

HEALTH PROGRESS AMONG INDUSTRIAL
POLICYHOLDERS, 1946 TO 1950

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INTRODUCTION

THIS survey of the mortality experience of Industrial policyholders of the Metropolitan Life Insurance Company for the postwar years 1946 to 1950 is a continuation of two earlier studies.¹ The first of these covered the twenty-five year period beginning with 1911, when detailed annual data according to age, sex, color, and cause of death first became available. It was essentially a story of great reductions in mortality brought about by the control of the common infectious conditions. The second survey reported the experience from 1936 to 1945. During this period, which saw further gains against the infections, the degenerative diseases including cancer became more firmly entrenched in their position as the leading causes of death. An outstanding feature of the short postwar period covered by the present survey is not only the development of new chemotherapeutic substances, antibiotics, and other medical and surgical advances, but also the rapidity with which they have been put to widespread and effective use. The postwar years have been favored further by a great extension of public health services, by more popular support of the many voluntary health and welfare agencies, by the rapid increase in hospital use as a result of the great growth of insurance to cover the expenses involved, and, lastly, by a marked rise in our standard of living. All of these factors have operated to reduce the mortality of the white and the colored of both sexes, and at virtually every age period of life.

The distribution of the Industrial premium-paying policyholders according to color, sex, and age in the age range 1-74 years for the period 1946-1950 is shown in Table 1.² Altogether, this experience is based on

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¹ L. I. Dublin and A. J. Lotka, *Twenty-five Years of Health Progress*, published in 1937, and L. I. Dublin, *Health Progress, 1936 to 1945*, published in 1948 by the Metropolitan Life Insurance Company, New York. Factors bearing upon mortality discussed in detail in the earlier surveys are not repeated here.

² Whereas the earlier surveys were based upon the experience of Weekly premium-paying policyholders alone, the greatly increased volume of Monthly debit business makes it desirable to base the present survey upon the combined Weekly and Monthly premium-paying business. For the sake of comparability with general population data, all ages in this report are on a last birthday basis.

more than 95,000,000 life-years of exposure, of which 11.7 percent are colored and 57.7 percent are females. For the most part, the Industrial policyholders are members of wage-earning families living in urban areas of the country. The experience is thus the only published source of information regarding the progress of health and longevity of that segment of the population.

THE GENERAL MORTALITY FROM ALL CAUSES

Within the brief period of five years, mortality among Metropolitan Industrial policyholders fell by one eighth, declining without interrup-

TABLE 1
PERCENTAGE DISTRIBUTION OF PREMIUM-PAYING POLICYHOLDERS
BY COLOR, SEX, AND AGE—AGES 1 TO 74 YEARS
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1946 TO 1950
(Total at Ages 1-74 Years: 95,095,926 life-years= 100.00%)

AGE PERIOD YEARS	TOTAL	WHITE		COLORED	
		Males	Females	Males	Females
1-74.....	100.00%	37.03%	51.25%	5.26%	6.46%
1-4.....	7.06	3.30	3.24	.26	.26
5-14.....	19.10	8.85	8.75	.73	.77
15-24.....	18.71	7.83	8.93	.95	1.00
25-44.....	28.79	8.95	15.72	1.78	2.34
45-64.....	21.48	6.60	11.81	1.32	1.75
65-74.....	4.86	1.50	2.80	.22	.34

tion from 529.2 per 100,000 at ages 1-74 years in 1946 to 463.2 in 1950.* The rate for 1950 is little over half that of about two decades earlier, 1926-1930.⁴ A ready picture of the marked downward trend in death rates

* Continuing a practice adopted many years ago, the Standard Million Population of England and Wales, 1901, was used for the age-adjustment of death rates. To compute age-adjusted rates for the entire group of policyholders, the age-adjusted rates for white and colored persons were weighted by their proportions in the general population in the Death Registration States of 1920. Further detail regarding the procedure is given in *Twenty-five Years of Health Progress*, pp. 526-528. A comparison was made of age-adjusted rates for all causes and for several important causes computed in the manner just indicated with those based upon the age-sex-color distribution of Industrial policyholders in 1947. This comparison showed that the trend of the age-adjusted rates over the short period of this study would be the same by the use of either standard population. However, the level of the age-adjusted rates is, of course, affected by the choice of the standard.

