	0	1
SOUTH ATLANTIC												
Delaware	0	0	0	7	17	16	0	0	0	0	0	0
Maryland [2]	0	2	0	83	256	80	0	0	0	0	0	1
District of Columbia	0	0	0	22	67	24	0	0	0	1	0	0
Virginia	0	2	0	53	129	35	0	0	0	2	1	2
West Virginia	0	1	0	47	63	37	0	0	0	1	0	0
North Carolina	1	3	2	51	101	47	0	0	0	2	1	1
South Carolina	0	0	0	8	8	11	0	0	0	0	2	0
Georgia	1	0	0	16	28	21	0	2	0	1	2	2
Florida	5	0	0	7	7	7	0	0	0	7	3	2
EAST SOUTH CENTRAL												
Kentucky	1	0	1	42	88	88	0	0	0	1	0	0
Tennessee	1	0	0	73	96	80	0	0	0	2	2	3
Alabama	1	4	0	29	42	17	0	0	0	1	0	1
Mississippi [2]	1	1	1	16	44	9	1	0	0	0	1	2
WEST SOUTH CENTRAL												
Arkansas	2	0	0	21	24	13	1	8	0	0	2	2
Louisiana	0	0	0	9	18	6	0	0	0	3	2	2
Oklahoma	0	0	0	17	35	27	4	0	0	1	0	1
Texas	0	2	2	97	151	77	1	0	4	4	8	4
MOUNTAIN												
Montana	1	1	0	7	11	37	0	0	0	0	0	0
Idaho	0	0	1	11	69	14	0	0	0	0	0	0
Wyoming	0	0	0	4	5	10	0	0	0	0	0	0
Colorado	0	1	1	42	125	58	2	0	0	0	0	0
New Mexico	0	0	0	15	32	7	0	0	0	0	1	0
Arizona	0	0	0	17	37	11	0	0	0	0	0	0
Utah [2]	0	0	0	23	71	71	0	0	0	0	0	0
Nevada	0	0	0	0	10	0	0	0	0	0	0	0
PACIFIC												
Washington	1	2	1	45	88	57	0	0	0	0	1	0
Oregon	0	0	0	26	40	17	0	0	0	0	0	0
California	9	2	3	235	423	153	0	0	0	3	2	2
Total	33	42	26	3,615	5,887	4,069	11	14	33	42	67	67
7 weeks	313	288	213	21,094	35,958	26,048	50	65	154	281	419	490

[2] Period ended earlier than Saturday.
[3] Including paratyphoid fever reported separately, as follows: Massachusetts 1; Connecticut 1; New Jersey 1; Texas 1.

Telegraphic morbidity reports from State health officers for the week ended Feb. 16, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended Feb. 16, 1946							
	Week ended—		Median 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Feb. 16, 1946	Feb. 17, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	17	36	36								
New Hampshire	2										
Vermont	22	27	27								1
Massachusetts	141	142	164	1							
Rhode Island	34	23	16								
Connecticut	50	45	45								1
MIDDLE ATLANTIC											
New York	221	221	332	3	6		1				4
New Jersey	146	76	105			1					
Pennsylvania	150	192	192								
EAST NORTH CENTRAL											
Ohio	79	128	158								
Indiana	14	24	24	1			1				
Illinois	96	47	106	1	1		2	1	1		6
Michigan [2]	97	57	234								3
Wisconsin	51	79	98				1				2
WEST NORTH CENTRAL											
Minnesota	9	32	38	2					1		6
Iowa	4	4	19								
Missouri	14	25	13								
North Dakota	2	1	5								
South Dakota		5	5								
Nebraska	10	15	14				1				
Kansas	17	33	46								5
SOUTH ATLANTIC											
Delaware	3	5	5								
Maryland [2]	12	49	49								
District of Columbia	4	10	10								
Virginia	38	32	56			16			1		1
West Virginia	13	52	40								
North Carolina	42	89	131						1	1	
South Carolina	74	38	51	1	14					1	
Georgia	31	11	14						4	6	2
Florida	9	19	19				2			2	
EAST SOUTH CENTRAL											
Kentucky	8	22	50						1		
Tennessee	41	16	37						7	2	2
Alabama	10	9	9				1		1	5	2
Mississippi [2]									4	1	
WEST SOUTH CENTRAL											
Arkansas	12	20	10	4						1	1
Louisiana	3	31	7	1					2	5	
Oklahoma	1	4	9								2
Texas	146	313	313	11	192	56			1	23	14
MOUNTAIN											
Montana	6	20	15						1		
Idaho	18		5								
Wyoming		5	3								
Colorado	28	31	31		3						
New Mexico	6	9	14								
Arizona	16	25	25			22					
Utah [2]	37	10	17								
Nevada											
PACIFIC											
Washington	37	32	49								2
Oregon	21	16	16	1							2
California	97	245	245	4	4			1		2	3
Total	1,889	2,325	3,623	30	220	95	9	2	25	49	59
Same week, 1945	2,325			17	397	73	8	1	8	39	77
Average, 1943–45	2,522			19	250	52	9	[4] 0	9	[4] 32	
7 weeks: 1946	12,814			273	2,239	873	54	3	155	386	451
1945	16,017			192	4,313	957	42	3	176	425	510
Average, 1943–45	18,571		[4] 27,046	155	2,354	532	57	[4] 3	129	[4] 341	

