

PUBLIC HEALTH STATISTICS

STATE OF

OKLAHOMA

1951



PART I

REPORTABLE DISEASES

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Oklahoma State Department of Health
Oklahoma City, Oklahoma
G. F. MATHEWS, M. D., Commissioner

FOREWORD

Before any problem can be attacked intelligently, it is essential that so far as possible its nature and magnitude be known -- the nature in order to discover effective methods of attack; the magnitude to determine the most practical ways of applying these methods.

When the problem is human disease, the determination of the nature of the disease and of means of control belongs largely to the research laboratory and the clinic. The magnitude of the problem, however -- the prevalence and seriousness of a given disease throughout an entire population, as well as in each of its segments -- is defined only through experience, that is to say, through statistics. Furthermore, in order to improve the control of a disease, it is essential to evaluate what has been done in the past, and this, too, is a function of statistics.

Since it is axiomatic that statistical measures can be no better than the figures on which they are based, obviously the original data, to serve their purpose, must be accurate and complete. No amount of statistical treatment can compensate for faulty original data. The usefulness of statistical information, and hence perhaps the effectiveness of control measures, depends finally on those who have direct contact with patients and who have the responsibility for disease reporting. Hospital managements and physicians, by making sure that reportable diseases are fully, accurately, and promptly reported, can aid greatly in improving disease statistics. To those who have been helping in this way, thanks are due from all who are interested in improving the public health.

G. F. Matthews
G. F. Matthews, M. D.
Commissioner of Health

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PUBLIC HEALTH STATISTICS OF OKLAHOMA

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This publication is the eighth edition of Part I, Public Health Statistics of Oklahoma, and contains information concerning illness in the State's population as a result of the diseases which are reportable to the health department. Traditionally, those diseases which are communicable from one person to another have been required by law to be reported to the local health department so that prompt action might be taken to prevent the spread of infection to other people. To assist practicing physicians in making such reports, special cards are mailed to them each week from the State Department of Health. These cards provide space for listing the diagnosis, name of patient, address, age, sex, and race, and are preaddressed to the county health officer of the county in which the physician practices. After transcribing from these reports information needed for local action, the county health officer forwards the reports to the State Department of Health once each week where they are available for tabulation and summarizing of data for the entire State.

The most recent addition to the list of reportable diseases was cancer. While this disease is not known to be communicable from person to person, it has been made reportable so that whatever may be learned from studying case reports (of large numbers of victims) may be used to further the quest for knowledge of the disease.

Sources of case reports in addition to weekly report cards prepared by physicians, hospitals, clinics, and local health departments were the State Laboratory, death certificates, and interstate reciprocal notifications of disease contracted in Oklahoma but diagnosed or treated outside the State. Cases reported among the civilian population have been allocated to the county where the disease was contracted, if that information was known, or to the county of residence. Cases reported among military populations have been tabulated separately and have been included in State totals, but were not allocated to various counties since they are the responsibility of military officials and not of local health officers.

The following discussion presents, by disease topics, the more important aspects of the year's morbidity experience. Age-specific attack rates are featured in this discussion because accurate counts of the age distribution of the population were available from the 1950 Census enumeration. The discussion is followed by detailed tables showing attack rates for each racial group within the State and numbers of cases reported according to age, sex, race, month of report, and county of residence.

Population figures used in computing rates for this publication have been estimated by the Statistics Division. Numbers of deaths for 1951 are provisional pending final totals to be published in Part II of Public Health Statistics.

It is well known that cases of disease occur which are never reported to health departments. The proportion of underreporting varies from one disease to another depending upon the severity of the disease and the benefit or service to be derived by the patient following report to health authorities. It follows that cases of poliomyelitis are more completely reported than cases of measles. Nevertheless, the study of reported cases of disease is worthwhile for year-to-year comparisons even when the data do not give the complete picture of disease incidence. The most readily available measure of underreporting comes from death certificates which list a reportable disease as a cause of death when the case was not reported through case-reporting channels. Such death certificates routinely are checked through case report files and any cases previously unreported are added from information contained in the death certificate. Table 1 shows numbers of cases of selected diseases reported by death certificate expressed as a percentage of total reported cases.

Table 1

Cases of Communicable Diseases Reported by Death Certificate Only, Oklahoma, 1951

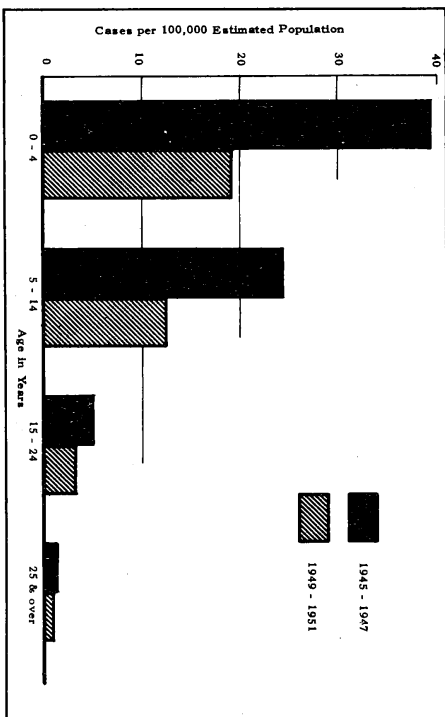
Disease	Total Number Reported Cases	Cases Reported by Death Certificate	Per Cent Reported by Death Certificate
Diphtheria	103	1	1.0
Dysentery	344	13	3.8
Encephalitis, infectious	21	6	28.6
Meningitis, meningococcal	72	6	8.3
Pneumonia	1,854	506	27.3
Poliomyelitis, acute	677	4	0.6
Rocky Mountain spotted fever	7	-	-
Scarlet fever	496	1	0.2
Septic sore throat	532	8	1.5
Tuberculosis	1,762	122	6.9
Whooping cough	1,115	15	1.3

DIPHTHERIA

During 1951, 103 cases of diphtheria were reported, representing the smallest number of cases and lowest case rate, 4.6 per 100,000 population, yet recorded. The greatest number of cases continues to occur among children (where case fatality rates are usually high). There were six deaths (provisional) in 1951 due to diphtheria.

The trend in the number of reported cases has been downward through the years. During the early thirties, there was a rapid decrease attributed to widespread immunization. Since that time, the decrease has not been so pronounced, but it has been steady. Chart 1 shows the age-specific attack rates for two recent three-year periods. The decrease in each age group is apparent.

Chart 1
Diphtheria Attack Rates by Age
1945-1947 and 1949-1951
Oklahoma



INTESTINAL DISEASES

A total of 344 cases of dysentery was reported in 1951. Of these cases, 24 were of amebic dysentery, 263 bacillary, and 57 unspecified as to type. January was the month in which the largest number of cases was reported (222), due largely to an outbreak in Comanche County. A school well was reportedly sunk too close to the septic tank and the well thereby became contaminated.

The Indian population had the highest attack rate for dysentery, 109.7 cases per 100,000 estimated population. The white and Negro populations showed much lower rates of 3.1 and 6.9 cases per 100,000 estimated population, respectively. This racial difference in attack rates has been observed also in past years. Table II, in the Appendix, shows the number of cases and attack rates for each form of dysentery, by race.