⁴ The death rates for 1926-1930 are based upon the experience of Weekly premium-paying policyholders only; the Monthly business at that time was relatively small.

since 1911 is provided by Chart I. The sharp decline before World War I was interrupted by the extremely high mortality of the influenza epidemic of 1918, but the recovery was rapid. During most of the decade of the 1920's, there was no substantial improvement in mortality. However, since 1930 the decline in death rates has been continuous after deaths from enemy action during World War II are excluded. This forty year period of improvement in mortality is without parallel in history. New low records are continuously being made. They provide gratification and astonishment; no serious student of mortality would guess when the death rate will reach a minimum and what it will be.

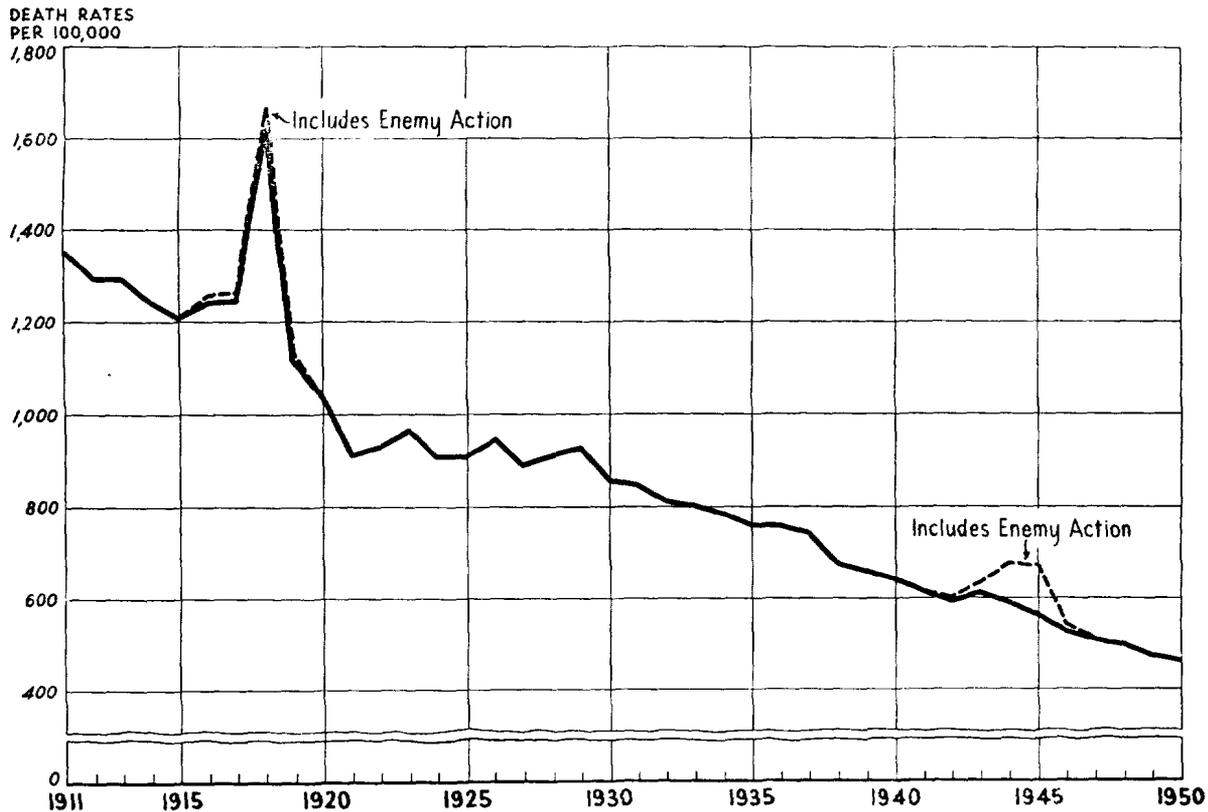
Color, sex, and age.—The detailed death rates in Table 2 show that each color, sex, and age category registered notable reductions between 1946 and 1950. The outstanding features of the trend are the greater reductions for females than for males and for colored than for white persons, and reductions averaging about one third at ages under 25 years. Declines were recorded even at the higher ages. As a result of these changes, the ratio of male to female death rates among white persons at ages 1–74 years rose from 1.56 in 1946 to 1.70 in 1950; among the colored, the rise was from 1.15 to 1.22. At the same time, the ratio of colored to white death rates for males fell somewhat from 1.31 in 1946 to 1.22 in 1950; among females, the corresponding drop was from 1.77 to 1.71. The excess in the death rates for the colored over those for white persons continues to be substantial, notwithstanding the greater rate of improvement for the colored in the postwar period.