[2] Period ended earlier than Saturday.
[4] 5-year median, 1941–45.

WEEKLY REPORTS FROM CITIES

City reports for week ended Feb. 9, 1946

This table lists the reports from 87 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	----	0	1	0	0	0	4	0	0	11
New Hampshire:												
Concord	0	0	----	0	----	0	0	0	2	0	0	----
Vermont:												
Barre	0	0	----	0	----	1	0	0	6	0	0	----
Massachusetts:												
Boston	4	0	----	2	30	3	19	0	42	0	0	38
Fall River	0	0	----	0	----	0	1	0	3	0	0	7
Springfield	0	0	----	0	----	0	0	0	5	0	0	1
Worchester	0	0	----	0	11	1	13	0	5	0	0	9
Rhode Island:												
Providence	0	0	----	0	1	2	5	0	2	0	0	44
Connecticut:												
Bridgeport	0	0	----	0	----	0	0	0	3	0	0	2
Hartford	0	0	----	0	----	1	1	0	3	0	0	3
New Haven	0	0	1	0	1	0	1	0	0	0	0	2
MIDDLE ATLANTIC												
New York:												
Buffalo	1	0	----	0	30	1	7	0	9	0	0	37
New York	15	2	15	2	295	9	90	1	242	0	0	43
Rochester	0	0	----	1	44	0	3	0	6	0	0	1
Syracuse	0	0	----	0	473	0	2	0	11	0	0	6
New Jersey:												
Camden	0	0	----	0	11	0	1	0	4	0	0	2
Newark	0	0	2	0	89	1	3	0	8	0	0	15
Trenton	0	0	----	0	----	0	8	0	1	0	0	----
Pennsylvania:												
Philadelphia	4	0	2	2	488	5	21	1	52	0	0	34
Pittsburgh	2	0	5	4	2	5	10	0	15	0	0	11
Reading	0	0	----	1	17	0	3	0	2	0	0	14
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	5	0	2	1	33	10	10	0	14	0	0	4
Cleveland	0	0	11	1	7	2	8	0	22	0	0	19
Columbus	9	0	----	0	7	1	1	0	8	0	0	3
Indiana:												
Fort Wayne	0	0	----	1	----	0	2	0	0	0	0	----
Indianapolis	1	0	----	0	121	2	6	0	32	0	0	17
South Bend	0	0	----	0	----	0	0	0	3	0	0	----
Terre Haute	0	0	----	0	1	0	3	0	4	0	0	----
Illinois:												
Chicago	1	0	5	2	706	2	23	0	85	0	2	62
Springfield	1	0	----	0	----	1	3	0	3	0	0	----
Michigan:												
Detroit	9	0	3	0	685	0	10	0	46	0	0	51
Flint	0	0	----	0	18	0	3	0	2	0	0	----
Grand Rapids	0	0	----	0	56	0	0	0	3	0	0	10
Wisconsin:												
Kenosha	0	0	----	0	4	0	0	0	0	0	0	----
Milwaukee	0	0	1	1	82	0	3	0	33	0	0	13
Racine	0	0	----	0	1	0	1	0	2	0	0	----
Superior	0	0	----	0	2	0	0	0	3	0	0	2
WEST NORTH CENTRAL												
Minnesota:												
Duluth	9	0	----	0	4	0	0	0	2	0	0	3
Minneapolis	6	0	----	0	2	0	4	0	10	0	0	1
Missouri:												
Kansas City	1	0	5	0	163	0	16	0	12	0	0	----
St. Louis	6	0	4	1	31	3	12	0	20	0	1	1

