

## **INFLUENZA MORTALITY AMONG WAGE EARNERS AND THEIR FAMILIES: A PRELIMINARY STATEMENT OF RESULTS**

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### **ABSTRACT**

Whites rather than colored people were attacked by the pandemic of influenza and the young rather than the old, a reversal of usual conditions. These conclusions are based on the accurate figures obtainable from nearly 18,000,000 policies in force and 105,552 claims. The following is a brief statement of some of the basic findings of an investigation which has been made into the epidemic of influenza. It is limited to the policyholders of the Industrial Department of the Metropolitan Life Insurance Company and covers the period from October 1, 1918 to June 30, 1919. It should be noted in this connection that in this department there are represented over 12,000,000 policyholders, as of December 31, 1918; that these policyholders include both races, white and colored, males as well as females, and all age periods, excepting early infancy and extreme old age. This group of insured wage earners is well distributed over the entire United States and Canada. Effort was made, furthermore, to make the record of influenza deaths as complete as possible. In all, 105,552 policy claims were paid during the period under investigation, representing a total of 70,729 deaths from influenza-pneumonia.

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The following is a brief statement of some of the basic findings of an investigation which has been made into the epidemic of influenza. It is limited to the policyholders of the Industrial Department of the Metropolitan Life Insurance Company and covers the period from October 1, 1918 to June 30, 1919. It should be noted in this connection that in this department there are represented over 12,000,000 policyholders, as of December 31, 1918; that these policyholders include races, white and colored, males as well as females, and all age periods, excepting early infancy and extreme old age. This group of insured wage earners is well distributed over the entire United States and Canada. Effort was made, furthermore, to make the record of influenza deaths as complete as possible. In

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all, 105,552 policy claims were paid during the period under investigation, representing a total of 70,729 deaths from influenza-pneumonia.<sup>2\*</sup>

It will be seen from these considerations that the results of this study should be generally applicable to the working population of the United States. Only crude descriptive data are given and no attempt will be made to give results which depend upon refined statistical analysis. Such work is still being carried on and will be reported on in a later and fuller statement.

The 70,729 deaths included in this study were largely concentrated during the first three months, namely, October, November, and December of 1918. In fact, slightly more than three fourths of all the deaths from influenza-pneumonia in the nine months under observation occurred in these three months. The month of October alone showed 34,471 deaths or nearly one half of all the deaths in the entire period. In this epidemic, there was no clearly defined preparatory period leading up the month of greatest incidence. The following table shows the percentage distribution of the deaths according to single months, and by quarters:

Table 1

Actual and cumulative number of deaths from Influenza-Pneumonia, during each calendar month, October, 1918 to June, 1919

Period	Number	Percentage	Cumulative number	Cumulative percentage
October, 1918 to June, 1919.....	70,729	100.0	70,729	100.0
<b>By month:</b>				
October.....	34,471	48.7	34,471	48.7
November.....	10,506	14.9	44,977	63.6
December.....	8,227	11.6	53,204	75.2
January.....	6,724	9.5	59,928	84.7
February.....	3,925	5.6	63,853	90.3
March.....	3,677	5.2	67,530	95.5
April.....	1,829	2.6	69,359	98.1
May.....	1,058	1.5	70,417	99.6
June.....	312	.4	70,729	100.0
<b>By quarter:</b>				
Oct. to Dec., 1918...	53,204	75.2	53,204	75.2
Jan. to Mar., 1919...	14,326	20.3	67,530	95.5
Apr. to June, 1919 ..	3,199	4.5	70,729	100.0

It will be seen that the epidemic was virtually over by the end of March. A few thousand deaths occurred in the last quarter, April to June, but not to an excessive degree when it is remembered that there are always deaths from these causes at this time of the years, especially in April. It will be desirable, therefore, to call attention to the facts by quarterly periods, remembering that the first quarter from October to

<sup>2</sup> Includes all deaths classified as "influenza" (10), "broncho-pneumonia" (91), and "pneumonia-lobar and undefined" (92). The numbers refer to titles of the International List of Causes of Death.

December represented the period of severest incidence, the second quarter from January to March, the period of secondary recurrences and the third quarter, April to June, the return toward the usual low rates of the late spring and early summer months.

**Death Rate from Influenza-Pneumonia**

When related to the number of years of life exposed, these deaths indicate a rate of 774 per 100,000 during the nine months' period. This is an annual rate; that is, it is what the rate continued for a full year. In October, the death rate was 3,035 per 100,00; in November, 1,035, the figures declining rapidly thereafter, with a slight halt, however in the months of March is a high influenza-pneumonia month in any year. As against these was a rate for epidemic period, there was a rate of 152 per 100,000 during the twelve months ending September 30, 1918. The difference between 774 and 152 per 100,000, namely 622, is a approximate measure of the effect of epidemic. The year 1918, prior to the epidemic, was already significantly affected with mortality from respiratory disease, especially during March and April, when high death rates prevailed. During the period 1911 to 1917, considering these seven years as a *norm*, there was an annual influenza-pneumonia rate of 125 per 100,000.

