

U.S. Department of Health, Education and Welfare

Public Health Service

Bureau of State Services

COMMUNICABLE DISEASE CENTER
POLIOMYELITIS SURVEILLANCE UNIT
50 Seventh St., N.E.
Atlanta 23, Ga.

POLIOMYELITIS VACCINATION SURVEY

ST. LOUIS COUNTY, MISSOURI

SEPTEMBER, 1959

Conducted by the St. Louis County Health Department
Dr. C. Howe Eller, Commissioner

In cooperation with

Mr. Thomas C. Dundon, Director of Vital Statistics, the Division of
Health of Missouri

Dr. E.A. Belden, Communicable Disease Consultant, the Division of
Health of Missouri

Dr. Richard G. Cornell, Chief, Laboratory and Field Station Statistics
Unit, Communicable Disease Center

Poliomyelitis Immunization Survey, St. Louis County*

A survey of the vaccination status of several areas of St. Louis County was conducted by the St. Louis County Health Department, C. Howe Eller, M.D., D.P.H., Commissioner, in August, 1959. The survey was planned with consultation by Dr. Richard G. Cornell of the Statistics Section, Communicable Disease Center, and Thomas Dundon, Director, Bureau of Vital Statistics, Missouri Division of Health, and was directed by Dr. John Glidewell, Director of Research, St. Louis County Health Department. Nurses, sanitarians and clerical staff from the Department volunteered to serve as interviewers.

St. Louis County is located immediately adjacent to St. Louis City and comprises 497 square miles. The county is characterized by its numerous municipalities (ninety-eight) which have resulted largely from its rapid growth in population. In 1920 the population of the county was 100,000; today its population is estimated to be well over 600,000.

The Survey Sample

Nine areas were designated for survey and were chosen on the basis of being representative of (1) urban, suburban and rural areas; (2) socio-economic levels of the population ranging from high income to low income groups; (3) school districts with various health programs; and (4) areas where health services to preschool children range from health department sponsored Child Health Conferences to private physician care only.

*Based on a report by Betty P. Carlin, M.D., St. Louis County Health Department.

Areas Selected for Survey

| Area Code | Identification | Demographic Characteristics |
|-----------|--|---|
| 1 | Kinloch-Robertson | Negro, low income group |
| 2 | Meacham Park-Elmwood Park- Brentwood-North Webster | Negro, low income group |
| 3 | Valley Park-Jefferson Barracks | White, low income group |
| 4 | Lemay | White, lower middle income group to low income group, largely urban |
| 5 | Wellston-Pine Lawn- Maryland Heights-Jennings | White, lower middle income group to low income group, largely urban |
| 6 | Ladue-Town and Country- Frontenac-Huntleigh- Westwood | White, upper income group, restricted suburban areas |
| 7 | University City-Richmond Heights-Clayton | White, upper middle to upper income group, urban to suburban |
| 8 | Kirkwood-Webster Groves- Glendale-Crestwood | White, middle income group to upper middle income group, suburban |
| 9 | Rural areas southwest (including Ellisville, Glencoe, Allenton, Times Beach, Eureka and farm households) | White, suburban to rural, with wide range of economic conditions |

The location of 839 households in the surveyed area was determined by a random procedure described in Manual for Conducting an Immunization Survey in an Urban Area (Part V., Polio Packet, 1959, DHEW, CDC). Table 1 shows the schedule of interviews and the number completed.

Table 1. Number of Survey Dwelling Units and Interviews

| | |
|--|-----|
| Number of household visits scheduled | 839 |
| Number of completed interviews | 796 |
| Completed on first visit | 645 |
| Completed by telephone | 61 |
| Completed by later visit | 90 |
| Number not completed | 29 |
| Information not indicated on interview | 14 |

The distribution of the sample population by age and areas surveyed is shown in Table 2.

Table 2. Age Composition of Sample

| Area | Number of Households | Total Persons | Age Groups | | | | | |
|-------|----------------------|---------------|------------|-----|-----|-------|-------|-------------|
| | | | Under 1 | 1-4 | 5-9 | 10-19 | 20-39 | 40 and Over |
| 1 | 97 | 401 | 13 | 39 | 51 | 104 | 84 | 110 |
| 2 | 102 | 433 | 11 | 52 | 59 | 94 | 78 | 139 |
| 3 | 87 | 399 | 16 | 56 | 67 | 87 | 104 | 69 |
| 4 | 100 | 371 | 8 | 37 | 39 | 77 | 79 | 131 |
| 5 | 90 | 291 | 4 | 30 | 29 | 38 | 94 | 96 |
| 6 | 96 | 343 | 7 | 21 | 38 | 79 | 64 | 134 |
| 7 | 84 | 250 | 3 | 5 | 22 | 44 | 55 | 121 |
| 8 | 87 | 330 | 10 | 28 | 47 | 64 | 67 | 114 |
| 9 | 96 | 368 | 8 | 37 | 61 | 66 | 78 | 118 |
| Total | 839 | 3186 | | | | | | |

Findings - Poliomyelitis Immunizations

The results indicate that a high percentage of school age children in the predominately white areas have received 3 or more poliomyelitis inoculations, the proportions being higher for the 5-9 age group than for the 10-19 age group.