The decreases in the age-specific death rates are much more impressive when 1950 is compared with 1926–1930. At ages 1–4 years the reductions were more than 80 percent. Even at ages 65–74 years the death rate for males fell by more than one quarter and for females by one third.

Leading causes of death.—There are characteristic differences in the ranking of the five leading causes of death when the experience among Industrial policyholders is considered separately according to color, sex, and age; the pertinent data for 1946–1950 are shown in Table 3. Among children at ages 1–4 years, accidents ranked first as a cause of death in each color-sex category, accounting for about one quarter of all deaths at this period of life. Pneumonia and influenza held second place in each case, causing about one sixth of the total. Among white children the third ranking cause was malignant neoplasms, while for the colored it was tuberculosis.

At ages 5–14 years, accidents were by far the most important cause of death; they accounted for over two fifths of the male deaths and over one fifth of the female deaths. Malignant neoplasms ranked second for

CHART I
ANNUAL DEATH RATES FROM ALL CAUSES FOR TOTAL PERSONS AT AGES 1-74 YEARS*
METROPOLITAN LIFE INSURANCE COMPANY, INDUSTRIAL DEPARTMENT, 1911 TO 1950



* Standardized death rates.

TABLE 2
DEATH RATES FROM ALL CAUSES*
BY COLOR, SEX, AND AGE
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD YEARS	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons								
1-74†	463.2	476.4	499.6	511.4	529.2	905.8	-12.5%	-48.9%
White Males								
1-74†	569.1	582.5	607.2	614.7	624.4	976.0	- 8.9%	-41.7%
1- 4	109.0	126.3	144.8	153.7	169.8	599.3	-35.8	-81.8
5-14	60.3	65.3	66.1	73.6	80.4	199.4	-25.0	-69.8
15-24	119.8	127.8	134.7	140.4	182.8	315.1	-34.5	-62.0
25-44	280.8	289.0	307.2	315.4	336.4	658.1	-16.5	-57.3
45-64	1667.1	1708.9	1746.9	1773.7	1739.7	2430.1	- 4.2	-31.4
65-74	5240.4	5245.4	5336.7	5461.0	5378.2	7013.8	- 2.6	-25.3
White Females								
1-74†	334.0	347.0	365.9	381.5	399.3	749.4	-16.4%	-55.4%
1- 4	89.2	104.3	116.3	117.3	142.0	529.9	-37.2	-83.2
5-14	39.0	41.1	41.8	44.4	52.9	161.4	-26.3	-75.8
15-24	59.9	60.9	64.5	80.5	88.4	304.0	-32.2	-80.3
25-44	159.9	166.4	181.2	193.7	209.9	506.9	-23.8	-68.5
45-64	875.7	909.9	958.5	993.1	1015.8	1674.1	-13.8	-47.7
65-74	3550.3	3657.7	3803.1	3878.5	3987.6	5627.0	-11.0	-36.9
Colored Males								
1-74†	695.8	698.9	755.5	752.3	815.9	1488.9	-14.7%	-53.3%
1- 4	192.1	140.6	215.1	192.4	255.4	1110.5	-24.8	-82.7
5-14	68.2	87.3	96.6	94.9	109.9	322.7	-37.9	-78.9
15-24	205.3	217.6	233.2	240.4	307.5	769.1	-33.2	-73.3
25-44	452.0	449.6	495.8	499.0	573.9	1264.8	-21.2	-64.3
45-64	1860.1	1934.8	2059.9	2015.9	2116.0	3282.9	-12.1	-43.3
65-74	5803.3	5521.0	5853.5	5959.9	6051.8	8023.0	- 4.1	-27.7
Colored Females								
1-74†	572.5	595.5	618.6	648.0	707.7	1353.7	-19.1%	-57.7%
1- 4	141.0	149.3	138.9	147.7	208.9	969.5	-32.5	-85.5
5-14	61.6	49.3	73.0	67.4	94.5	304.6	-34.8	-79.8
15-24	179.7	193.6	213.3	273.0	290.4	879.6	-38.1	-79.6
25-44	388.5	412.1	438.1	479.1	517.8	1167.7	-25.0	-66.7
45-64	1524.7	1596.1	1620.9	1674.2	1760.5	2810.1	-13.4	-45.7
65-74	4605.3	4723.2	4820.3	4739.8	5315.0	6895.1	-13.4	-33.2