Other intestinal diseases included typhoid fever, which showed a marked decrease in number of cases reported in 1951, as compared with 1950. The numbers were 53 and 84, respectively. The smallest number of cases previously reported in any year was 34 in 1946. Forty cases of food poisoning were reported. Of these cases, 3 were reported as due to *Salmonella* infection, 2 to staphylococcus, while 35 were of unspecified nature. Five of the cases were fatal. There were 6 reported cases of infectious diarrhea of the newborn and 8 cases of paratyphoid fever.

MALARIA

Forty-four cases of malaria acquired in the United States were reported in Oklahoma during 1951. This number represents a marked decrease when compared with the 91 cases reported in 1950 and the 86 cases in 1949, the lowest number of cases ever reported previously in the State. Pushmataha County reported the greatest number of cases, 10. McIntosh County reported 7 cases and Creek County, 5 cases. The remainder of the cases were scattered throughout 14 other counties of the State.

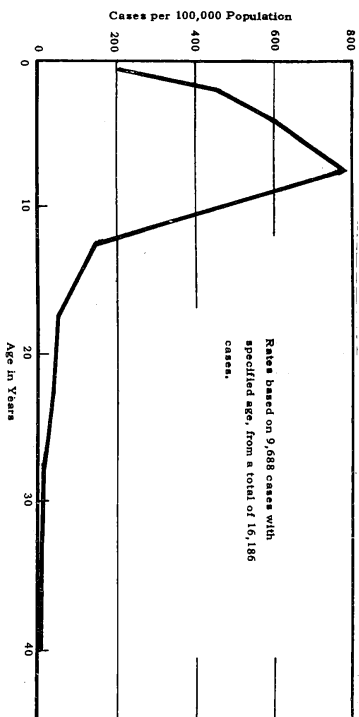
While the malaria attack rate was higher for the Indian population, 35.3 per 100,000 estimated population (19 cases), the actual number of cases was higher in the white population, 25 cases (rate, 1.2). There were no reported cases among the Negro population.

In addition to the cases just discussed, 376 cases of malaria were reported as having been acquired outside the United States. Of these, 369 cases were reported to be in military personnel.

MEASLES

After a low year in 1950, when only 646 cases of measles were reported, 1951 was again a high year, with 8,000 reported cases, the greatest number since 1934, when there were 9,432. Of the 4,605 cases for which the age of the patient was known, 2,244, or 49 per cent, occurred in the age group 5-9 years. This was the largest number reported from any five-year age group. Chart 2 shows the three-year average attack rates for the age groups for which Census figures are available.

Chart 2
Measles Attack Rates by Age
Oklahoma, 1949-1951

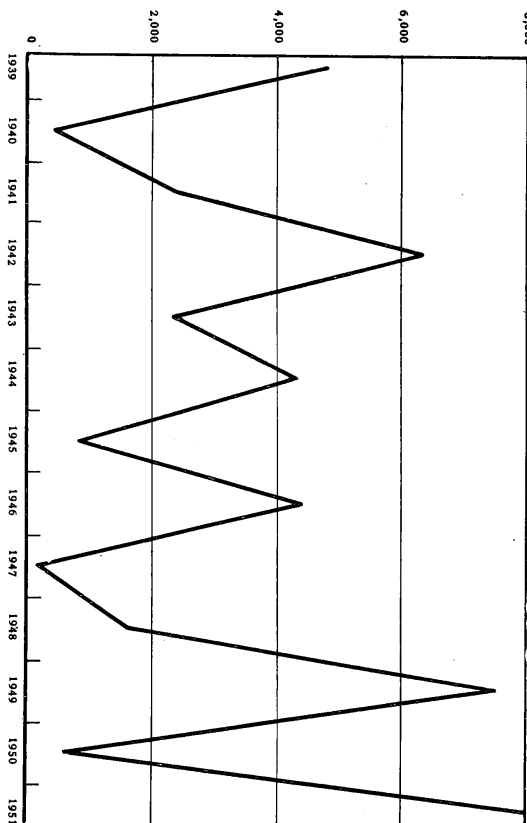


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More than half of the cases, 4,586, occurred in the white population. However, the rate per 100,000 estimated population was greatest in the Indian population, with 437.1. The white population had a rate of 225.3, and the Negro a rate of 144.3.

Chart 3 shows the incidence of measles for 13 years. The 2 to 3 year cyclical variation is apparent.

Chart 3
Reported Cases of Measles by Year.
Oklahoma, 1939-1951



MENINGOCOCCAL MENINGITIS

Of the 72 reported cases of meningococcal meningitis in 1951, 67 were among the white population, 4 Negro, and 1 Indian. The Indian case resulted in death. In addition, there were 17 fatalities from meningococcal infections in the white population. The greatest number of cases (7) was reported from Oklahoma County. The rest of the cases were scattered throughout 31 other counties, as may be seen from Table VIII in the appendix.

Following the pattern of higher incidence in the winter and spring, 15 cases were reported in February and 17 in December. Eight cases, the next largest number, occurred in April, and none in October. The remainder were spread rather evenly throughout the rest of the year, as shown by Table III.

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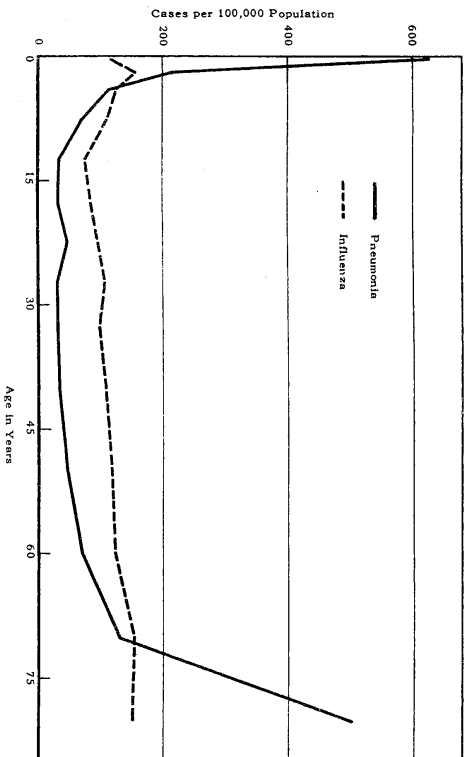
PNEUMONIA AND INFLUENZA

The year under discussion, 1951, is the last year in which pneumonia and influenza were on the list of reportable diseases. Both diseases have been grossly underreported in the past. In times of high incidence, cases were too numerous to be listed individually by name; a large number of cases never came under the care of a physician; and many of the now prevalent but ill-defined virus diseases were very likely being reported as pneumonia or influenza.

Age-specific rates for each of these diseases are shown in Chart 4 for the three-year period 1949-1951. The actual numbers reported in 1951 for each age group are shown in Table VII; for the other years, the figures are available from corresponding tables in previous issues of this publication. These tables indicate that large numbers of cases were reported with unspecified age of patient. In the case of influenza, for example, during the three years, 18,324 cases were reported. For 10,947 of these cases, the age was not specified. For pneumonia, the situation was somewhat better. Of 6,026 cases reported during the period, the age was omitted in the reports for 405. Hence, the actual attack rates for each age group in Chart 4 are doubtless far too low. However, it appears reasonable to assume that the cases with unspecified age were distributed in a random way throughout the reported cases. On this assumption, Chart 4 is a usable indication of the relative importance for various ages of these diseases.

