RHEUMATIC FEVER AND STREPTOCOCCAL ILLNESS IN TWO COMMUNITIES IN NEW YORK STATE

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MORBIDITY surveys which are conducted by periodic visits to families offer special advantages in the study of incidence and prevalence of nonreportable diseases, such as rheumatic fever and streptococcal illness, in their population. The study of acute respiratory illness that was conducted in two communities, Pleasantville and Mt. Kisco, in Westchester County, New York, from September, 1946 to June, 1949 included records of attacks of tonsillitis and related illness and rheumatic fever as it was reported in those populations. The purpose of this paper is to present data on these illnesses.

DATA AND METHOD OF STUDY

The periodic survey of families for the purpose of collection of illness records was the method employed in this study. All families in which there were one or more children attending grade school or high school in each of the two communities were included. These families were visited every twenty-eight days during the three school years, September to June, 1946–1949. On each visit to the family, inquiry was made about acute respiratory illnesses which had occurred among their members during the past four weeks. Visits were not made during the summer months because it was believed that observation during that period would be incomplete since some children go to summer camps and often the entire family is away from the community for part or all of the summer.

Each family visitor was given a list of the common acute respiratory illnesses in the terminology generally used by the family informant. In this particular analysis, streptococcal illnesses include the following: tonsillitis, septic sore throat,

[1] From the Milbank Memorial Fund. This is the eighth in a series of papers dealing with a study of respiratory illness.

peritonsillitis, otitis media, mastoiditis, and scarlet fever.[2] Any acute respiratory illness accompanied by signs of cervical adenitis, that is, swollen glands, was also included. Inquiry was made about the presence or absence of each of these illnesses among members of the family.

This study includes records of both histories and active cases of rheumatic fever. A history of rheumatic fever in any member of the household was recorded on the first visit to the family. Any acute attack of rheumatic fever was recorded when first reported and inquired about on each monthly visit to the family.

The sickness record included the nature of the illness as stated by the informant, usually the mother, and the date of onset and duration of the illness. In the study in Pleasantville and Mt. Kisco the diagnoses were not based on laboratory tests for the presence of the infecting organisms.

It is recognized that in a study such as this many diagnoses may lack medical confirmation. Considering all respiratory illness in both communities only 18 per cent had medical attendance. However, approximately 90 per cent of the cases with a diagnosis of tonsillitis or streptococcal sore throat were attended by a physician. In the rheumatic fever families 100 per cent of such illnesses were attended by a physician. Forty-seven per cent of the cases included in the group of streptococcal illness because of swollen glands had a physician's care. The same was true of the rheumatic families. Both communities were similar with respect to the proportions medically attended.

The mean number of families visited during the three school years of the special study was 530 in Pleasantville and 570 in Mt. Kisco. The families in Pleasantville included some 2,100 persons and those in Mt. Kisco 2,400. In each group of families there were about 900 school-age children and 180 to 200 preschool-age children.

[2] In the two years studied there was total of only four cases reported as scarlet fever in both communities combined. In New York State scarlet fever is not reported under that terminology. It is reported as "strep. sore throat (including scarlet fever)."

Characteristics of the Two Communities

In the study of acute respiratory illness, data were obtained from each family which reveal certain social characteristics of the family. These data included: a census of the household, the age, sex, and marital status of the members, the occupation and place of employment of all employed members, and the highest education attained for all members of the household.

A description of the two communities with respect to these characteristics has been presented in previous reports (1,2). The two communities were found to be comparable with respect to loss of families due to moving and refusal to cooperate, age distribution of the family members, age of husbands and wives, and size of family. There were, however, marked differences between the two communties in the educational attainment of the husbands and wives and in the occupation of the head of the household. For example, 40 per cent of the heads of the household in the Pleasantville families had a college education compared with 15 per cent in Mt. Kisco. Fifty-four per cent of the household heads in Pleasantville were in the professional or managerial class compared with 36 per cent in Mt. Kisco. None of these differences between the communities is believed to affect the data presented in this paper.