On the basis of the rate for year ending September, 1918, there would have been only 13,891 deaths as against the 70,729 that actually occurred. The following table presents the rates by months and by quarters for the entire experience, as well as for white and colored lives and the each sex group separately:

Table 2

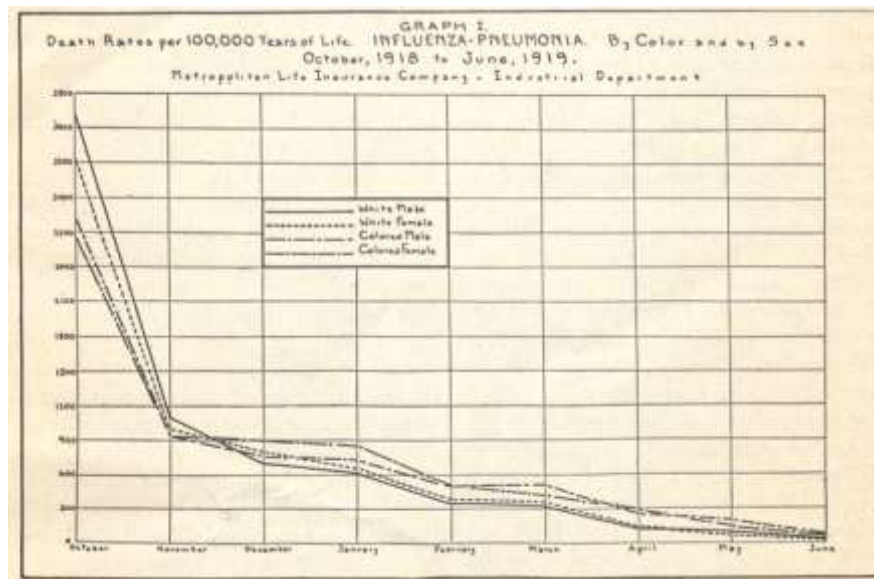
Death rate per 100,000 years of life in each month and by quarters, October, 1918 to June 1919. Classified by color and by sex

Period	Death rate per 100,000 years of life				
	Total	White		Colored	
		Males	Females	Males	Females
October, 1918 to June, 1919	774	789	763	767	767
By months:					
October . . . . .	3,035	3,074	3,325	2,816	2,604
November . . . . .	1,035	1,091	1,010	944	945
December . . . . .	810	768	833	807	802
January . . . . .	602	605	672	741	809
February . . . . .	387	354	382	515	517
March . . . . .	362	325	358	328	488
April . . . . .	167	160	169	288	297
May . . . . .	104	97	89	204	182
June . . . . .	31	29	28	60	42
By quarters:					
Oct. to Dec. . . . .	1,747	1,844	1,723	1,522	1,504
Jan. to Mar. . . . .	470	428	471	594	625
Apr. to June . . . . .	105	95	95	184	174
"Norm" periods:					
Oct., 1917 to Sept., 1918 . . . . .	152	164	116	316	315
Total, 1911 to 1917 . . . . .	125	126	107	217	167

Graph 1 illustrates these data.

Graph 1

Death rates per 100,000 years of life. INFLUENZA-PNEUMONIA. By color and by sex. October, 1918 to June, 1919. Metropolitan Life Company - Industrial Department



### Sex, color and age incidence of influenza-pneumonia

The chief interest in the statistics of the influenza epidemic must center for the sometime around the relative incidence of the deaths in the sex, color and age group of the population. Such statistic, if authoritative, throw light on the natural history of disease, indicating to the epidemiologist where its invasion was most or last disastrous and where he may concentrate his research. To the public health officer and to the medical profession generally, these data will indicate, perhaps, where forces for the control of this disease should be concentrated.

In view of the importance of these practical bearings, it will be necessary, of course, that such figures describing the relation between the disease and groups of population be consistent, not only for the various phases of the epidemic, but for different parts of the country where the epidemic occurred. This is assured by the uniform methods of classification employed, and by the special efforts which were made to have these statistics as accurate as possible. We shall discuss the relations between these data for sex, color and age in this order.

### Sex-Incidence of influenza-pneumonia mortality

The respiratory disease, including influenza-pneumonia, under conditions, show a higher mortality incidence among males than among females. In the seven years period from 1911 to 1917, the mortality rate showed an excess of 18 per cent, males over females, among white lives and of 30 per cent among colored lives. This then is the background against which the figures for epidemic must be thrown. We find that for the entire period from October, 1918 to June 1919, the rates for males and females respectively, were 789 and 763 among white lives 767 for both males and females among colored lives. In the other words, the excess of males over females among the whites was only 3 per cent, and there was no excess at all among colored lives. These figures are shown in Tables 2 and 3.