Table 3. Percent of Population Surveyed with 3 or more Poliomyelitis Inoculations

| Area | Demographic Characteristics | Age Groups | | | |
|------|---|------------|-----|-------|-------|
| | | 1-4 | 5-9 | 10-19 | 20-39 |
| 1 | Negro, low income group | 49 | 53 | 41 | 8 |
| 2 | Negro, low income group | 75 | 53 | 48 | 12 |
| 3 | White, low income group | 61 | 69 | 63 | 10 |
| 4 | White, lower middle urban | 54 | 85 | 84 | 19 |
| 5 | White, lower middle urban | 87 | 83 | 79 | 20 |
| 6 | White, upper suburban | 67 | 92 | 94 | 50 |
| 7 | White, upper to middle urban - suburban | * | 100 | 75 | 42 |
| 8 | White, middle suburban | 79 | 96 | 91 | 42 |
| 9 | White, suburban to rural | 62 | 82 | 82 | 22 |

* Only 5 children in sample; all with 3 or more inoculations.

In Area 2, the low percentages of school age children, 53 percent and 48 percent, who have received 3 or more poliomyelitis inoculations are significant when compared to the high percentage, 75 percent, for the 1-4 age group. Three of the schools, those in Meacham Park, Brentwood and North Webster, in Area 2 are part of larger school districts (Kirkwood, Brentwood and Webster Groves) who serve a predominately middle to upper

middle income group population and rely largely on parents obtaining immunization from private physicians. The parents of children in Area 2 must obtain private medical care, or travel to the St. Louis County Health Center for free immunization services. There is no free clinic for school age (such as a school clinic) within the community.

The percentage of children with 3 or more poliomyelitis inoculations is comparatively low in both the preschool and school age children in Area 1 (Kinloch-Robertson) although the Health Department services such as Child Health Conferences, School Clinics and Public Health Nursing Programs are available. It is a matter of record that these facilities are not fully used by the community population.

The high percentage, 87 percent, of preschool children who have received 3 or more inoculations in Area 5, a white lower middle income group to low income group, is probably related to the extensive services of Child Health Conference available to parents who cannot afford private medical care. The percentage of preschool children, 67 percent, in Area 6 is not as high as might be expected in an upper income group.

The young adult age group does not appear to be well vaccinated against poliomyelitis. Here the levels of vaccination do correspond with socioeconomic levels.

Tables 4, 5 and 6 show poliomyelitis inoculations by age, area and number of inoculations.

Table 4. Number of Poliomyelitis Inoculations in the 1-4 Age Group

| Area | Total Persons | Number of Inoculations | | | | Percent With | |
|------|---------------|------------------------|-----|-----------|---------|--------------|------|
| | | 0 | 1-2 | 3 or more | Unknown | 3 or more | None |
| 1 | 39 | 7 | 12 | 19 | 1 | 48.7 | 17.9 |
| 2 | 52 | 6 | 7 | 39 | 0 | 75.0 | 11.5 |
| 3 | 56 | 12 | 10 | 34 | 0 | 60.7 | 21.4 |
| 4 | 37 | 9 | 6 | 20 | 2 | 54.1 | 45.0 |
| 5 | 30 | 3 | 1 | 26 | 0 | 86.7 | 11.5 |
| 6 | 21 | 2 | 5 | 14 | 0 | 66.7 | 14.3 |
| 7 | 5 | 0 | 0 | 5 | 0 | (*) | (*) |
| 8 | 28 | 0 | 6 | 22 | 0 | 78.6 | 0 |
| 9 | 37 | 8 | 6 | 23 | 0 | 62.2 | 21.6 |

*Number too small.

Table 5. Number of Poliomyelitis Inoculations in the 5-9 Age Group

| Area | Total Persons | Number of Inoculations | | | | Percent With | |
|------|---------------|------------------------|-----|-----------|---------|--------------|------|
| | | 0 | 1-2 | 3 or more | Unknown | 3 or more | None |
| 1 | 51 | 11 | 11 | 27 | 2 | 52.9 | 21.6 |
| 2 | 59 | 16 | 7 | 31 | 5 | 52.5 | 27.1 |
| 3 | 67 | 6 | 8 | 46 | 7 | 68.7 | 13.0 |
| 4 | 39 | 0 | 4 | 33 | 2 | 84.6 | 0 |
| 5 | 29 | 4 | 1 | 24 | 0 | 82.8 | 16.7 |
| 6 | 38 | 1 | 2 | 35 | 0 | 92.1 | 2.6 |
| 7 | 22 | 0 | 0 | 22 | 0 | 100.0 | 0 |
| 8 | 47 | 0 | 2 | 45 | 0 | 95.7 | 0 |
| 9 | 61 | 7 | 4 | 50 | 0 | 82.0 | 11.5 |