Incidence of Tonsillitis and Related Illness

In both Pleasantville and Mt. Kisco, tonsillitis and related illnesses accounted for 7 per cent of the total acute respiratory illness, 5 per cent tonsillitis and 2 per cent other illness, reported during the last two years of the study, September to June, 1947–1949.[3] The incidence of these illnesses is shown in Table 1 for persons of all ages in each community for the two study years. The population is composed of the persons counted in each year that they were observed. The incidence varied from 78.3 to 100.1 per 1,000 in Pleasantville and from 85.4 to 99.5 per 1,000 in Mt. Kisco.

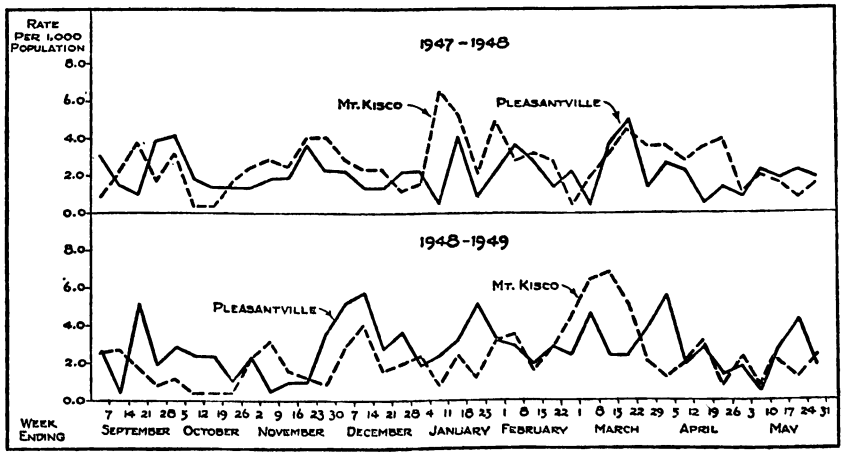
[3] A question concerning the presence or absence of swollen cervical glands was added to the illness schedules in September, 1947. Therefore, this analysis includes the illness experience of the 1947–1948 and 1948–1949 study years only.

School Year and Community	Rate Per 1,000 Population	Cases of Streptococcal Illness	Population Observed
September, 1947—June, 1948			
Pleasantville	78.3	181	2,312
Mt. Kisco	99.5	254	2,554
September, 1948—June, 1949			
Pleasantville	100.1	227	2,268
Mt. Kisco	85.4	223	2,612

Table 1. Incidence of streptococcal illness in Pleasantville and Mt. Kisco for the nine-month period in each of two study years, September to June, 1947–1949.

Figure 1 shows the weekly incidence of tonsillitis and related illness (Appendix Tables 1 and 2). The heavy line indicates the rates for Pleasantville and the broken line those for Mt. Kisco. From these data there appear to have been in each school year four periods of relatively high incidence of tonsillitis and related illness. One period was in September, the second in November, the third in January, and the fourth in March and the early part of April. These are the periods when all types of respiratory illnesses are most frequent. The weekly incidence in each of the two communities was fairly similar in each study year.

Fig. 1. Weekly incidence of streptococcal illness in Pleasantville and Mt. Kisco for the nine-month period in each of two study years, September, 1947 to June, 1949.



These rates are based upon the observation of about 2,100 to 2,400 persons in each week in each community.

In brief summary, tonsillitis and related illnesses accounted for 7 per cent of the total acute respiratory illness reported in the two communities in 1947–1948 and 1948–1949. The incidence of these illnesses was similar in the two communities in each of the two school years.

Rheumatic Fever

Rheumatic fever is a disease believed to be closely related to streptococcal infections. The prevention of acute rheumatic fever by the prompt treatment of streptococcic infections with penicillin emphasizes the close relationship between streptococcic disease and rheumatic fever (3,4,5).