Chart 4

Attack Rates for Pneumonia and Influenza by Age
Oklahoma, 1949-1951



POLIOMYELITIS

Because of the widespread publicity received in the last few years by poliomyelitis, it has become, probably, one of the most completely reported diseases. At least so far as clinically recognized cases are concerned. Information about the cases also was comparatively complete in 1951. Only one case was tabulated during the year for which the age was unknown, and there were no cases of unknown race or sex. Of course, a more definite effort was made to obtain complete information about each case of poliomyelitis than was done for diseases of smaller current epidemiologic interest.

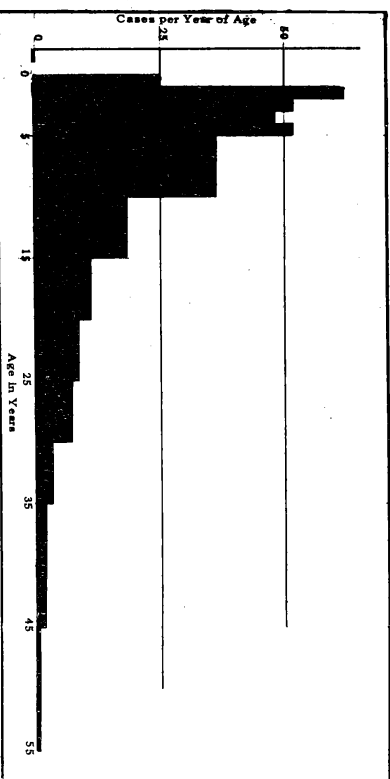
In 1951, 677 cases were reported. This was slightly more than the 533 cases reported in 1950, but was considerably below the epidemic year of 1949, when 1,322 were reported.

Poliomyelitis again in 1951 followed the pattern of previous years by reaching a peak in the months of August and September. In these months, 189 and 159 cases, respectively, were reported. The number of cases reported per month rose sharply before these two months, and declined as sharply afterwards.

The bar graph (Chart 5, below) shows another characteristic of this disease -- its distribution by age. It may be observed that the greatest incidence, as usual, was in children under 10 years of age.

Chart 5

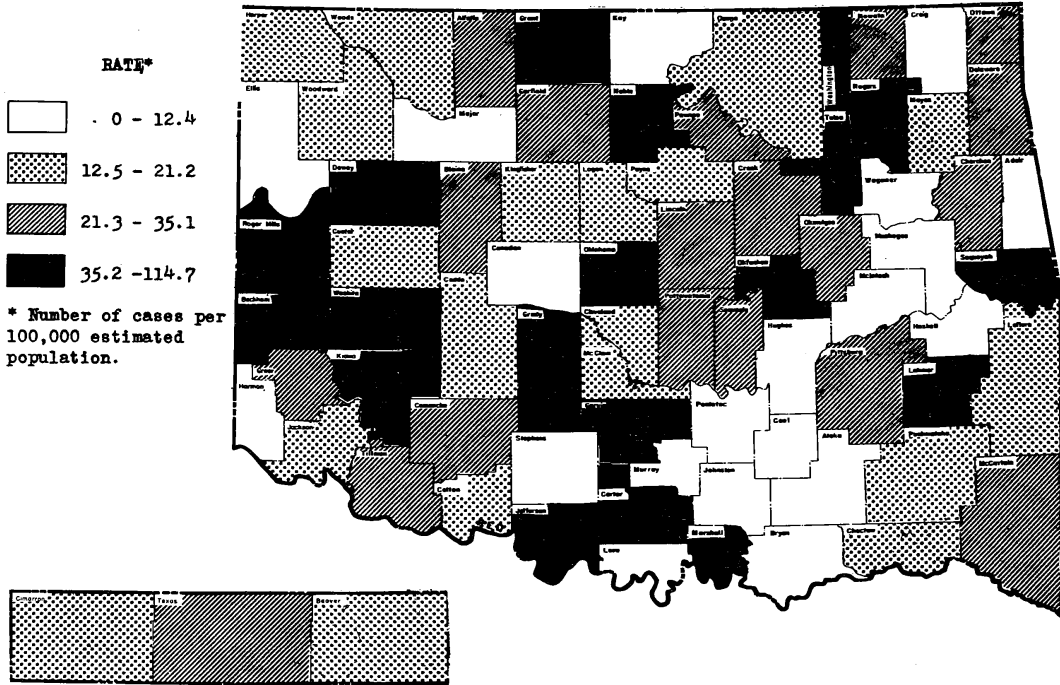
Poliomyelitis by Age, Oklahoma, 1951



The attack rate for this disease in the white population, 31.9 per 100,000 estimated population, was more than twice the rates for either of the other two population groups, which were 13.1 for the Negro population and 14.9 for the Indian, following the pattern of the past few years. The number of deaths from poliomyelitis in 1951 was 33, lower than the six-year average number, 1945-1950, which was 38.5.

Chart 6

Poliomyelitis Attack Rates, by County of Residence
Oklahoma, 1951



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The map (Chart 6, on the opposite page) is based on the attack rate for each county of the State. This rate varied from zero (no cases reported) for Ellis, Harmon, and Love counties, to 114.7 for Roger Mills County. The median rate was 21.2 per 100,000 estimated population. The largest number of cases was reported as occurring in residents of Oklahoma County. Tulsa County reported 95 cases, with 76 of these as residents of Tulsa City. The number of cases reported from other counties may be found in Table VIII.

RESPIRATORY STREPTOCOCCAL INFECTIONS

There were 1,028 cases of respiratory streptococcal infection reported in 1951: 496 of these were scarlet fever, and the rest, 532 cases, were septic sore throat. The occurrence of scarlet fever was greatest in the age groups under 15 years. The 5-9 year age group had the highest incidence, with 229 cases. This group also had the greatest number of cases of septic sore throat, but septic sore throat was relatively more prevalent than scarlet fever in the older age groups. These facts are brought out in Table 2, below.

Table 2

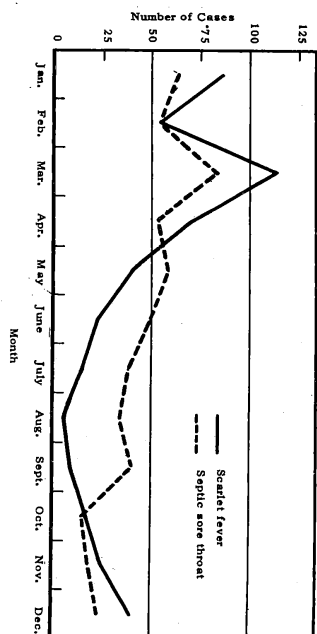
Attack Rates for Scarlet Fever and Septic Sore Throat, by Age
Oklahoma, 1949-1951

Age Group	Scarlet Fever				Septic Sore Throat			
	Reported Cases by Year	Average Rate	Reported Cases by Year	Average Rate	Reported Cases by Year	Average Rate	Reported Cases by Year	Average Rate
Total	1949	1950	1951	Rate	1949	1950	1951	Rate
Under 1 year	402	532	496	21.3	388	387	532	19.5
1-2 years	1	3	-	2.9	5	3	9	12.3
3-4 years	38	51	41	43.4	36	24	29	29.7
5-9 years	74	109	86	94.9	29	17	37	29.3
10-14 years	209	253	229	109.0	64	43	76	28.9
15-19 years	47	63	33	25.4	33	32	51	20.6
20 years and over	8	6	7	3.9	29	37	36	19.0
Unknown	17	16	16	0.9	126	145	175	10.5
		31	84	...	66	86	119	...