This would seem to indicate, therefore, that the effect of the epidemic was not much (if any) greater on males than on females. In fact, once we pass the crest of the epidemic

did not operate on the sexes as the normal mortality from influenza-pneumonia had in previous years. This fact of excess respiratory disease among females is in itself one well worthy of the more intensive study, especially when it is remembered that a considerable number of deaths of females were assigned to the puerperal causes which were undoubtedly complicated by attacks of influenza, although not so certified by physicians. The following table summarizes the facts with reference to sex-ratios in the two main color group and by quarterly periods:

Table 3

Percentage, male of female death rate Influenza-Pneumonia  
Classified by quarterly, October, 1918 to June, 1919

Period	White	Colored
October, 1918 to June, 1919.....	103	100
October to December.....	107	101
January to March.....	91	95
April to June.....	100	106
<i>Norm:</i>		
October, 1917 to Sept., 1918.....	141	147
Total, 1911 to 1917.....	118	130

### Color or race incidence of Influenza-Pneumonia mortality

The second consideration is with reference to color. In this connection, a very clear picture is presented. Normally, the respiratory diseases are much more highly represented among whites, and this applies to both sexes. Thus, in the seven year period, from 1911 to 1917, influenza-Pneumonia showed an excess of 72 per cent colored males over white males, and of 56 per cent colored females over white females. But, during the period of epidemic, the situation was reversed. The whites suffered from higher rates than colored. This is clearly shown during the first three months of the epidemic, when colored males showed a rate of 1,522 per 100,000, as compared a rate of 1,844 per 100,000 for white males. The same condition is shown among females, the colored rate being 1,504 and the white rate, 1,723. Put in the other words, while the rate among white males during this period, October to December was nearly fifteen times as great as the rate during the same seven year period. White females during the height of the epidemic showed a rate more than sixteen times as high as the normal, while colored females experienced a rate only nine times as high. After the first of January, 1919, that is, after the severest period, the colored group showed higher rates than the white, and the amount of excess approximated what had prevailed in normal times, as the distance from the explosive period of the epidemic increased. In the last quarter, April to June, the excess of colored females over white females, 83 per cent., figures which are almost identical with those for the twelve months ending September 30, 1918. The facts indicate with great clearness that the effect of the epidemic was much greater among white lives than among colored lives. This difference wore off as the epidemic waned and conditions returned to normal, as they virtually did during the last quarter of this period, from April to June, when a marked excess of colored mortality is shown over white mortality. Table 4, below, give the relation of colored to white mortality by quarters for each of the two sexes.

Table 4

Percentage, Colored of white Influenza-Pneumonia Death Rate  
Classified by sex by quarters, October, 1918 to June, 1919

Period	Percentage colored of white	
	Male	Female
October, 1918 to June, 1919	97	101
October to December	83	87
January to March	139	133
April to June	194	183
<i>Norm:</i>		
October, 1917 to Sept. 1918	103	185
Total, 1911 to 1917	172	156

### Age Incidence of Influenza-Pneumonia Mortality

It is when we consider the facts for age that the most instructive relations with reference to the influence to the influenza-pneumonia epidemic are brought out. We shall find that during the period of the attack, the diseases affected the population in a manner distinctively its own, and this is quite different from that in which the disease known as influenza and pneumonia affect the community at large during non-epidemic periods. During normal times, as indicated by the facts for seven years period from 1911 to 1917, we find that influenza-pneumonia affects primarily the first age period of life, ages one to four years, and the period of late middle life and old age. The rates are normally minimal between 5 and 30 years. The picture of the pandemic by age groups shows three modal points instead of two. In fact, the highest rate among the whites is in period of early adult life, namely, between 25 and 34 years, where, as we remarked above the normal rates are minimal. Among the colored group this age period also shows a very high point but it is not high as than in the first five years of life.

### Excess Influenza-Pneumonia Mortality

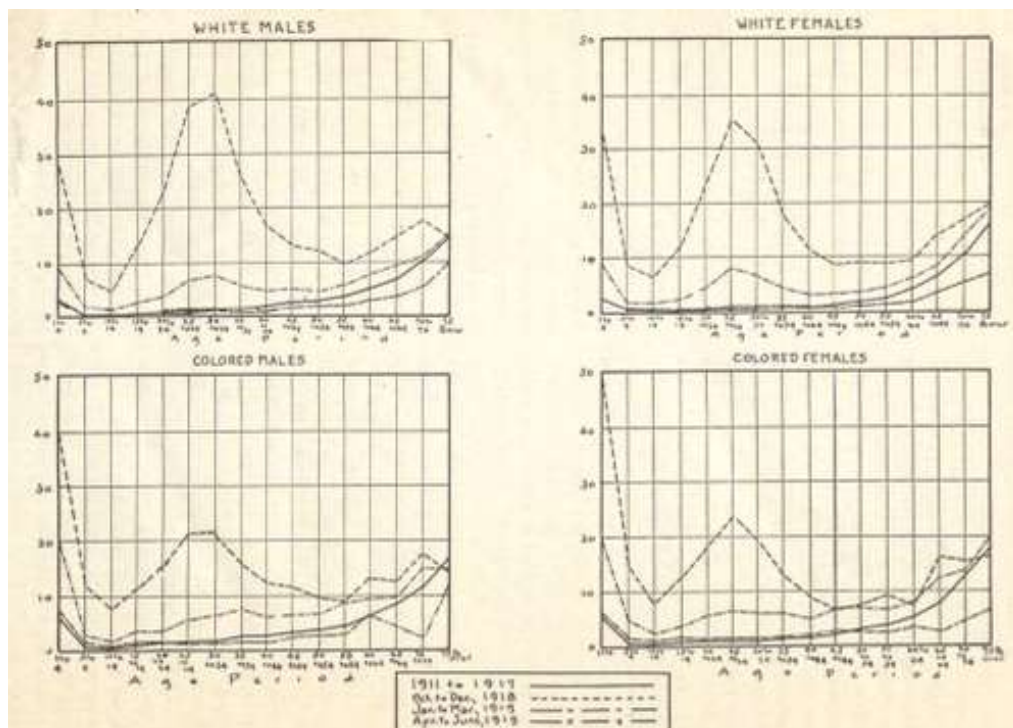
When considered from the point of view of excess influenza-pneumonia mortality, we find that the epidemic affected most the period of early infancy and early childhood, the period of early adult life and culminated between 25 and 34 years. The period of old age shows no significant excess during the period of the epidemic. The figures for April to June are very much lower than for the normal period, but these data are obviously incomparable because of the difference in season, the age "norm" for 1911 to 1917 being based upon entire calendar years.