In Pleasantville there were forty-three persons who had a history of having had active rheumatic fever prior to the study. In addition there were two persons whose disease was considered as active during observation. No newly diagnosed cases were reported in this community during the three years, September, 1946 to June, 1949.

In Mt. Kisco there were thirty-one persons who had a history of having had active rheumatic fever prior to the study. There were also nine persons whose disease was considered active during observation. In addition, seven newly diagnosed cases were reported during the three years. Two of these cases were preceded by scarlet fever and one by an attack of tonsillitis.

Incidence. A study carried on by the United States Public Health Service and the Milbank Memorial Fund among a representative sample of white families in the Eastern Health District of Baltimore between June, 1938 and May, 1943 reported an annual incidence of rheumatic fever for both sexes of 1.20 per 1,000 population (6). In Mt. Kisco the annual incidence of rheumatic fever was 0.94 per 1,000 population. This rate is fairly similar to the rate reported in the Eastern Health District Study.

Prevalence. The study in the Eastern Health District of

Occupational Class	Pleasantville	Mt. Kisco
	Rate Per 1,000	
All Ages—Total	14.8	14.1
Professional and Managerial	14.9	14.8
Clerical and Skilled	14.6	14.0
Semi-Skilled and Unskilled	14.8	13.5

Table 2. Prevalence of rheumatic fever among persons in Pleasantville and Mt. Kisco, September to June, 1946–1949.

Baltimore reported a prevalence of persons having rheumatic fever during an average twelve-month period of 13.5 per 1,000 population (7). The prevalence of persons who had had rheumatic fever in Pleasantville was 14.8 per 1,000 population and in Mt. Kisco 14.1 per 1,000 population (Table 2 and Appendix Table 3). In expressing the prevalence for Pleasantville and Mt. Kisco, all persons who had a history or who had active rheumatic fever during the period of observation have been included. The population is composed of the persons counted only once during the three years of the study (Appendix Table 4). The prevalence of persons with a case of rheumatic fever in Pleasantville and Mt. Kisco is similar to the prevalence of persons reported in the study by the United States Public Health Service and the Milbank Memorial Fund in the Eastern Health District of Baltimore. The prevalence in the two communities also is strikingly similar.

Table 2 also shows for both communities the prevalence of persons who had rheumatic fever. The data are arrayed by the occupational class of the head of the household.[4] The prevalence of persons in the three occupational classes was similar. Rheumatic fever did not appear to have been selective of persons in any particular occupational class.

Age at First Diagnosis. Swift states that rheumatic fever is rarely seen in infants and begins to appear in children about 5 years of age. The disease increases in the frequency of occur-

[4] Coding of occupational class was based upon the Alphabetical Index of Occupations and Industries. United States Department of Commerce, Bureau of the Census, Sixteenth Census of the United States, 1940.

Community	Male	Female	Ratio of Females to Males
	Rate Per 1,000		
Pleasantville	10.7	18.7	1.75
Mt. Kisco	12.2	15.9	1.30

Table 3. Prevalence of persons having rheumatic fever by sex in Pleasantville and Mt. Kisco, September, 1946 to June, 1949.

rence until the ages of 9 to 11 years. After puberty there is a marked decline in incidence as age increases (8). In his monograph on rheumatic fever, Paul discussed some of the difficulties in determining the age at onset of rheumatic fever. He concluded that "Epidemiologically . . . it is reasonable to regard rheumatic fever as a disease of childhood or school age, because from the age distribution of first attacks the period of mid-childhood is the period of greatest vulnerability." (9).

The mean age at first diagnosis of rheumatic fever for the age group 0–19 was 6.4 in Pleasantville and 8.5 in Mt. Kisco.[5] Hedley analyzed the records of 2,539 patients with rheumatic fever admitted to Philadelphia hospitals between January 1, 1930 and December 31, 1934. From his data the mean age at the first reported attack for the 1939 cases in the 0–19 year age group was 10.3 years (10). This mean age is higher but not significantly so than the mean ages in Pleasantville and Mt. Kisco for the same age group.