The highest incidence of these two diseases occurs in the United States in the late winter and early spring. Both diseases followed this pattern in Oklahoma in 1951, reaching a peak in March. The range in the number of cases reported monthly was much greater for scarlet fever than for septic sore throat, although the total number of cases for the year was about the same. There were 113 cases of scarlet fever reported in March and only 6 reported in August, the month with the lowest number of cases. The range for septic sore throat was from 84 cases in March to 14 in October. Chart 7 shows the distribution of reported cases by month. The figures on which this chart is based are given in Table III in the Appendix.

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Chart 7
Scarlet Fever and Septic Sore Throat by Month
Oklahoma, 1951



The attack rate was somewhat higher for urban areas than for rural, the rates being, for scarlet fever, 31.2 and 12.6, respectively, and for septic sore throat, 27.1 and 20.3. The higher rate in urban areas was probably related to the mode of transmission of the two diseases. Table IV shows the distribution of urban and rural cases by race.

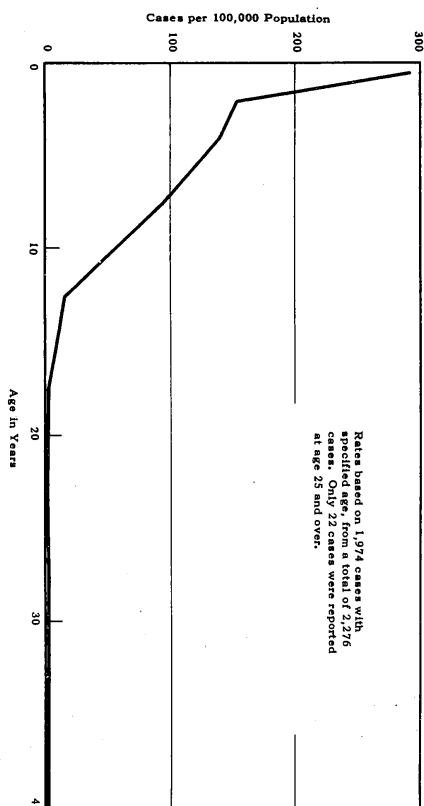
WHOOPIING COUGH

Whooping cough is one of the most dangerous diseases of childhood, and the number of cases is particularly heavy in the younger age groups. The total incidence in 1951, 1,115 cases, was higher than for any year since 1941. Of these cases, 887, or 79.8 per cent of those of specified age, occurred in children under 10 years of age, and 185, or 19.6 per cent, occurred in children under one year of age. The incidence in persons over 10 years of age was negligible. Chart 8 shows the three-year average age-specific attack rates.

The rate of incidence was greatest in the Indian population, this rate being 154.4 per 100,000 estimated population. The rate for the white population was 38.9, and for the Negro racial group, 76.3.

Due to their large populations, Oklahoma and Tulsa counties reported the greatest number of cases, 139 and 96, respectively. Washington County reported 74 cases, Beckham County, 65, and Garvin County, 64. Fourteen counties reported no cases of whooping cough. The rate for the urban population, 58.5 per 100,000 estimated population, was somewhat greater than the rural rate of 41.0.

Chart 8
Whooping Cough Age-Specific Attack Rates
Oklahoma, 1949-1950



OTHER ACUTE COMMUNICABLE DISEASES

There were 71 cases of brucellosis (undulant fever) reported in 1951. This was less than the number of cases reported in 1950 (95) and in 1949 (144); however, it was near the ten-year average, 1941-1950, which was 75.3 reported cases.

Twenty-one cases of infectious mononucleosis were reported in widely scattered counties. No county reported more than two cases except Oklahoma County, which reported seven cases.

The seven cases of Rocky Mountain spotted fever reported in 1951 were also in widely scattered counties. Three of the cases were in urban areas; four were in rural localities. The total number was smaller than in 1950, when ten cases were reported.

Among the other diseases reported were tetanus, 15 cases; trachoma, 52 cases; and tularemia, 52 cases.

No cases of human rabies were reported during the year. Because of the potential danger to public health, it may be mentioned that from laboratory reports, 123 cases of rabies in animals were recorded during the year. Tulsa, Muskogee, and Oklahoma counties had the largest numbers of such cases; 22, 17, and 14, respectively.

RHEUMATIC FEVER

Since 1949 was the first year in which rheumatic fever was reportable in the State, it is impossible to note any long-term trends in the incidence of the disease. However, figures are available for three-year age-specific rates, which are included in Table 3.

During 1951, more cases occurred in the age group 5-9 years, than in any other five-year age group. Of the 82 cases reported during the year, 20 cases, or 24.4 per cent of the total, occurred in this age group. The distribution of the other cases is shown in Table 3.

There were 18 deaths (provisional) due to rheumatic fever in 1951. Perhaps a better indication, though, of the seriousness of this disease was the fact that 219 deaths were due to chronic rheumatic heart disease, a late effect of rheumatic fever.

Table 3
Rheumatic Fever by Age, Each Year, Three-Year Averages and Age-Specific Attack Rates, Oklahoma, 1949-1951

Age Group	Reported Cases by Year			Three-year Average	Average Rate
	1949	1950	1951		
Total	103	73	82	86.0	3.9
Under 1 year	-	-	-	-	-
1-2 years	1	-	1	0.7	0.7
3-4 years	6	2	7	5.0	5.3
5-9 years	18	16	20	18.0	8.5
10-14 years	36	18	14	22.7	12.1
15-19 years	16	9	11	12.0	6.7
20-24 years	7	4	5	9.0	5.4
25-29 years	4	9	16	6.0	3.6
30-34 years	3	2	2	2.3	1.5
35-44 years	5	4	4	4.3	1.4
45-54 years	-	3	-	1.0	0.4
55-64 years	2	-	1	1.0	0.5
65-74 years	2	1	1	1.3	1.0
75 years and over	-	-	-	-	-
Unknown	3	5	-	2.7	...

TUBERCULOSIS

Although the attack rate for tuberculosis is still high, the number of reported cases has, in general, been gradually decreasing year by year. The rate for 1951 was 78.8 per 100,000 estimated population for all types of tuberculosis. There were 1,762 reported cases. As is usually the case, the rate was higher in the non-white than in the white population, as may be seen in Table II, in the Appendix. The numbers involved, by stage for respiratory cases, and by site for non-respiratory cases, are shown in Table 4, for each race.

Table 4
Reported Cases of Tuberculosis, by Type, Stage and Activity, by Race, Oklahoma, 1951

Type, Stage and Activity	Total	Race			
		White	Negro	Indian	Unknown
Tuberculosis of respiratory system:	1,682	1,371	130	179	2
Minimal, active	126	98	6	22	-
Moderately advanced, active	232	182	21	29	-
Far advanced, active	177	115	28	34	-
Active, unspecified stage	210	180	14	14	2
Arrested (including inactive)	530	470	28	32	-
Activity questionable	198	170	12	16	-
Activity unspecified	209	156	21	32	-
Tuberculosis of other sites:	80	46	14	20	-
Meninges and central nervous system	24	14	4	6	-
Intestines, peritoneum, mesentery	5	2	2	1	-
Vertebral column	5	1	1	3	-
Other bones and joints	7	3	1	3	-
Lymphatic system	10	5	2	3	-
Genito-urinary system	12	11	-	1	-
Adrenal glands	2	-	1	1	-
Other organs	2	2	-	-	-
Disseminated (miliary)	13	8	3	2	-

While only 2.0 per cent of the reported cases of respiratory tuberculosis were in children under 15 years of age, the situation was quite different for non-respiratory sites. For these sites, 42.3 per cent of the cases were in these younger ages, the actual number being 33, from a total of 80 cases, as may be read from Table VII. Table 5, below, shows the age-specific rates for respiratory and non-respiratory cases for the period 1949-1951.