The chief characteristics of this peculiar age incidence of the influenza-pneumonia mortality are shown in the following graph for each color and sex. A solid line or other configuration is presented for each one of the three quarterly periods of the study. Graph II shows more clearly than the figures, the three modal points, especially during the last quarter of the year 1918. During the first two quarters of 1918, the points of difference from the normal are less prominent and late become entirely submerged in the "norm". The outstanding fact is that for white males during a considerable age period of active adult life, deaths from influenza-pneumonia occurred during the three months of October to December which, if they that continued for a whole year at that rate, would have removed approximately 4 per

cent of the population at those ages; among white females, 3,5 per cent; among colored males, approximately 2 percent, and colored females, nearly 2,5 per cent. In the first years of life, the annual rates was a little less than 3 per cent from white males rising to a maximum of 5 per cent among colored females. These are the crude measures of the severity of the epidemic.

### Graph II

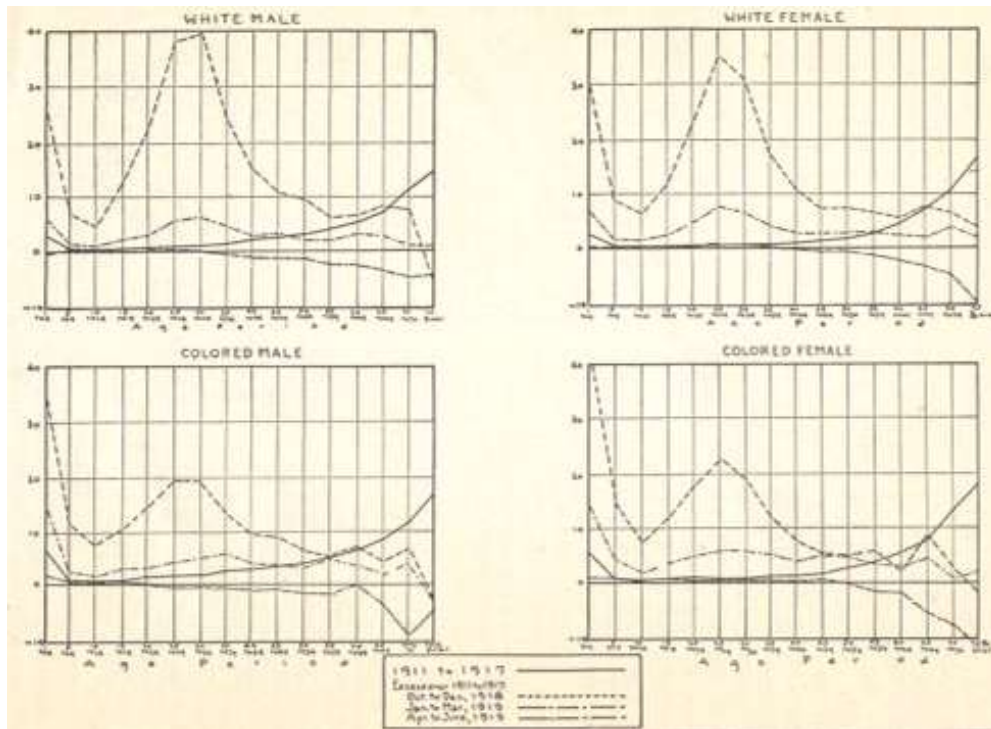
Death Rates per 1,000 years of life INFLUENZA - PNEUMONIA, By color and by age period quarters, Oct 1919 to June 1919, and years 1911 to 1917 combined  
Metropolitan Life Insurance Company, Industrial department



One thing is clear, namely, that we are concerned in this epidemic which behave very differently from the way in which the disease known by the same names affected the community in previous years. The question is very properly suggested by the figures whether we are dealing in the two periods, *i. e.*, the endemic and epidemic periods, with the same disease entities. No other disease for which reliable figures are at hand shows similar divergences as to age incidence in the different period of time. The color relations also suggest a similar query. These peculiar relations of age and color incidence for epidemic period are strikingly alike throughout the country. As such relation are ordinarily not subject to much variation, the change in the period of the epidemic at least suggest that we may be concerned with a different causative agent. This problem, however, is not within the sphere of statistician whose function is to call the attention of the epidemiologist to the facts. It is the proper business of the latter to determine in the last analysis between the endemic and epidemic "influenzas and pneumonias".