City reports for week ended Feb. 15, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo	0	0	------	0	-------	0	0	0	3	0	0	------
Nebraska:												
Omaha	1	0	------	0	15	1	2	0	9	0	0	------
Kansas:												
Topeka	0	0	------	0	93	0	0	0	10	0	0	------
Wichita	3	0	------	0	42	0	4	0	6	0	0	------
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	5	0	2	0	0	0	0	------
Maryland:												
Baltimore	12	1	6	2	44	0	8	1	23	0	0	18
Cumberland	0	0	------	0	0	0	1	0	0	0	0	------
Frederick	0	0	------	0	-------	0	0	0	0	0	0	------
District of Columbia:												
Washington	0	0	4	2	25	1	14	0	14	0	0	3
Virginia:												
Lynchburg	0	0	------	0	3	0	2	0	3	0	0	------
Richmond	0	0	22	0	3	1	3	0	8	0	0	1
Roanoke	0	0	------	0	-------	0	0	0	1	0	0	------
West Virginia:												
Wheeling	0	0	------	0	-------	0	1	0	1	0	0	3
North Carolina:												
Raleigh	1	0	------	0	17	2	4	0	0	0	0	1
Wilmington	1	0	------	0	-------	0	1	0	1	0	0	2
Winston-Salem	0	0	------	0	-------	0	1	0	1	0	0	10
South Carolina:												
Charleston	0	0	34	0	-------	2	0	0	1	0	0	1
Georgia:												
Atlanta	0	0	36	2	3	0	4	0	1	0	0	------
Brunswick	0	0	------	0	-------	0	1	0	0	0	0	------
Savannah	0	0	5	2	-------	0	2	1	0	0	0	------
Florida:												
Tampa	1	0	------	0	15	0	2	0	3	0	0	15
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	10	2	31	1	6	0	3	0	0	4
Nashville	0	0	------	0	15	1	3	0	1	0	0	1
Alabama:												
Birmingham	2	0	3	0	1	0	6	0	0	0	0	------
Mobile	2	0	3	3	-------	4	2	0	0	0	0	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	37	0	6	1	3	0	5	0	0	1
Louisiana:												
New Orleans	1	0	11	6	5	3	9	1	5	0	1	------
Shreveport	0	0	------	1	-------	0	3	0	0	0	0	------
Texas:												
Dallas	0	0	3	4	0	0	3	0	5	0	0	------
Galveston	0	0	------	0	-------	0	3	0	0	0	0	2
Houston	1	0	------	0	1	0	5	0	3	0	0	------
San Antonio	1	0	4	1	10	0	4	0	1	0	0	1
MOUNTAIN												
Montana:												
Billings	0	0	------	0	-------	0	1	0	0	0	0	------
Great Falls	0	0	------	0	-------	0	3	0	0	0	0	------
Helena	0	0	------	0	-------	0	0	0	0	0	0	------
Missoula	0	0	25	0	45	0	0	0	1	0	0	------
Idaho:												
Boise	0	0	------	0	-------	0	1	0	0	0	0	------
Colorado:												
Denver	2	0	8	0	14	0	12	0	17	0	0	6
Pueblo	0	0	------	0	-------	0	0	0	5	0	0	3
Utah:												
Salt Lake City	0	0	------	3	10	0	1	0	3	0	0	4