Table 6. Number of Poliomyelitis Inoculations in the 10-19 Age Group

| Area | Total Persons | Number of Inoculations | | | | Percent With | |
|------|---------------|------------------------|-----|-----------|---------|--------------|------|
| | | 0 | 1-2 | 3 or more | Unknown | 3 or more | None |
| 1 | 104 | 21 | 33 | 43 | 7 | 41.3 | 20.2 |
| 2 | 94 | 32 | 9 | 45 | 8 | 47.9 | 34.0 |
| 3 | 87 | 15 | 7 | 55 | 10 | 63.2 | 17.2 |
| 4 | 77 | 6 | 4 | 65 | 2 | 84.4 | 7.8 |
| 5 | 38 | 5 | 3 | 30 | 0 | 78.9 | 13.2 |
| 6 | 79 | 3 | 2 | 74 | 0 | 93.7 | 3.8 |
| 7 | 44 | 4 | 3 | 33 | 4 | 75.0 | 9.1 |
| 8 | 64 | 4 | 2 | 58 | 0 | 90.6 | 6.3 |
| 9 | 66 | 6 | 5 | 54 | 1 | 81.8 | 9.1 |

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RURAL SURVEY OF POLIOMYELITIS VACCINATION

JEFFERSON COUNTY, MISSOURI

SEPTEMBER 29 - OCTOBER 2, 1959

Conducted by the Jefferson County Health Department

Dr. Carl E. Rice, Director

Robert Scott, Health Educator

Directed by Mr. Thomas C. Dundon, Director of Vital Statistics, the Division
of Health of Missouri

In consultation with

Dr. E.A. Belden, Communicable Disease Consultant, the Division of Health
of Missouri

Dr. Richard G. Cornell, Chief, Laboratory and Field Station Statistics
Unit, Communicable Disease Center

Poliomyelitis Vaccination Survey
Jefferson County, Missouri

A survey of the vaccination status of the population of predominantly rural Jefferson County, Missouri, was conducted September 29 - October 2. The northern portion of Jefferson County is within commuting distance of St. Louis, and the northern and southern parts of the county were surveyed separately. The small, adjacent cities of Festus and Crystal City were taken as another study area as was the community of DeSoto. The professional staff of the Jefferson County Health Department, consisting mostly of public health nurses, interviewed in each of the four areas on successive days. In each area each professional person was assisted by a volunteer worker from that area. An area sampling plan was used which is similar to that described in the Manual for Conducting an Immunization Survey in an Urban Area (Serfling et al, 1959) but utilizes county road maps showing the number and approximate placement of houses.

The results of the survey are summarized in Table 1 which presents the number and percent of persons with no inoculations and with three or more inoculations by age for each of the four study areas. Approximate standard deviations of the percentages are also given in Table 1. The results for all four areas are similar and indicate low poliomyelitis immunization levels in the 0-4 and 15-39 age groups with a fairly high level of immunization in the 5-14 age group.

Table 1
 Poliomyelitis Immunization Status of Jefferson County, Missouri
 by Area and Age

| Age Group | Number of Persons | No Inoculations | | | 3 or More Inoculations | | |
|---------------------|-------------------|-----------------|-----|-------------------|------------------------|----|-------------------|
| | | Number | % | $\Delta \sigma^*$ | Number | % | $\Delta \sigma^*$ |
| NORTHERN RURAL AREA | | | | | | | |
| 0-4 | 49 | 18 | 37 | 9 | 19 | 39 | 8 |
| 5-14 | 92 | 9 | 10 | 4 | 73 | 79 | 6 |
| 15-39 | 97 | 61 | 63 | 5 | 26 | 27 | 5 |
| 40 and Over | 106 | 106 | 100 | 0 | 0 | 0 | 0 |
| SOUTHERN RURAL AREA | | | | | | | |
| 0-4 | 48 | 12 | 25 | 7 | 21 | 44 | 8 |
| 5-14 | 76 | 4 | 5 | 1 | 64 | 84 | 5 |
| 15-39 | 94 | 61 | 65 | 6 | 21 | 22 | 5 |
| 40 and Over | 127 | 123 | 97 | 2 | 1 | 1 | 1 |
| FESTUS-CRYSTAL CITY | | | | | | | |
| 0-4 | 49 | 7 | 14 | 5 | 24 | 49 | 9 |
| 5-14 | 103 | 2 | 2 | 1 | 88 | 85 | 4 |
| 15-39 | 109 | 63 | 58 | 6 | 37 | 34 | 6 |
| 40 and Over | 101 | 93 | 92 | 3 | 4 | 4 | 2 |
| DE SOTO | | | | | | | |
| 0-4 | 34 | 12 | 35 | 9 | 10 | 29 | 8 |
| 5-14 | 81 | 13 | 16 | 2 | 60 | 74 | 6 |
| 15-39 | 125 | 86 | 69 | 5 | 26 | 21 | 5 |
| 40 and Over | 90 | 90 | 100 | 0 | 0 | 0 | 0 |

* $\Delta \sigma$ is the approximate standard deviation of the percentage calculated by a method which takes into account familial association.