Graph Iii

Death Rates per 1,000 years of life INFLUENZA - PNEUMONIA. Excess over 1911 to 1917 Norm, by color, sex and by age period, Metropolitan Life Insurance Company, Industrial Department



Much further study is required to clear up the meaning of these age relations in the several color and sex groups. Work along these lines is being carried on and gives much encouragement in view of the completeness and high degree of accuracy of the data for insured wage earners, both as to lives exposed and number of the deaths for each color, sex and age group. Graph II and table 5 give the basic facts with reference to age, sex and color for each one of the three month periods of the epidemic and norm, that is, the year 1911 to 1917.

For the present, we show in graph II the excess of influenza-pneumonia experience in each quarter over the "norm" 1911 to 1917 for each color and sex class.

#### **Mortality from Other Disease During Epidemic Period**

In the last quarter of 1918, a number of changes in death rates from other diseases than influenza and the respiratory disease occurred. These changes may throw light on the nature of the epidemic since, in many cases; they were the direct resultant of the epidemic itself.

This is clearly the case in connections with the increase from the puerperal disease and it is suggested that a similar relation may have occurred in connection with the increase in mortality from pulmonary tuberculosis and heart disease. We find on comparing the death rate of the last quarter of 1918 with that of the last quarter of 1917 that whooping-cough increased among white lives from 5 a 11 per 100,000; and among



colored lives, from 8 to 14. It is, of the tuberculosis death rate increased from 142 to 162 among white lives; but, among the colored, there was a decrease, 375 to 335.

Table 5

Death rates per 100,000 years of life, Influenza-Pneumonia, 1911 to 1917 and various Quarters of Epidemic Period Compared (Minus difference from 1911 to 1917 norm shoves in bold-face)