Adults with a history of rheumatic fever have been excluded from this tabulation of age at first diagnosis because it was be-

[5]

	Mean Age at Onset of Rheumatic Fever (Age Group 0–19)	*Standard Error of the Mean*	*Standard Deviation*
Pleasantville	6.4	±0.91	3.03
Mt. Kisco	8.5	±0.99	4.18

The difference between the mean ages is not statistically significant. The standard error of the difference between means was the test used and the value for "t" was obtained by computing the ratio of the difference between means to the standard error of the difference between the means.

$$\sigma_d = \sqrt{\frac{S_1 + S_2}{N_1 + N_2 - 2} + \frac{S_1 + S_2}{N_1 + N_2 - 2}}$$

lieved that information concerning age at first diagnosis would not be entirely reliable due to the factor of memory.

Sex. The prevalence of persons of all ages who had rheumatic fever is shown by sex in Table 3 for Pleasantville and Mt. Kisco. In Pleasantville the prevalence of rheumatic fever among females was 75 per cent higher than the prevalence among males. In Mt. Kisco the prevalence among females was 30 per cent higher than the prevalence among males.

Rheumatic Families

Over a period of years observers have noticed that rheumatic fever is more prevalent under certain conditions associated with poverty, such as crowding, dampness, and unhygienic environment (8,9,11,12). The environmental conditions under which the family lived were considered one of the predisposing factors in the production of rheumatic fever. Certain small areas such as a section of a city were thought to be the harborers of the disease.

Rheumatic families in this analyisis were selected on the basis of the presence in the family of a person or persons who had or had had rheumatic fever. There were forty-two such families in Pleasantville with forty-three persons who had or had had rheumatic fever and forty-four families in Mt. Kisco with forty-

Table 4. Distribution of heads of the households by occupational class, Pleasantville and Mt. Kisco combined.[1]

Occupational Class	Per Cent		Number	
	Rheumatic Families	All Families 1947-1948	Rheumatic Families	All Families 1947-1948
Total	100.0	100.0	86	934[2]
Professional and Managerial	41.9	44.6	36	417
Clerical and Skilled	31.4	30.4	27	284
Semi-Skilled and Unskilled	26.7	25.0	23	233

[1]The data for all families are based on the middle study year 1947-1948.
[2]Excludes sixty-one families in which the head of the household is not employed and one family in which the employment is unknown.

Type of Family	First Quartile	Median	Third Quartile	Number of Families
Rheumatic Families	4.0	4.9	6.4	86
All Families (1947-1948)	4.2	4.9	5.9	995

Table 5. Median number of persons per family in rheumatic families and in all families, Pleasantville and Mt. Kisco combined.

six such persons.[6] Because of the small number of rheumatic families in each community the data from the two communities have been combined for the family analysis.

Economic Status. The occupational class of the head of the household is generally indicative of the economic situation of the family. Table 4 shows a comparison of the distribution of the rheumatic households by the occupational class of the head of the household compared with the distribution of all households. The rheumatic families were distributed throughout the occupational classes in proportions similar to the total families.

Size of Family. The median number of persons per family in the rheumatic families and in the total families in both communities is shown in Table 5.[7] The median values are exactly the same, 4.9 for the rheumatic families and 4.9 for the total families.

Crowding. Crowding in households has been suggested as a contributing factor to the development of rheumatic fever (8,9,11,12). The crowding ratings of the rheumatic families and of the total families observed in the two communities in 1947–1948 are shown in Table 6. The term "crowding rating" as used in this study takes into consideration the age and sex of the total persons in the household in relation to the total rooms necessary for a minimum amount of privacy and comfort. A complete description of the crowding rating is given in Appendix 5. Only those rheumatic families in which the child

[6] Since the family study includes a study of illness in the observed population, three persons with histories of rheumatic fever have been excluded because they were observed for illness for only a short period of time.