City reports for week ended Feb. 9, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	3	0	-----	0	147	0	3	0	4	0	0	6
Spokane	0	0	------	0	62	0	4	0	3	0	0	16
Tacoma	1	0	------	0	24	0	0	0	0	0	0	5
California:												
Los Angeles	7	0	58	7	90	1	7	1	50	0	0	16
Sacramento	0	0	1	1	12	1	5	0	2	0	0	2
San Francisco	0	0	5	1	136	1	12	0	15	0	0	3
Total	113	3	331	56	4,290	70	441	6	937	0	4	590
Corresponding week, 1945	67	------	105	41	347	------	486	------	1,666	1	18	556
Average, 1941–45	69	------	965	[1] 57	[2] 3,772	------	[1] 524	------	1,487	2	13	829

[1] 3-year average, 1943–45.
[2] 5-year median, 1941–45.

Anthrax.—Cases: Philadelphia, 1.
Dysentery, amebic.—Cases: New York, 2; Rochester, 1.
Dysentery, bacillary.—Cases: Charleston, S. C., 3; San Francisco, 1.
Dysentery, unspecified.—Cases: Cincinnati, 1; Mobile, 1; San Antonio, 7.
Leprosy.—Cases: Los Angeles, 1.
Tularemia.—Cases: Memphis, 1; New Orleans, 1.
Typhus fever, endemic.—Cases: Nashville, 1; Shreveport, 1; Houston, 3.

Rates (annual basis) per 100,000 population, by geographic groups, for the 87 cities in the preceding table (estimated population, 1943, 33,974,200)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	10.5	0.0	2.6	5.2	115	20.9	104.6	0.0	196	0.0	0.0	306
Middle Atlantic	10.2	0.9	11.1	4.6	671	9.7	68.5	0.9	162	0.0	0.0	75
East North Central	15.8	0.0	13.4	3.6	1,048	10.9	44.4	0.0	158	0.0	1.2	110
West North Central	59.5	0.0	20.6	2.3	801	9.2	87.0	0.0	165	0.0	2.3	11
South Atlantic	25.1	1.7	179.2	13.4	193	10.0	77.0	3.3	95	0.0	0.0	90
East South Central	23.6	0.0	94.4	29.5	277	35.4	100.3	0.0	24	0.0	0.0	30
West South Central	8.6	0.0	157.8	34.4	63	11.5	86.1	2.9	55	0.0	2.9	11
Mountain	15.9	0.0	262.1	23.8	548	0.0	143.0	0.0	207	0.0	0.0	103
Pacific	17.4	0.0	101.2	14.2	745	4.7	49.0	1.6	117	0.0	0.0	76
Total	17.4	0.5	50.9	8.6	660	10.8	67.9	0.9	144	0.0	0.6	91

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended January 19, 1946.—During the week ended January 19, 1946, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		26		119	503	30	41	60	160	939
Diphtheria		4	2	24	17	4				51
Dysentery, bacillary				2						2
German measles				4	35		1	6	4	50
Influenza		247			206				67	520
Measles		23	2	232	1,124	4	5	18	44	1,452
Meningitis, meningococcus				4	1	1		1		7
Mumps				37	135	34	6	59	68	339
Poliomyelitis				1						1
Scarlet fever		7	13	73	84	7	1	29	22	236
Tuberculosis (all forms)		3	8	96	54	10		20	39	230
Typhoid and paratyphoid fever				5	1					6
Undulant fever				1		1				2
Venereal diseases:										
Gonorrhea	1	13	16	166	169	49	30	55	100	599
Syphilis		5	7	158	151	12	11	11	49	404
Whooping cough				135	23	1				159