Color; Age	Males								Females									
	1911 to 1917	Oct. '18 to June, '19		Oct. to Dec., '19		Jan. to Mar., '19		Apr. to June, '19		1911 to 1917	Oct. '18 to June, '19		Oct. to Dec., '19		Jan. to Mar., '19		Apr. to June, '19	
		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
		(Oct. to June) (1911 to 1917)	(Oct. to Dec.) (1911 to 1917)	(Jan. to Mar.) (1911 to 1917)	(Apr. to June) (1911 to 1917)	(Oct. to June) (1911 to 1917)	(Oct. to Dec.) (1911 to 1917)	(Jan. to Mar.) (1911 to 1917)	(Apr. to June) (1911 to 1917)									
<b>White persons:</b>																		
<b>All ages—one and over</b>	127	780	662	1644	1717	428	301	95	<b>22</b>	107	703	656	1723	1616	471	364	95	<b>13</b>
1 to 4	261	1300	1036	2906	3545	657	596	298	<b>29</b>	237	1449	1213	3218	2981	887	659	243	<b>6</b>
5 to 9	32	612	389	753	701	160	129	45	<b>11</b>	33	377	344	930	867	199	157	49	<b>7</b>
10 to 14	14	198	184	479	465	100	80	15	<b>1</b>	17	282	265	673	650	147	130	26	<b>9</b>
15 to 19	27	518	491	1295	1269	230	203	29	<b>2</b>	20	487	467	1201	1181	230	215	24	<b>4</b>
20 to 24	36	881	845	2273	2257	322	290	40	<b>13</b>	25	940	923	2304	2279	474	449	56	<b>23</b>
25 to 29	63	1532	1472	3878	3818	655	591	67	<b>7</b>	34	1471	1437	3511	3477	819	770	102	<b>59</b>
30 to 34	90	1628	1529	4075	3978	714	615	95	<b>4</b>	44	1289	1245	3084	3049	693	646	82	<b>41</b>
35 to 39	138	1981	1843	4560	4431	574	496	101	<b>27</b>	58	767	709	1765	1702	462	404	78	<b>31</b>
40 to 44	188	734	636	1671	1483	407	219	99	<b>92</b>	77	500	426	1134	1027	317	240	98	<b>8</b>
45 to 49	228	639	411	1291	1063	502	274	125	<b>102</b>	106	417	311	859	744	239	222	71	<b>35</b>
50 to 54	378	509	391	994	616	250	172	165	<b>112</b>	245	487	341	879	624	461	215	131	<b>114</b>
55 to 59	498	729	533	1149	653	784	398	255	<b>241</b>	410	372	169	630	523	611	291	175	<b>288</b>
60 to 64	619	923	524	1494	765	423	220	350	<b>349</b>	676	857	181	1390	710	842	166	345	<b>332</b>
65 to 69	1015	1125	119	1758	749	1088	73	928	<b>487</b>	1039	1168	159	1694	625	1267	248	542	<b>497</b>
70 to 74	1416	1288	<b>138</b>	1411	<b>4</b>	1481	65	972	<b>444</b>	1644	1501	<b>143</b>	1962	235	1844	200	678	<b>666</b>
<b>75 and over</b>																		
<b>Colored persons:</b>																		
<b>All ages—one and over</b>	216	707	551	1022	1300	594	378	184	<b>22</b>	166	767	691	1604	1338	625	450	174	<b>8</b>
1 to 4	593	2223	1630	3965	3772	1075	1382	739	<b>137</b>	552	2483	1920	4873	4320	1946	1393	629	<b>70</b>
5 to 9	65	532	466	1291	1135	290	224	105	<b>59</b>	64	694	758	1463	1399	488	424	122	<b>68</b>
10 to 14	35	321	286	793	728	144	109	50	<b>21</b>	42	393	323	781	739	231	189	75	<b>22</b>
15 to 19	76	537	461	1191	1057	348	270	131	<b>55</b>	77	609	525	1263	1186	391	314	153	<b>70</b>
20 to 24	120	687	567	1579	1439	377	257	120	<b>4</b>	85	383	744	1826	1731	595	478	110	<b>25</b>
25 to 29	149	928	779	2131	1982	545	396	209	<b>41</b>	80	1024	944	2307	2222	639	579	120	<b>40</b>
30 to 34	194	975	851	2134	2070	653	489	238	<b>86</b>	88	862	805	1935	1847	615	525	132	<b>44</b>
35 to 39	221	624	603	1540	1319	789	565	187	<b>74</b>	116	681	565	1288	1172	669	493	147	<b>31</b>
40 to 44	241	660	419	1228	987	610	360	183	<b>88</b>	131	508	377	886	755	491	390	140	<b>15</b>
45 to 49	304	674	379	1181	877	619	315	222	<b>81</b>	170	515	345	955	495	672	363	208	<b>38</b>
50 to 54	390	641	251	894	604	654	298	271	<b>119</b>	299	385	316	792	493	732	463	261	<b>8</b>
55 to 59	458	701	343	921	663	903	443	278	<b>106</b>	391	619	238	941	580	680	299	235	<b>144</b>
60 to 64	620	959	338	1312	963	934	305	631	<b>2</b>	519	615	102	717	394	786	276	241	<b>172</b>
65 to 69	830	888	58	1243	613	977	147	444	<b>306</b>	782	1039	237	1021	330	1222	441	216	<b>540</b>
70 to 74	1126	1154	18	1786	644	1494	348	398	<b>688</b>	1208	1305	<b>182</b>	1524	256	1325	57	464	<b>864</b>
<b>75 and over</b>																		

For organic disease of the heart, we find an increase from 128 to 154 per 100,000 among white lives, and from 209 to 217 among the colored. Too great stress cannot be put on these figures, especially among white lives may be significant. The greatest difference occurred in connections with the puerperal diseases which increased from 15 to 55 among white lives and from 22 to 42 among colored. This marked change in the puerperal death rate followed directly from a large number of accidents of pregnancy and accidents of labor which were induced by influenza attack.

The following table shows the facts with reference to the changed mortality in the two corresponding quarters of 1917 and 1918. But, it must not be assumed that the figures are complete or conclusive. It may well be that some of these diseases, like bright's disease, do not as yet show the effect on them as the result of the influenza epidemic, but that it will require a longer period, perhaps year, to show what the impairments of

the kidney, which physicians report as common in their practice, had on the death rate from renal disease.

**Influenza-Pneumonia experience in various parts of the United States and Canada**

At the present time we can also offer some statistics showing the comparative death rates from influenza-pneumonia in the several main geographic regions of the United States and in Canada, for the period October, 1918 to June, 1919. The mortality rates are expressed as "claim rates", that is, the number of claims from influenza-pneumonia paid during this period per 1,000 policy-years exposed to risk. Thus, for the total company experience of this nine-month period, there was an influenza-pneumonia claim rate of 8 per 1,000.

Considering the experience according to broad geographic divisions the New England, Middle Atlantic, South Atlantic and west south Central State showed a rate 9 per 1,000. The East North Central, West North Central, Mountain and Pacific States each recorded a rate of 6 per 1,000. The group of East North Central State registered a rate of 8 per 1,000. Considering individual States, Pennsylvania and Delaware showed the highest rates, 11 and 12 per 1,000, respectively, with New Hampshire and Vermont, Maryland and Louisiana following with rates 10 per 1,000. As a general conclusion from these statistics of influenza mortality by states it may be said that the highest rates were experienced in those states having port cities and the least for the inland states.