[7] The data for the total families are based on the 1947–1948 study year.

was the person who had had rheumatic fever were considered in Table 6. Adults with histories of rheumatic fever may have been living under entirely different crowding conditions at the onset of their illness. Column 3 of Table 6 gives the per cent that the rheumatic families were of the total families in the two groups, those rated as adequate and those rated as unsatisfactory with respect to crowding. The difference between the per cents was not statistically significant.[8] In this study it does not appear that the rheumatic families in which the child was the person who had had rheumatic fever were any more crowded than was true of the total families studied.

Multiple Cases in a Family. In Pleasantville there were forty-three persons who had had rheumatic fever in forty-two families. The two persons in one family were a wife aged 37 and her mother aged 72. In Mt. Kisco there were forty-six persons who had had rheumatic fever in forty-four families. One family had two persons with histories of rheumatic fever, a mother aged 37 and her daughter aged 13. The other family had two persons with rheumatic histories, a mother aged 48 and her daughter aged 16. In both communities the multiple cases were histories, i.e., the attacks of rheumatic fever occurred prior to the study.

Table 6. Distribution of the rheumatic families and the total families by crowding ratings in Pleasantville and Mt. Kisco.

Crowding Rating	Families With a Case or Cases of Rheumatic Fever[1]	All Families in Both Communities 1947-1948	Per Cent Rheumatic Families Were of Total Families by Specific Crowding Ratings
Adequate	28	739	3.8
Unsatisfactory	12	243	4.9

[1] Includes only those families in which the child was the person with the case or history of rheumatic fever.

[8] The standard error of the difference between per cents was the test used and the value for "t" was obtained by computing the ratio of the difference between per cents to the standard error of the difference between the per cents. The formula is

$$\sigma_d = \sqrt{\frac{P_1 Q_1}{N_1} + \frac{P_2 Q_2}{N_2}}$$

Streptococcal Illness in Rheumatic Families. The simple family was the type of family unit selected for the study of familial susceptibility to tonsillitis and related illness because of the close relationship of the family members. The simple family unit was defined as the spouse or spouses and their children. All other relatives and all unrelated persons in the households have been excluded.

The hypothesis that rheumatic persons and their immediate families were especially susceptible to tonsillitis and related illnesses was tested by chi square. In Pleasantville a greater

Table 7. Observed and expected number of persons with streptococcal illness in Pleasantville and Mt. Kisco, September, 1947–May, 1949.

All Ages	Observed Number	Expected Number	Chi Square	P
Pleasantville				
All Persons Having:				
Streptococcal Illness	495	501.24		
No Streptococcal Illness	3,703	3,696.76		
Rheumatic Persons Having:[1]			11.44	<.001
Streptococcal Illness	10	3.82		
No Streptococcal Illness	22	28.18		
All Persons Having:				
Streptococcal Illness	495	503.76		
No Streptococcal Illness	3,703	3,694.24		
Related Persons in Rheumatic[1] Families Having:			6.84	<.01
Streptococcal Illness	22	13.20		
No Streptococcal Illness	88	96.80		
Mt. Kisco				
All Persons Having:				
Streptococcal Illness	541	547.97		
No Streptococcal Illness	4,191	4,184.03		
Rheumatic Persons Having:[1]			11.94	<.001
Streptococcal Illness	12	4.86		
No Streptococcal Illness	30	37.14		
All Persons Having:				
Streptococcal Illness	541	560.74		
No Streptococcal Illness	4,191	4,171.26		
Related Persons in Rheumatic[1] Families Having:			26.23	<.001
Streptococcal Illness	37	17.30		
No Streptococcal Illness	109	128.70		

[1]Rheumatic cases and related persons counted once for the two-year experience

proportion of rheumatic persons had tonsillitis and related illness than did the total population included in the study (Table 7). Also, a greater proportion of their closely related family members had these illnesses than was true of the total population. In each instance the observed number of rheumatic persons and their closely related family members who had tonsillitis and related illnesses exceeded the expected number of such persons. These differences between the observed and expected number of persons were statistically significant and differences such as these would occur in less than 1 in 1,000 chances among rheumatic cases and in less than 1 in 100 chances among their related family members.