* Exclusive of deaths from enemy action.

† Death rates standardized for age.

white children and fourth for the colored. Diseases of the heart took third place for all but colored females, where they ranked second. Accidents continued in the forefront among males at 15-24 years, but for females tuberculosis was in first place. Within these ages, diseases of the heart were also prominent among the causes of death. At ages 25-44 years, they rose to first place for white males and second place for each of the other color-sex categories. Beginning with age 45, diseases of the heart were consistently in first place, followed by malignant neoplasms in all instances but one. Intracranial lesions of vascular origin were third in order after age 45 in all classes but one. Among older females, diabetes ranked high as a cause of death.

For the period 1946-1950, the causes of death were classified on the basis of the Fifth Revision of the International List of Causes of Death and the Fourth Edition of the Manual of the Joint Causes of Death. The record for 1950 thus terminates a forty year series with a fairly comparable basis for classification of causes of death. This continuity was hardly disturbed by the introduction, in 1950, of a revised form of death certificate and claim certificate to accord with recommendations made in connection with the Sixth Revision of the International List of Diseases and Causes of Death. With the Sixth Revision, the cause of death tabulated, where more than one is stated, is the one indicated by the physician on the death certificate as the underlying cause, instead of being selected by a set of prescribed rules, as with the Manual of Joint Causes. The causes of death for 1950 were classified according to the current Sixth Revision, in addition to the Fifth Revision. Except for diabetes, and possibly nephritis, the ranking of the leading causes of death would not be appreciably altered by the use of the Sixth Revision.

Comparison with general population.—The Industrial policyholders and the general population are distinguished by several factors that have a bearing upon mortality. It has already been mentioned that Industrial policyholders are predominantly members of urban wage-earning families in the lower income brackets. A very small proportion of the family heads are engaged in agriculture or in professional pursuits, which are the occupation-type classes that generally experience the lowest mortality. Over 8 percent of the Industrial policyholders are residents of Canada. The insured lives entering into this experience have been subject to a certain degree of underwriting selection. However, this selection is not at as high a standard as for Ordinary insurance and its effect upon the mortality of the entire body of insured lives is not long-lasting.

The death rate among Metropolitan Industrial policyholders at ages 1-74 years was only 3 percent higher than that of the general population

TABLE 3
RANK OF FIVE LEADING CAUSES OF DEATH IN SPECIFIED AGE GROUPS, BY RACE AND SEX
METROPOLITAN LIFE INSURANCE COMPANY, INDUSTRIAL DEPARTMENT, 1946 TO 1950

RANK	WHITE				COLORED			
	Males		Females		Males		Females	
	Cause of Death	% of All Causes	Cause of Death	% of All Causes	Cause of Death	% of All Causes	Cause of Death	% of All Causes
1-74 Years								
1.....	Diseases of the heart*	37%	Diseases of the heart*	31%	Diseases of the heart*	29%	Diseases of the heart*	30%
2.....	Malignant neoplasms	16	Malignant neoplasms	23	Malignant neoplasms	12	Malignant neoplasms	15
3.....	Accidents	10	Intracranial lesions	10	Intracranial lesions	9	Intracranial lesions	13
4.....	Intracranial lesions	6	Chronic nephritis	5	Tuberculosis	9	Chronic nephritis	7
5.....	Tuberculosis	5	Accidents	4	Accidents	7	Tuberculosis	7
1-4 Years								
1.....	Accidents	28%	Accidents	21%	Accidents	26%	Accidents	23%
2.....	Pneumonia and influenza	13	Pneumonia and influenza	16	Pneumonia and influenza	18	Pneumonia and influenza	18
3.....	Malignant neoplasms	9	Malignant neoplasms	10	Tuberculosis	11	Tuberculosis	10
4.....	Congenital malformations	6	Congenital malformations	7	Congenital malformations	5	Communic. dis. of childhood	6
5.....	Communic. dis. of childhood	4	Communic. dis. of childhood	6	Communic. dis. of childhood	5	Congenital malformations	5
5-14 Years								
1.....	Accidents	44%	Accidents	23%	Accidents	42%	Accidents	21%
2.....	Malignant neoplasms	11	Malignant neoplasms	12	Tuberculosis	9	Diseases of the heart*	16
3.....	Diseases of the heart*	5	Diseases of the heart*	9	Diseases of the heart*	8	Tuberculosis	15
4.....	Acute poliomyelitis	5	Pneumonia and influenza	5	Malignant neoplasms	5	Malignant neoplasms	6
5.....	Pneumonia and influenza	5	Tuberculosis	6	Appendicitis	4	Pneumonia and influenza	5