In Table 7 we give not only the data for geographic divisions and states but also for a number of the leading cities in each of these states. While the data are given for state of Colorado and for the city of Denver, no importance should be attached to the rates because the lives represented were but recently insured and were consequently limited to those for other states where the age and sex distribution of the outstanding policies conforms more nearly to normal.

Table 6

Death rate per 100,000 from non influenza Disease  
Last quarters of 1918 and 1917 compared by color

Cause of death	White		Colored	
	Oct. to Dec. '18	Oct. to Dec. '17	Oct. to Dec. '18	Oct. to Dec. '17
Typhoid fever	14	13	29	27
Measles	2	3	1	1
Scarlet fever	5	5	—	—
Whooping cough	11	5	14	8
Diphtheria and croup	27	26	6	12
Tuberculosis—all forms	162	142	333	373
Tuberculosis of the lungs	149	130	300	346
Tubercular meningitis	6	6	7	10
Meningitis	7	6	6	7
Cerebral hemorrhage, apoplexy	60	63	92	97
Organic diseases of the heart	151	128	217	209
Bright's disease	75	82	126	134
Total puerperal state	55	15	42	22
Puerperal septicemia	6	6	10	12
Puerperal albuminuria and convulsions	5	4	7	5
Other diseases and conditions of the puerperal state	43	5	25	6

Table 7

Claim rate per 1,000 Policies (Annual Basis)  
Influenza-Pneumonia During Period October, 1918 to June, 1919

Area	Influenza-pneumonia claim rate per 1,000, Oct. '18 to June '19	Area	Influenza-pneumonia claim rate per 1,000, Oct. '18 to June '19
<b>UNITED STATES AND CANADA</b>			
United States.....	8.1		
Canada.....	8.2		
	7.3		
<b>By Geographic Divisions:</b>			
New England.....	8.9		
Middle Atlantic.....	9.1		
East North Central.....	6.4		
West North Central.....	6.2		
South Atlantic.....	8.8		
East South Central.....	7.6		
West South Central.....	9.0		
Mountain.....	5.6		
Pacific.....	3.8		
<b>By States:</b>			
<i>New England</i>			
Maine.....	7.0		
New Hampshire.....	9.9		
Vermont.....	9.0		
Massachusetts.....	8.9		
Rhode Island.....	8.7		
Connecticut.....	9.3		
<i>Middle Atlantic</i>			
New York.....	7.8		
New Jersey.....	8.1		
Pennsylvania.....	11.2		
<i>East North Central</i>			
Ohio.....	7.1		
Indiana.....	6.2		
Illinois.....	6.5		
Michigan.....	5.2		
Wisconsin.....	5.4		
<i>West North Central</i>			
Iowa.....	6.0		
Kansas.....	6.4		
Nebraska.....	7.2		
Minnesota.....	6.1		
Missouri.....	6.2		
<i>South Atlantic</i>			
Delaware.....	11.8		
Maryland.....	9.5		
District of Columbia.....	9.1		
Virginia.....	8.2		
West Virginia.....	6.4		
North Carolina.....	6.9		
South Carolina.....	8.6		
Georgia.....	6.4		
Florida.....	7.1		
<i>East South Central</i>			
Alabama.....	8.8		
Kentucky.....	8.0		
Tennessee.....	7.8		
<i>West South Central</i>			
Arkansas.....	5.0		
Louisiana.....	10.1		
Oklahoma.....	6.2		
<i>Mountain</i>			
Colorado.....	14.0		
Idaho.....	4.1		
Montana.....	5.2		
Utah.....	5.1		
<i>Pacific</i>			
Washington.....	4.3		
Oregon.....	4.0		
California.....	6.3		
<b>By Cities*:</b>			
<i>Maine</i>			
Leviston.....	6.9		
Portland.....	9.9		
<i>New Hampshire</i>			
Dover (N. H.).....	10.5		
Manchester.....	9.2		
<b>By Cities (cont.):</b>			
<i>Vermont</i>			
Burlington.....	9.8		
<i>Massachusetts</i>			
Boston.....	9.6		
Brockton.....	12.1		
Cambridge.....	7.7		
Fall River.....	8.7		
Framingham.....	8.6		
Holyoke.....	8.1		
Lawrence.....	8.2		
Lowell.....	8.4		
Lynn.....	9.1		
Malden.....	7.2		
New Bedford.....	9.9		
Newton.....	7.3		
Pittsfield.....	10.3		
Salem.....	8.4		
Somerville.....	8.4		
Springfield.....	9.0		
Taunton.....	9.1		
Worcester.....	8.7		
<i>Rhode Island</i>			
Pawtucket.....	9.9		
Providence.....	8.4		
Woonsocket.....	9.7		
<i>Connecticut</i>			
Bridgeport.....	8.0		
Darby.....	10.5		
Hartford.....	9.2		
New Haven.....	7.9		
New London.....	9.2		
Norwich.....	10.1		
Stamford.....	9.7		
Waterbury.....	10.3		
<i>New York</i>			
Albany.....	10.1		
Amsterdam.....	8.0		
Ashtab.....	7.3		
Roshamton.....	7.8		
Buffalo.....	6.3		
Cohoes.....	10.8		
Elmira.....	6.0		
Glen Falls.....	12.3		
Hempstead.....	8.4		
Mt. Vernon.....	7.4		
Newburgh.....	9.3		
New York City.....	7.7		
Niagara Falls.....	8.2		
Rochester.....	5.5		
Schenectady.....	7.3		
Syracuse.....	6.9		
Troy.....	10.5		
Utica.....	6.9		
Watertown.....	11.6		
Yonkers.....	7.8		
<i>New Jersey</i>			
Atlantic City.....	9.5		
Bayonne.....	9.2		
Blondfield.....	8.3		
Burlington.....	9.6		
Camden.....	10.7		
Dever (N. J.).....	12.0		
Elizabeth.....	8.6		
Hackensack.....	6.4		
Hoboken.....	8.8		
Irvington.....	9.2		
Jersey City.....	10.6		
Jersey City Hts.....	8.9		
Newark.....	8.1		
New Brunswick.....	8.7		
Oranges.....	7.7		
Passaic.....	7.7		