The lower section of Table 7 shows the same data for Mt. Kisco. In that community also a greater proportion of both rheumatic persons and their immediate family members had tonsillitis and related illnesses than did the total popualtion studied. Again, the differences between the observed and expected number of persons were statistically significant and such differences would occur in less than 1 in 1,000 chances. These data indicate that a familial susceptibility to tonsillitis and related illness did exist in the rheumatic families in the two communities studied.

Summary

This paper presents data on tonsillitis and related illness and rheumatic fever that were reported in the study of respiratory illness in two communities, Pleasantville and Mt. Kisco in Westchester County, New York, from September, 1946 to June, 1949.

Tonsillitis and related illness accounted for 7 per cent of the total acute respiratory illness during the second and third years of the study, September, 1947 to June, 1949. The total incidence and the seasonal incidence of these illnesses was similar in the two communities in the last two study years.

The annual incidence of rheumatic fever in Pleasantville was 0 during the three years of observation and in Mt. Kisco the

rate was 0.94 per 1,000 population. The prevalence of persons having active and non-active rheumatic fever was 14.8 in Pleasantville and 14.1 in Mt. Kisco during the three years of the study. The mean age at first diagnosis of rheumatic fever in the 0–19 year age group was 6.4 in Pleasantville and 8.5 in Mt. Kisco. A higher prevalence of persons having rheumatic fever was noted among females than among males.

Environmental conditions seemed to exert little influence on the prevalence of rheumatic fever in this study. Occupational class was used as a measure of economic status. No difference in the prevalence of persons having rheumatic fever was observed among the three occupational classes. Rheumatic families were similar to the total families with respect to crowding in the households.

The hypothesis that rheumatic persons and their immediate family members were especially susceptible to streptococcal illnesses was tested by a comparison of their experience with respect to such illness during observation with that of the total universe from which they were drawn. In both Pleasantville and Mt. Kisco a significantly higher proportion of persons in the rheumatic families had one or more attacks of streptococcal illness than would have been expected from the experience of the total families. These data do indicate that a familial susceptibility to streptococcal illness may exist in rheumatic families.

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Appendix Table 1. Weekly incidence of streptococcal illness in *Pleasantville* for the nine-month period in each of two study years, September to June, 1947–1949.

Date	Rate Per 1,000 Population		Cases of Streptococcal Illness		Population Observed	
	1947-1948	1948-1949	1947-1948	1948-1949	1947-1948	1948-1949
September						
1- 7	3.1	2.7	6	5	1,949	1,824
8-14	1.5	0.5	3	1	2,011	1,924
15-21	1.0	5.2	2	10	2,034	1,933
22-28	3.9	2.0	8	4	2,066	2,020
29-Oct. 5	4.2	2.9	9	6	2,124	2,067
October						
6-12	1.9	2.4	4	5	2,135	2,073
13-19	1.4	2.4	3	5	2,160	2,082
20-26	1.4	1.0	3	2	2,143	2,101
27-Nov. 2	1.4	2.4	3	5	2,143	2,101
November						
3- 9	1.9	0.5	4	1	2,142	2,103
10-16	1.9	1.0	4	2	2,152	2,105
17-23	3.7	1.0	8	2	2,163	2,103
24-30	2.3	3.8	5	8	2,165	2,128
December						
1- 7	2.3	5.3	5	11	2,159	2,092
8-14	1.4	5.8	3	12	2,162	2,085
15-21	1.4	2.8	3	6	2,167	2,125
22-28	2.3	3.7	5	8	2,174	2,155
29-Jan. 4	2.3	1.9	5	4	2,197	2,114
January						
5-11	0.5	2.4	1	5	2,185	2.102
12-18	4.2	3.3	9	7	2,160	2,110
19-25	0.9	5.2	2	11	2.140	2,100
26-Feb. 1	2.3	3.3	5	7	2,140	2,100
February						
2- 8	3.7	2.9	8	6	2,152	2,081
9-15	2.8	1.9	6	4	2,174	2,076
16-22	1.4	2.9	3	6	2,176	2,073
23-Mar. 1	2.3	2.4	5	5	2,173	2,081
March						
2- 8	0.5	4.7	1	10	2,171	2,115
9-15	3.7	2.4	8	5	2,183	2,104
16-22	5.0	2.4	11	5	2,190	2,101
23-29	1.4	3.8	3	8	2,192	2,102
30-Apr. 5	2.7	5.7	6	12	2,183	2,100
April						
6-12	2.3	1.9	5	4	2,190	2,096
13-19	0.5	2.9	1	6	2,156	2,085
20-26	1.4	1.4	3	3	2,140	2,109
27-May 3	0.9	1.9	2	4	2,140	2,109
May						
4-10	2.3	0.5	5	1	2,137	2,084
11-17	1.9	2.9	4	6	2,142	2,091
18-24	2.3	4.3	5	9	2,150	2,104
25-31	1.9	1.9	4	4	2,137	2,100