* Includes acute rheumatic fever at ages 1-24 years, organic diseases of the heart (1909 classification), diseases of the coronary arteries and angina pectoris.

TABLE 3—Continued

RANK	WHITE				COLORED			
	Males		Females		Males		Females	
	Cause of Death	% of All Causes	Cause of Death	% of All Causes	Cause of Death	% of All Causes	Cause of Death	% of All Causes
15-24 Years								
1.....	Accidents	54%	Tuberculosis	18%	Accidents	28%	Tuberculosis	43%
2.....	Malignant neoplasms	7	Accidents	17	Tuberculosis	26	Puerperal state	10
3.....	Diseases of the heart*	6	Diseases of the heart*	9	Homicide	14	Accidents	7
4.....	Tuberculosis	6	Malignant neoplasms	9	Diseases of the heart*	5	Diseases of the heart*	6
5.....	Suicide	4	Puerperal state	8	Pneumonia and influenza	3	Homicide	4
25-44 Years								
1.....	Diseases of the heart*	23%	Malignant neoplasms	25%	Tuberculosis	20%	Tuberculosis	17%
2.....	Accidents	21	Diseases of the heart*	15	Diseases of the heart*	15	Diseases of the heart*	16
3.....	Tuberculosis	11	Tuberculosis	10	Accidents	12	Malignant neoplasms	14
4.....	Malignant neoplasms	10	Accidents	5	Homicide	9	Intracranial lesions	7
5.....	Suicide	5	Puerperal state	5	Malignant neoplasms	6	Chronic nephritis	7
45-64 Years								
1.....	Diseases of the heart*	41%	Diseases of the heart*	30%	Diseases of the heart*	32%	Diseases of the heart*	32%
2.....	Malignant neoplasms	18	Malignant neoplasms	28	Malignant neoplasms	14	Malignant neoplasms	18
3.....	Intracranial lesions	6	Intracranial lesions	11	Intracranial lesions	10	Intracranial lesions	14
4.....	Tuberculosis	5	Diabetes	7	Tuberculosis	7	Chronic nephritis	7
5.....	Accidents	5	Chronic nephritis	4	Chronic nephritis	6	Diabetes	5
65-74 Years								
1.....	Diseases of the heart*	44%	Diseases of the heart*	40%	Diseases of the heart*	39%	Diseases of the heart*	41%
2.....	Malignant neoplasms	18	Malignant neoplasms	18	Malignant neoplasms	14	Intracranial lesions	16
3.....	Intracranial lesions	10	Intracranial lesions	13	Intracranial lesions	13	Malignant neoplasms	13
4.....	Chronic nephritis	5	Diabetes	7	Chronic nephritis	8	Chronic nephritis	8
5.....	Accidents	3	Chronic nephritis	5	Pneumonia and influenza	4	Diabetes	4

of the United States, after adjustment for differences in age, sex, and color composition, according to data for 1946-1948, the latest comparable period. However, the detailed comparison in Table 4 shows that the excess mortality is concentrated at ages 25-74 for white males, at ages 45-74 for white females, and at ages 65-74 for the colored of both sexes.⁵ On the other hand, for both white males and white females under 25, the death rates for the insured lives averaged about 90 percent of that for the general white population. The death rates for colored persons under 65 averaged about 80 percent of the comparable rates for the colored in the general population.