CHINA

Notifiable diseases—September 1945.—During the month of September 1945, certain notifiable diseases were reported in China as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	20	4	Relapsing fever	391	9
Cholera	1,939	394	Scarlet fever	19	2
Diphtheria	21	4	Smallpox	47	2
Dysentery	3,521	75	Typhoid fever	492	7
Plague	126	65	Typhus fever	175	

NORWAY

Notifiable diseases—October 1945.—During the month of October 1945, cases of certain notifiable diseases were reported in Norway as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	8	Mumps	63
Diphtheria	570	Paratyphoid fever	2
Dysentery, unspecified	21	Pneumonia (all forms)	1,748
Encephalitis, epidemic	6	Poliomyelitis	181
Erysipelas	617	Rheumatism	195
Gastroenteritis	5,435	Scabies	8,036
Gonorrhea	750	Scarlet fever	549
Hepatitis, epidemic	1,391	Syphilis	101
Impetigo contagiosa	5,825	Tuberculosis (all forms)	406
Influenza	2,115	Typhoid fever	12
Laryngitis	11,158	Undulant fever	1
Lymphogranuloma inguinale	1	Weil's disease	3
Malaria	1	Whooping cough	3,031
Measles	8,316		

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Plague

Bolivia—Santa Cruz Department—Vallegrande Province.—For the week ended February 9, 1946, 12 cases of plague with 4 deaths were reported in Vallegrande Province, Santa Cruz Department, Bolivia.

India—Calcutta.—For the week ended February 2, 1946, 1 death from plague was reported in Calcutta, India. All necessary precautions are being taken.

Smallpox

Canada—Saskatchewan Province.—For the week ended February 2, 1946, 2 cases of smallpox were reported in Saskatchewan Province, Canada.

Morocco (French).—For the period January 21–31, 1946, 170 cases of smallpox were reported in French Morocco.

Typhus Fever

Chile.—For the period December 1–29, 1945, 51 cases of typhus fever were reported in Chile. Provinces reporting the highest incidence are: Valparaiso, 8; Cautin, 3.

Colombia—Department of Cundinamarca—Bogota.—For the month of December 1945, 74 cases of typhus fever with 3 deaths were reported in Bogota, Department of Cundinamarca, Colombia.

Egypt.—For the week ended January 12, 1946, 67 cases of typhus fever were reported in all of Egypt.

Morocco (French).—For the period January 21–31, 1946, 152 cases of typhus fever were reported in French Morocco. Regions reporting the highest incidence are: Agadir and Frontier districts, 14; Casablanca, 53; Fez, 27; Marrakech, 29; Meknes, 16; Rabat, 13.

Turkey.—For the week ended February 9, 1946, 50 cases of typhus fever were reported in Turkey, including 9 cases reported in Istanbul, 5 cases in Izmir, 3 cases in Erzurum, 2 cases in Antalya, and 1 case in Samsun.

Yellow Fever

French Equatorial Africa—Chad Territory—Logone Department—Moundou.—On February 10, 1946, 1 fatal case of suspected yellow fever was reported in a native in Moundou, Logone Department, Chad Territory, French Equatorial Africa.

Venezuela.—During the week ended February 9, 1946, yellow fever was reported in Venezuela as follows: Las Guabinas, jurisdiction of San Felix, municipality of Rivas Berti, Tachira State, 1 case; Vega Grande Farm, municipality of Motatan, Trujillo State, 1 case.

* * *

DEATHS DURING WEEK ENDED FEBRUARY 9, 1946

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Feb. 9, 1946	Corresponding week, 1945
Data for 91 large cities of the United States:		
Total deaths	10,072	9,820
Average for 3 prior years	9,638	
Total deaths, first 6 weeks of year	63,490	58,238
Deaths under 1 year of age	608	659
Average for 3 prior years	634	
Deaths under 1 year of age, first 6 weeks of year	3,575	3,740
Data from industrial insurance companies:		
Policies in force	67,159,950	67,011,370
Number of death claims	14,323	14,452
Death claims per 1,000 policies in force, annual rate	11.1	11.2
Death claims per 1,000 policies, first 6 weeks of year, annual rate	11.7	10.8