Appendix Table 2. Weekly incidence of streptococcal illness in *Mt. Kisco* for the nine-month period in each of two study years, September to June, 1947–1949.

Date	Rate Per 1,000 Population		Cases of Streptococcal Illness		Population Observed	
	1947-1948	1948-1949	1947-1948	1948-1949	1947-1948	1948-1949
September						
1- 7	0.9	2.6	2	6	2,172	2,295
8-14	2.2	2.7	5	6	2,260	2,243
15-21	3.8	1.7	9	4	2,346	2,334
22-28	1.7	0.8	4	2	2,394	2,399
29-Oct. 5	3.3	1.2	8	3	2,417	2,480
October						
6-12	0.4	0.4	1	1	2,414	2,493
13-19	0.4	0.4	1	1	2,415	2,496
20-26	1.7	0.4	4	1	2,409	2,490
27-Nov. 2	2.5	2.4	6	6	2,409	2,490
November						
3- 9	2.9	3.2	7	8	2,408	2,469
10-16	2.5	1.6	6	4	2,413	2,453
17-23	4.1	1.2	10	3	2,424	2,450
24-30	4.1	0.8	10	2	2,424	2,473
December						
1- 7	2.9	2.9	7	7	2,428	2,454
8-14	2.4	4.1	6	10	2,450	2,456
15-21	2.4	1.6	6	4	2,463	2,492
22-28	1.2	2.0	3	5	2,441	2,501
29-Jan. 4	1.6	2.4	4	6	2,463	2,476
January						
5-11	6.5	0.8	16	2	2,457	2,462
12-18	5.3	2.4	13	6	2,447	2,461
19-25	2.0	1.2	5	3	2,460	2,458
26-Feb. 1	4.9	3.3	12	8	2,460	2,458
February						
2- 8	2.8	3.6	7	9	2,475	2,471
9-15	3.2	1.6	8	4	2,470	2,461
16-22	2.8	2.9	7	7	2,462	2,446
23-Mar. 1	0.4	4.5	1	11	2,462	2,447
March						
2- 8	2.0	6.5	5	16	2,457	2,447
9-15	3.2	6.9	8	17	2,463	2,464
16-22	4.5	5.2	11	13	2,468	2,480
23-29	3.6	2.0	9	5	2,472	2,493
30-Apr. 5	3.6	1.2	9	3	2,491	2,502
April						
6-12	2.8	2.0	7	5	2,499	2,487
13-19	3.6	3.2	9	8	2,498	2,474
20-26	4.0	0.8	10	2	2,501	2,465
27-May 3	1.2	2.4	3	6	2,501	2,465
May						
4-10	2.0	0.8	5	2	2,491	2,466
11-17	1.6	2.9	4	7	2,497	2,452
18-24	0.8	1.2	2	3	2,499	2,458
25-31	1.6	2.4	4	6	2,495	2,461