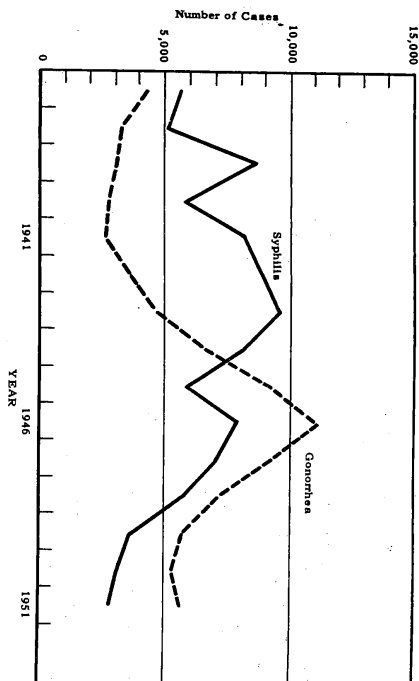
Table 5
Attack Rates for Tuberculosis, Respiratory and Non-Respiratory, by Age and Race, Oklahoma, 1949-1951

Age Group	Average Attack Rates		Age Group	Average Attack Rates	
	Respiratory Sites	Non-Respiratory Sites		Respiratory Sites	Non-Respiratory Sites
Total	89.9	2.5	25-34 years	92.0	1.5
Under 5 years	5.8	7.5	35-44 years	108.5	1.7
5-9 years	2.7	0.9	45-54 years	140.3	1.1
10-14 years	9.4	2.1	55-64 years	184.9	3.1
15-24 years	62.6	1.4	65-74 years	200.1	3.6
			75 years & over	179.9	5.7

VENEREAL DISEASES

The downward trend in the yearly number of reported cases of syphilis, which began in 1947, continued in 1951, when 2,906 cases were reported, compared with 3,169 in 1950. There was a slight increase in the number of reported cases of gonorrhea, 5,573 cases having been reported in 1951, compared with 5,309 in 1950. This increase was probably due to the increased emphasis placed on gonorrhea case finding with the greater degree of control of syphilis. The number of reported cases for each year from 1937 through 1951 is shown in Chart 9.

Chart 9
Reported Cases of Syphilis and Gonorrhea
Oklahoma, 1937-1951



Quite a difference was observed in the racial distribution of the two diseases, as shown by Table II in the Appendix. About 57 per cent of the reported cases of syphilis were in the white group, 33 per cent were Negro, and 9 per cent Indian; whereas 34 per cent of those having gonorrhea were white, 60 per cent Negro, and 5 per cent Indian.

Table 6, below, shows the occurrence, by sex, of each venereal disease, syphilis being broken down by type or stage. More cases were reported in males than in females for each of these diseases except syphilis and granuloma inguinale (only five cases of the latter disease having been reported -- all in females). The excess of syphilis cases in females was in the early latent and congenital categories.

A breakdown by age of cases of syphilis for certain groups of stages, together with the percentages for each age group, is included in Table 7. The largest number of cases of primary and secondary and early latent syphilis were in the age group 15-24 years; on the other hand, more than one-half of all cases of late and late latent syphilis were in persons 45 years or older.

Table 6
Reported Cases of Venereal Diseases,
by Disease, Stage, and Sex, 1951

Disease and Stage	Total	Male	Female	Unknown
Total venereal diseases	8,534	4,946	3,583	5
Gonorrhea	5,573	3,460	2,113	-
Syphilis, all stages	2,906	1,445	1,461	5
Primary and secondary	179	95	84	-
Early latent	556	217	339	-
Late and late latent	1,861	963	914	4
Congenital	212	93	118	1
Not stated	78	77	1	-
Optic atrophy	3	2	1	-
Other venereal diseases	52	39	13	-
Chancroid	35	28	7	-
Granuloma inguinale	5	-	5	-
Lymphogranuloma	12	11	1	-

There were 100 deaths from syphilis during 1951 and two from gonorrhea (two male Negroes died from late effects of the disease). Of the deaths assigned to syphilis, 29 were due to aneurysm of aorta, and 27 to general paralysis of the insane.

Table 7
Reported Cases of Syphilis by Certain Specified Stages,
by Age Group, Oklahoma, 1951

Age Group	Primary and Secondary		Early Latent		Late Latent	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total cases with age specified	168	100.0	510	100.0	1,752	100.0
Under 15 years	5	3.0	5	1.0	1	0.1
15-24 years	74	44.0	193	37.8	75	4.3
25-34 years	50	30.0	148	29.0	302	17.2
35-44 years	21	12.5	95	18.6	497	28.4
45 years and over	18	10.7	69	13.5	877	50.1

MALIGNANT NEOPLASMS

Cancer having been made reportable August 15, 1947, figures for four years became available for study when data were tabulated for 1951. Study of statistical data may prove of especial value here, since this disease (or group of diseases) is not so well understood with regard to etiology and method of attack as are most of the other diseases discussed in this publication.

In the discussion of cancer, as in other sections of this bulletin, particular emphasis is placed on age-specific rates. Also, because sex is an important factor in attack by cancer, sex-specific rates have been included, such computations being practicable for the years 1949-1951, since the composition of the mid-year population is available from the decennial Census.

The total number of cases reported through regular case-reporting channels in 1951 was 1,369, the smallest number reported in any of the four years (the other figures being 1,636 for 1948, 1,706 for 1949, and 1,649 for 1950). It is unlikely, however, that this decline represented a true decrease in incidence of cancer, because the number of deaths from this cause continued high, as will be discussed more fully in the section on cancer reported by death certificate.

The form used for cancer reporting requests information as to whether or not metastasis had occurred, and if so, as to the metastatic site. Of the 1,369 reports, 544, or 40.5 per cent, included such information, and in 186, or 33.6 per cent of these specified cases, metastasis had occurred. In 148 cases, the metastatic site was specified, while in the other 38, the statement was merely that metastasis had occurred. A considerable variation was observed in the proportion of metastasis from various primary sites. The number of cases for which this information was omitted, however, was so large as to make the results of doubtful value. Even when cancers of the lymphatic and hematopoietic tissues are excluded from the consideration, the percentages of metastasis (for cases where such information was given) varied from 100 for brain and other parts of the central nervous system (based, however, on only one specified case) to zero for the category, "nose, nasal cavities, middle ear, and accessory sinuses." Sites showing high rates of metastasis were female genital organs (exclusive of uterus), 85.7 per cent; digestive organs and peritoneum, 72.5; male genital organs, 66.7; breast, 62.1; respiratory system (exclusive of nose, etc., mentioned above), 54.5. The rank order of these percentages was quite different from those obtained in other years and reported in previous issues of this publication. Such variation from year to year is probably due, at least in part, to the low proportion of specified cases.

Similarly, information as to whether or not biopsy was performed was available for only 70.4 per cent of the cases, and in 77.9 per cent of these cases there was a biopsy. For each of the major site categories, at least 50 per cent of the cases for which this information was given, were biopsied.