\* Includes influenza-pneumonia experience of all policies "in force" in districts having their offices in specified cities

Table 7 (continued)

Area	Influenza-pneumonia claim rate per 1,000, Oct. '18 to June '19	Area	Influenza-pneumonia claim rate per 1,000, Oct. '18 to June '19
By Cities (cont.)		By Cities (cont.)	
<i>New Jersey (cont.)</i>		Missouri	
Paterson	9.4	Kansas City (Mo.)	8.8
Plainfield	10.4	Meriden	7.1
Red Bank	10.3	Poplar Bluff	10.1
Trenton	11.2	Sedalia	7.3
Union Hill	7.0	St. Joseph	8.1
Woodbury	11.0	St. Louis	5.0
<i>Pennsylvania</i>		Delaware	
Allentown	7.8	Doover (Del.)	10.2
Bradford	12.3	Wilmington	13.1
Chester	10.1	Massachusetts	
Harrisburg	9.2	Baltimore	9.0
Jonestown	7.2	Cumherland	14.0
Lancaster	11.9	Hagerstown	11.0
Mckeesport	11.0	Harre de Gray	8.1
Millvale	12.0	Dist. of Columbia	
New Castle	8.0	Washington, D. C.	9.1
Norristown	11.4	Virginia	
Philadelphia	11.0	Norfolk	7.5
Pittsburgh	11.0	Richmond	6.7
Pottsville	23.1	West Virginia	
Reading	10.2	Charlottesville	7.6
Scranton	10.6	Wheeling	9.3
Uniontown	10.3	North Carolina	
Wilkes Barre	13.3	Charlotte	10.8
Williamsport	12.3	Greensboro	7.3
<i>Ohio</i>		Ireland	
Akron	6.5	Galway	9.5
Canton	7.5	Georgia	
Cincinnati	7.5	Athens	6.0
Cleveland	6.7	Augusta	7.5
Columbus	6.0	Columbus	6.5
Dayton	5.5	Macon	6.6
Edgewood Place	8.3	Savannah	6.3
Springfield	6.1	Florida	
Steubenville	9.1	Jacksonville	7.0
Toledo	4.5	Alabama	
Youngstown	9.0	Birmingham	7.0
Zanesville	7.1	Mobile	7.7
<i>Tennessee</i>		Kentucky	
Evansville	6.1	Covington	8.1
Fort Wayne	4.1	Lexington	7.2
Indianapolis	6.1	Louisville	7.4
Muske	5.6	Petersburg	8.0
New Albany	6.0	Paris	8.4
South Bend	6.5	Tennessee	
Hammond	—	Chattanooga	6.7
<i>Illinois</i>		Jackson	
Alton	7.5	Knoxville	4.7
Belleville	7.4	Memphis	7.1
Carbondale	7.2	Nashville	7.3
Chicago	3.5	Arkansas	
East St. Louis	6.9	Little Rock	4.5
Peoria	9.4	Lexington	10.3
Quincy	7.3	Louisiana	
Rockford	7.0	New Orleans	10.3
Springfield	7.2	Idaho	
<i>Michigan</i>		Salt Lake City	
Detroit	5.1	Washington	4.8
Grand Rapids	4.7	Seattle	4.2
Flint	—	Oregon	
Bay View	5.0	Portland	4.0
Milwaukee	5.2	California	
Jones	—	Los Angeles	5.9
Davenport	6.1	Oakland	6.4
Des Moines	5.9	San Francisco	6.2
Ottawa	6.5	San Jose	6.2
Kansas		Canada	
Kansas City	6.0	Hamilton	6.2
Nebraska		Montreal	8.0
Omaha	7.3	Ottawa	11.5
Minnesota		Quebec	8.5
Duluth	4.6	Sherbrooke	12.8
Minneapolis	3.7	Three Rivers	13.1
St. Paul	5.4	Toronto	5.8
		Vancouver	6.1
		Winnipeg	4.9