Age Group and Occupational Class	Pleasantville			Mt. Kisco		
	Both Sexes	Male	Female	Both Sexes	Male	Female
All Ages—Total	45	16	29	47	20	27
Professional-Managerial	23	6	17	17	7	10
Clerical-Skilled	13	6	7	15	6	9
Semiskilled-Unskilled	9	4	5	15	7	8
Age 0-18—Total	12	7	5	16	5	11
Professional-Managerial	6	3	3	7	1	6
Clerical-Skilled	3	1	2	3	2	1
Semiskilled-Unskilled	3	3	0	6	2	4
Age 19+—Total	33	9	24	31	15	16
Professional-Managerial	17	3	14	10	6	4
Clerical-Skilled	10	5	5	12	4	8
Semiskilled-Unskilled	6	1	5	9	5	4

Appendix Table 3. Number of acute cases and histories of rheumatic fever classified by the age and sex of the rheumatic person and the occupational class of the head of the household. Pleasantville and Mt. Kisco, September, 1946 to June, 1949.

Appendix Table 4. Population[1] by age, sex, and occupational class of the household in Pleasantville and Mt. Kisco, September, 1946 to June, 1949.

Age Group and Occupational Class	Pleasantville			Mt. Kisco		
	Both Sexes	Male	Female	Both Sexes	Male	Female
All Ages—Total	3,040	1,491	1,549	3,334	1,641	1,693
Professional-Managerial	1,539	747	792	1,152	547	605
Clerical-Skilled	893	442	451	1,070	527	543
Semiskilled-Unskilled	608	302	306	1,112	567	545
Age 0-18—Total	1,348	672	676	1,538	752	786
Professional-Managerial	697	345	352	553	247	306
Clerical-Skilled	381	195	186	494	245	249
Semiskilled-Unskilled	270	132	138	491	260	231
Age 19+—Total	1,692	819	873	1,796	889	907
Professional-Managerial	842	402	440	599	300	299
Clerical-Skilled	512	247	265	576	282	294
Semiskilled-Unskilled	338	170	168	621	307	314

[1]Each person has been counted only once for the three-year period.

Appendix 5.

Instructions (crowding rating) given for determining suitable age and sex for sharing a sleeping room were as follows:

1. *Sex:* One sleeping room for two persons of opposite sex is considered suitable if the two persons are married or if both are under 6 years of age.

2. *Age:* a. A separate sleeping room is to be allowed for infants under 2 years of age, except where there is more than one infant under 2.

b. Two persons under 20 years of age who are of the same sex may share the same sleeping room if there is less than 6 years difference in their ages.

c. Two adults who are 20 years of age or older and of the same sex may share the same sleeping room if there is less than 15 years difference in their ages.

d. An adult who is 20 to 25 years of age may share a room with a younger person of the same sex if there is less than 6 years difference in their ages.

3. *Lodgers:* A separate room is to be allowed for each lodger of different sex, unless a married couple. Related lodgers will be treated in the same way as family members, except that no allowance will be made for a separate living room and kitchen for lodgers.

Crowding Ratings

1. *More Than Adequate:* More than one room for sleeping per person or per married couple plus two additional rooms (for living room and kitchen).

2. *Adequate:* One room for sleeping per person or for each two persons of suitable age and sex plus two additional rooms (for living room and kitchen).

3. *Unsatisfactory:* One room for sleeping for each two persons of suitable age and sex plus one additional room for kitchen. (Total rooms so few in relation to total persons that the living room was used as a sleeping room or more than two persons per sleeping room or persons of unsuitable age and/or sex occupying the same room.)

4. *Very Unsatisfactory:* Less than one room for sleeping for each two persons of suitable age and sex plus additional room for kitchen. (Total rooms so few in relation to total persons that living room and kitchen used as sleeping rooms or more than two persons per sleeping room or persons of unsuitable age and/or sex occupying the same room).