In order to avoid a mass of detail, figures for individual sites within the major categories (cf. Table V) are not included in this publication, although available in unpublished tabulations. However, in certain of the site groups, some sites were so predominant as to justify special mention. Thus,

of the 122 reported cancers of the buccal cavity and pharynx, more than half (67) were primary of the lip. In the category, "digestive organs and peritoneum," there were 54 cases of cancer of the stomach, 45 of the rectum, and 41 of other parts of the large intestine. The cases of cancer of the uterus were distributed as follows: 171 were primary in the cervix, 23 in the corpus, while the location was not specified for 19. In other female genital organs, 27 of the 34 cases originated in the ovary, while 39 of the 54 cancers of the male genital organs were primary in the prostate.

The distribution of cancer cases by race and sex for each major site group is included in Table V, in the Appendix. The influence of sex on cancer mortality deserves considerable attention at this point. During 1951, a few more cases were reported in males than in females (687 and 682, respectively). The excess was somewhat greater in 1949 and 1950. However, in 1948, more cases were reported in females. Death figures (available in Part II of Public Health Statistics) show somewhat the same picture from year to year -- little difference between the sexes, with the excess varying from one sex to the other.

This relationship is the more remarkable when it is realized that the susceptibility of various sites differed widely between the sexes, as is apparent from Table V. Furthermore, the age distribution of reported cases was different for males than for females. The median age of female cases reported in the period 1949-1951 was about 58 years, whereas the median age of the males was about seven years greater. Chart 10 shows something further about these age distributions for the three-year period. The female rate was somewhat higher than the male during the young adult years and into middle life, to be exceeded by the male rate beginning, apparently, about age 55. The attack rate for males increases sharply with age for all age groups which were tabulated. In contrast, the rate for females fell for the group 75 years of age and older.

Chart 10
Attack Rates from Cancer by Sex and Age
Oklahoma, 1949-1951

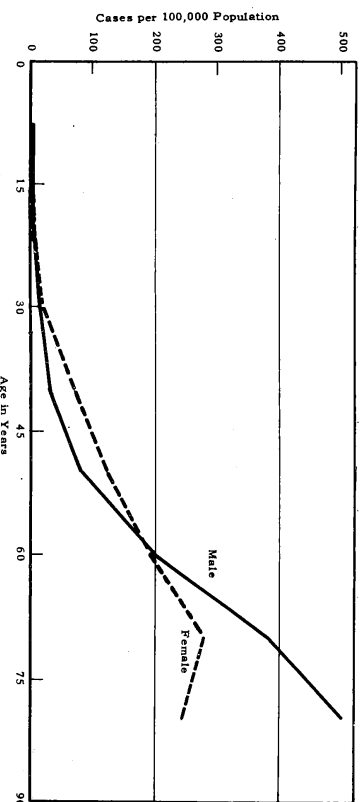
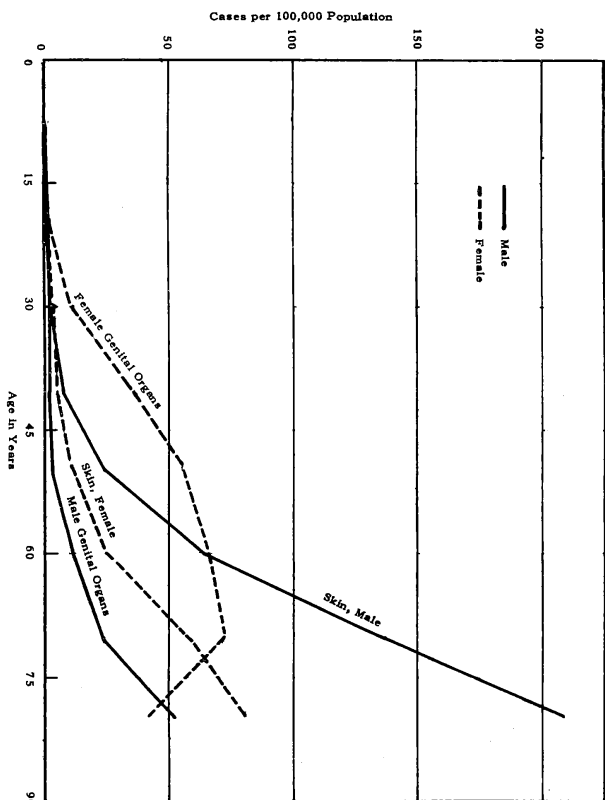


Chart 11 exhibits age- and sex-specific attack rates for a site common to both sexes (the skin), together with rates for male genital organs and for female genital organs. The graph of the last-mentioned data is seen to exhibit the same sort of pattern as the chart for all female cases (Chart 9, dashed line), while male genital organs and skin (both sexes) showed a strong resemblance to the total male graph, although the rate for cancer of the skin in females showed a smaller rate of increase with age.

Chart 11

Attack Rates from Cancer (Selected Sites) by Sex and Age
Oklahoma, 1949-1951



Cancer Cases Reported by Death Certificate Only

Since cancer was first made reportable (at which time physicians were asked to report all cases then under their care), a cumulative file has been maintained to use in eliminating duplicate case reports. All resident deaths in 1951 assigned to cancer were checked against this file. Deaths of persons who had not previously been reported as cases were tabulated as "cancer cases reported by death certificate only."

As was previously mentioned, the number of cancer case reports received during 1951 was smaller than the number received in 1950. The number of cases reported by death certificate, though, increased by an amount more than compensating for this decrease, from 2,172 in 1950 to 2,459 in 1951. In fact, the total number of cases reported through regular channels plus the number by death certificate has varied little during the four years of reporting, the figures being 3,929 in 1948, 3,837 in 1949, 3,821 in 1950, and 3,828 in 1951. Such a situation is, of course, to be expected, if the actual number of cases has remained fairly constant from year to year.

Table 8, below, shows the number and percentage of cases assigned to various site groups for cancer reported through normal channels and by death certificate.

Table 8

Cases of Cancer Reported Through Regular Channels and by Death Certificate Only, Number and Per Cent, by Primary Site of Lesion, Oklahoma, 1951

Primary Site	Cases Reported Through Regular Channels		Cases Reported by Death Certificate Only	
	Number	Per Cent	Number	Per Cent
Total	1,369	100.0	2,459	100.0
Buccal cavity and pharynx	122	8.9	39	1.6
Digestive organs and peritoneum	203	14.8	830	33.8
Respiratory system	133	9.7	71	2.9
Breast	102	7.4	177	7.2
Uterus	213	15.6	203	8.3
Other female genital organs	34	2.5	57	2.3
Male genital organs	54	3.9	165	6.7
Urinary organs	40	2.9	109	4.4
Skin	292	21.3	57	2.3
Brain and other parts of central nervous system	12	0.9	63	2.6
Bone	19	1.4	26	1.1
Lymphosarcoma and reticulosarcoma	16	1.2	37	1.5
Kodgkin's disease	5	0.4	26	1.1
Leukemia	18	1.3	131	5.3
Other lymphatic and hematopoietic tissues	5	0.4	25	1.0
Other and unspecified sites	101	7.4	443	18.0

ОКЛАБОМА, 1942-1951

Disease	1912		1913		1914		1915		1916	
	Number	Date	Number	Date	Number	Date	Number	Date	Number	Date
Active in man	60	3.1	1	0.0	50	2.2	2	0.1	-	-
Arteriosclerosis	1,029	44.5	841	36.5	-	35.8	682	29.9	632	1.6
Bacillary dysentery	-	-	-	-	-	-	-	-	-	27.8
Diphtheria	399	17.2	239	10.6	298	15.6	300	13.1	222	9.8
Scarlet fever	357	15.2	262	10.6	262	10.6	192	8.2	80	3.4
Septicæmia, infectious	3,666	156.7	4,694	207.8	6,996	287.7	9,216	403.8	11,090	486.4
Conjunctivæ	1,212	51.3	1,181	50.1	1,468	61.4	1,101	44.2	1,316	55.3
Influenza	3,701	160.0	6,841	289.1	11,778	513.7	6,924	300.4	6,885	286.8
Measles	1,212	51.3	1,181	50.1	1,468	61.4	1,101	44.2	1,316	55.3
Whooping-cough	6,331	273.7	2,795	113.2	4,316	188.3	4,101	168.8	19,111	783.1
Monilia, entomozoonal	39	1.7	124	5.4	117	5.1	84	3.7	77	3.4
Proteobacteria, all forms	1,959	86.7	1,446	62.8	2,346	102.3	1,928	85.8	1,709	75.2
Polioviruses, acute	28	1.2	594	25.8	94	2.4	20	0.8	494	19.1
Rabies in man	2	0.1	1	0.0	13	0.5	1	0.1	2	0.1
Rabies in dogs	22	1.0	1	0.0	1	0.0	1	0.1	1	0.1
Rocky Mountain spotted fever	772	33.4	1,039	44.7	1,003	43.7	1,003	43.9	546	24.0
Scarlet fever	-	-	-	-	-	-	-	-	-	-
Septicæmia throat	342	14.8	222	9.6	341	14.7	194	8.5	180	7.9
Smallpox	8	0.3	19	0.8	8,318	354.3	3,642	156.6	16	0.6
Syphilis	8,20	363.2	4,732	198.0	5,493	235.3	5,973	251.8	7,907	326.7
Tuberculosis, all forms	1,464	63.2	1,721	76.0	2,867	123.1	2,246	96.4	2,664	117.3
Typhoid, paratyphoid fevers	40	1.7	33	1.4	10	0.4	25	1.1	86	3.6
Typhus fever	200	8.6	168	7.3	109	4.8	10	0.4	58	2.5
Unknown group	492	20.5	895	38.4	426	18.6	713	31.2	499	21.1

Symbols Used in Tables

- Number or rate is zero
... Item not applicable
0.0 Rate is more than 0 but
less than 0.05

Disease	1947		1948		1949		1950		1951	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Antibiotic in man	1	0.0	-	-	-	-	-	-	-	-
Disinfectants	87	6.1	87	3.8	146	6.4	4.7	71	7	8.2
Chemical sprays	967	42.7	1,427	62.7	1,751	78.1	2,512	112.5	1,910	85.5
Vaccine	-	-	1	0.0	-	-	2,952	124.5	-	35.2
Diphtheria	209	9.2	165	7.3	132	5.9	131	5.8	103	4.6
Scarlet fever	149	6.6	103	4.6	73	3.3	111	5.0	21	0.9
Whooping cough	149	6.6	103	4.6	73	3.3	111	5.0	21	0.9
Measles	9,335	412.7	7,082	314.6	5,987	267.1	5,309	237.7	5,573	249.4
Infants, vaccinated in U. S.	25,095	1105.6	3,972	176.4	2,037	90.9	11,768	526.9	4,519	202.2
Measles, vaccinated in U. S.	556	23.7	302	13.4	86	3.8	92	4.1	376	16.8
Measles, vaccinated outside U. S.	168	7.4	1,633	72.5	7,538	336.4	646	29.0	8,000	358.0
Whooping cough, semi-protection	67	3.0	65	2.9	56	2.5	56	2.5	72	3.2
Measles, mild fever	860	38.7	887	39.2	2,765	123.2	2,937	130.5	1,659	74.2
Measles, all forms	2,002	88.5	1,648	73.2	1,851	82.6	2,321	103.9	1,884	83.0
Polio, all forms	59	2.6	369	16.4	1,322	59.0	533	23.9	677	30.3
Polio, all forms, acute	36	1.6	31	1.3	27	1.1	11	0.4	7	0.3
Polio, all forms, chronic	23	1.0	38	1.7	125	5.7	42	1.9	10	0.4
Rocky Mountain spotted fever	353	15.6	591	26.3	402	17.9	532	23.8	496	22.2
Scarlet fever	198	8.8	176	7.8	368	16.3	387	17.3	332	15.0
Sepsis acute throat	4	0.2	1	0.0	2	0.0	2	0.0	2	0.0
Salmonella	7,177	317.5	5,727	258.4	3,657	165.4	3,169	141.3	2,695	120.8
Shigella	2,495	107.5	4,346	190.3	2,462	107.2	2,109	96.9	1,762	78.8
Tuberculosis, all forms	130	5.7	84	3.7	71	3.2	64	2.7	52	2.4
Typhoid fever	96	4.2	84	3.7	74	3.4	81	3.8	53	2.4
Typhus fever	4	0.1	1	0.0	3	0.1	4	0.1	1	0.0
Whooping cough	1,055	46.6	1,084	48.1	228	10.2	933	41.8	1,115	49.9

TABLE VI. REPORTED CASES OF SELECTED COMMUNICABLE DISEASES BY SEX AND RACE,
OKLAHOMA, 1951

Disease	Total			White			Negro			Indian			Unknown		
	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown
Anthrax in man	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis	58	12	1	46	8	-	-	-	-	1	-	-	11	4	1
Chickpox	727	682	501	664	615	83	31	36	1	13	18	-	19	13	417
Diphtheria	44	59	-	38	53	-	3	5	-	2	1	-	1	-	-
Dysentery	67	72	205	33	37	-	7	3	-	27	32	-	-	-	205
Encephalitis, infectious	11	10	-	9	6	-	1	3	-	1	1	-	-	-	-
German measles	199	99	37	177	97	-	20	1	-	1	-	-	1	1	37
Gonorrhea	3,460	2,113	-	1,151	769	-	2,190	1,150	-	105	186	-	14	8	-
Hookworm	7	5	1	6	5	-	-	-	-	-	-	-	1	-	1
Influenza	1,025	944	2,550	802	734	125	58	56	-	126	125	-	39	29	2,425
Malaria, acquired in U. S.	29	15	-	19	6	-	-	-	-	10	9	-	-	-	-
Malaria, acquired outside U. S.	376	-	-	358	-	-	16	-	-	-	-	-	2	-	-
Measles	2,523	2,375	3,102	2,301	2,121	164	84	52	74	79	156	-	59	46	2,864
Meningitis, meningococcal	45	27	-	42	25	-	2	2	-	1	-	-	-	-	-
Mumps	852	531	276	810	508	11	21	6	3	11	7	-	10	10	262
Ophthalmia neonatorum	2	1	-	-	-	-	2	1	-	-	-	-	-	-	-
Paratyphoid fever	2	6	-	2	4	-	-	-	-	-	1	-	-	1	-
Pneumonia, all forms	1,069	729	56	875	581	1	129	66	-	62	76	-	3	6	55
Polioomyelitis, acute	376	301	-	357	293	-	12	7	-	7	1	-	-	-	-
Rocky Mountain spotted fever	3	4	-	2	3	-	-	-	-	-	1	-	1	-	-
Scarlet fever	217	226	53	210	221	6	1	-	4	2	1	-	4	4	43
Septic sore throat	234	225	73	225	207	7	5	8	-	3	5	-	1	5	66
Smallpox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Syphilis	1,445	1,456	5	848	797	1	464	501	-	115	136	-	18	22	4
Tetanus	11	4	-	10	3	-	1	-	-	-	1	-	-	-	-
Trachoma	27	25	-	6	3	-	-	-	-	21	21	-	-	-	-
Tuberculosis, respiratory	973	708	1	823	547	1	81	49	-	68	111	-	1	1	-
Tuberculosis, other forms	44	36	-	24	22	-	9	5	-	11	9	-	-	-	-
Tularemia	32	19	1	25	12	-	1	1	-	2	-	-	4	6	1
Typhoid fever	28	24	1	23	21	-	4	2	-	-	-	-	1	1	1
Typhus fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veneral diseases, other	39	13	-	12	1	-	27	12	-	-	-	-	-	-	-
Vincent's angina	29	14	-	29	13	-	-	-	-	1	-	-	-	-	-
Whooping cough	442	510	163	353	412	27	51	57	3	36	39	8	2	2	125

TABLE VII. REPORTED CASES OF SELECTED COMMUNICABLE DISEASES BY AGE,
OKLAHOMA, 1951

Disease	All Ages	Age in Years															75 and Over	Unknown
		Under 1 Year	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-44	45-54	55-64	65-74		
Anthrax in man	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis	71	1	-	-	1	-	2	2	3	2	5	6	16	14	3	1	-	15
Chickpox	1,910	48	75	94	122	142	796	62	15	13	12	8	6	2	5	1	1	568
Diphtheria	103	3	3	12	10	9	26	12	7	4	5	-	4	1	1	-	-	6
Dysentery	344	20	11	11	7	7	15	2	4	5	5	-	13	7	9	11	4	213
Encephalitis, infectious	21	2	1	1	1	1	2	1	2	1	-	2	2	1	2	2	-	2
German measles	395	11	28	18	15	11	49	16	43	86	2	4	-	-	-	-	-	52
Gonorrhea	5,573	9	3	1	4	1	13	46	1,104	1,786	1,086	455	351	102	21	10	2	579
Hookworm	13	-	-	-	-	-	3	3	1	-	2	-	1	-	1	-	-	2
Influenza	4,519	54	54	70	46	49	152	94	84	85	133	117	266	218	186	177	74	2,660
Malaria, acquired in U. S.	44	-	-	1	2	3	7	6	1	-	6	3	7	4	1	-	2	1
Malaria, acquired outside U. S.	376	-	-	-	-	-	-	-	64	213	36	31	22	-	-	-	-	10
Measles	8,000	125	285	405	413	539	2,244	287	108	127	22	24	15	7	2	2	-	3,395
Meningitis, meningococcal	72	11	6	7	4	2	9	11	3	4	2	-	3	6	1	1	-	2
Mumps	1,659	5	26	52	77	101	465	164	113	102	44	64	60	19	7	4	2	354
Ophthalmia neonatorum	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratyphoid fever	8	-	1	1	-	-	-	-	-	-	1	1	1	1	-	-	1	1
Pneumonia, all forms	1,854	256	123	95	57	62	117	58	75	120	47	49	90	92	121	131	270	91
Polioomyelitis, acute	677	25	62	52	48	52	183	93	57	43	36	15	8	2	-	-	-	1
Rocky Mountain spotted fever	7	-	-	1	-	-	1	2	-	-	-	-	-	-	1	-	-	1
Scarlet fever	496	-	11	30	36	50	229	33	7	3	5	2	4	1	1	-	-	84
Septic sore throat	532	9	15	14	19	18	76	51	36	39	36	30	38	21	6	2	3	119
Smallpox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Syphilis	2,906	15	3	6	4	2	20	34	179	251	265	268	621	501	303	153	33	268
Tetanus	15	1	1	-	-	-	1	2	1	1	-	2	-	-	5	1	-	-
Trachoma	52	-	1	-	-	2	9	13	7	2	1	-	4	3	6	3	1	-
Tuberculosis, respiratory	1,682	3	3	3	1	-	5	17	66	127	147	116	256	272	280	202	91	93
Tuberculosis, other	80	7	9	5	2	4	2	4	2	2	2	4	7	5	10	9	4	2
Tularemia	52	-	-	-	-	1	4	3	5	1	2	2	12	2	3	2	-	15
Typhoid fever	53	1	2	1	3	2	5	7	4	5	3	5	8	3	2	-	-	2
Typhus fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veneral diseases, other	52	-	-	-	-	-	-	-	19	16	8	2	1	2	1	-	-	3
Vincent's angina	43	1	-	1	-	1	-	-	11	20	2	-	-	-	-	-	-	7
Whooping cough	1,115	185	110	115	92	103	282	44	5	-	2	-	2	-	-	2	-	169

**TABLE VIII. REPORTED CASES OF COMMUNICABLE DISEASES BY COUNTY OF RESIDENCE
OKLAHOMA CITY, TULSA CITY AND MILITARY, 1951**

Disease	State	Male	Female	Both	Sexes	Problem	Male	Female	Both	Gender
Arterio in man	1	10	1	1	1	10	1	1	1	11
Arterio in man	1,970	10	1	1	1	10	1	1	1	11
Arterio in man	1,303	10	1	1	1	10	1	1	1	11
Arterio in man	24	10	1	1	1	10	1	1	1	11
Arterio in man	263	10	1	1	1	10	1	1	1	11
Arterio in man	21	10	1	1	1	10	1	1	1	11
Arterio in man	335	10	1	1	1	10	1	1	1	11
Arterio in man	5,773	10	1	1	1	10	1	1	1	11
Arterio in man	4,419	10	1	1	1	10	1	1	1	11
Arterio in man	1,46	10	1	1	1	10	1	1	1	11
Arterio in man	376	10	1	1	1	10	1	1	1	11
Arterio in man	6,001	10	1	1	1	10	1	1	1	11
Arterio in man	1,659	10	1	1	1	10	1	1	1	11
Arterio in man	3	10	1	1	1	10	1	1	1	11
Arterio in man	3	10	1	1	1	10	1	1	1	11
Arterio in man	518	10	1	1	1	10	1	1	1	11
Arterio in man	316	10	1	1	1	10	1	1	1	11
Arterio in man	262	10	1	1	1	10	1	1	1	11
Arterio in man	742	10	1	1	1	10	1	1	1	11
Arterio in man	677	10	1	1	1	10	1	1	1	11
Arterio in man	7	10	1	1	1	10	1	1	1	11
Arterio in man	56	10	1	1	1	10	1	1	1	11
Arterio in man	492	10	1	1	1	10	1	1	1	11
Arterio in man	1	10	1	1	1	10	1	1	1	11
Arterio in man	2,906	10	1	1	1	10	1	1	1	11
Arterio in man	15	10	1	1	1	10	1	1	1	11
Arterio in man	58	10	1	1	1	10	1	1	1	11
Arterio in man	373	10	1	1	1	10	1	1	1	11
Arterio in man	80	10	1	1	1	10	1	1	1	11
Arterio in man	52	10	1	1	1	10	1	1	1	11
Arterio in man	53	10	1	1	1	10	1	1	1	11
Arterio in man	42	10	1	1	1	10	1	1	1	11
Arterio in man	49	10	1	1	1	10	1	1	1	11
Arterio in man	1,115	10	1	1	1	10	1	1	1	11

**TABLE VIII. REPORTED CASES OF COMMUNICABLE DISEASES BY COUNTY OF RESIDENCE
OKLAHOMA CITY, TULSA CITY AND MILWAUKEE, 1951**

[illegible]

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