The Industrial policyholders, moreover, have experienced a more rapid reduction in death rate than the general population. Thus, the data in the lower panels of Table 4 show that the death rate at ages 1-74 years for white males with Industrial insurance fell 37 percent from 1926-1930 to 1946-1948, while that for the general population dropped 27 percent; a like situation is observed for the other color-sex groups. The insured lives at ages 45-74 years, in particular, had an appreciably greater rate of mortality reduction than the general population. This differential decline has closed the gap in longevity between the Industrial policyholders and the general population. The average length of life according to mortality in 1948 was 67.2 years for both groups. In 1911-1912, the earliest period of comparison, these insured, with an average length of life of 46.6 years, were at a disadvantage of 6.4 years as compared with the general population.

The rapid rise in the average length of life of Industrial policyholders is evident in Table 5.⁶ This average was 68.27 years in 1950, about three years greater than in 1945, the closing year of World War II. Compared with 1930, the gain in the ensuing two decades amounts to more than 10 years. The improvement in average length of life from 1911-1912 to 1950 is over 21 years.

THE PRINCIPAL COMMUNICABLE DISEASES OF CHILDHOOD

The death rate from the principal communicable diseases of childhood (diphtheria, measles, scarlet fever, and whooping cough) among the Industrial policyholders at ages 1-14 years dropped by more than three quarters within the short period from 1946 to 1950, to a low of only 1.3

⁵ It should be noted, in this connection, that mortality rates for colored persons in the general population at about ages 65 and over are not reliable.

⁶ The mortality records of premium-paying Industrial policyholders in the first year of life and at ages 75 and over are not adequate for the computation of mortality rates for the preparation of a life table. In their place were substituted population data; see Appendix I of *Twenty-five Years of Health Progress*.

TABLE 4

MORTALITY OF METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT AND GENERAL POPULATION
OF UNITED STATES COMPARED IN 1946-1948, AND FOR
CHANGES SINCE 1926-1930: BY COLOR, SEX, AND AGE

AGE PERIOD YEARS	WHITE MALES	WHITE FEMALES	COLORED MALES	COLORED FEMALES
Ratio of Death Rates: M.L.I. Co. to U.S., 1946-1948				
1-74*	1.07	1.04	.81	.83
1- 4 . . . . .	.94	.90	.81	.69
5-14 . . . . .	.90	.87	.93	.88
15-24 . . . . .	.89	.85	.78	.87
25-44	1.05	.98	.69	.76
45-64	1.12	1.08	.78	.78
65-74	1.07	1.09	1.03	1.01
Percentage Change: 1946-1948 since 1926-1930 Metropolitan Life Insurance Company				
1-74*	-37%	-49%	-48%	-51%
1- 4	-74	-76	-80	-83
5-14	-63	-71	-69	-74
15-24	-52	-74	-66	-71
25-44	-51	-62	-59	-59
45-64	-28	-41	-37	-40
65-74	-22	-31	-26	-28
Percentage Change: 1946-1948 since 1926-1930 General Population of the United States				
1-74*	-27%	-44%	-35%	-44%
1- 4	-72	-75	-76	-76
5-14	-60	-69	-62	-67
15-24	-45	-68	-60	-66
25-44	-43	-57	-48	-54
45-64	-11	-34	-14	-31
65-74	-10	-25	-13	-20

* Based on standardized death rates.

per 100,000. The decline was most rapid for white males, namely 82 percent to a rate of 0.9 per 100,000 in 1950; for white females, the decline was 75 percent to a rate of 1.4 per 100,000. The death rates from the principal communicable diseases of childhood not only tend to be higher among the colored than the white children, but their rate of improvement has been smaller. The death rate from these diseases in 1950 was fully 97 percent less than the rate about two decades earlier for all of these insured children; the details are shown in Table 6.

TABLE 5
EXPECTATION OF LIFE AT BIRTH
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT 1911-1912 TO 1950*

Calendar Year	Expectation in Years	Calendar Year	Expectation in Years	Calendar Year	Expectation in Years
1950†	68.27	1939	62.50	1928	55.88
1949	67.72	1938	61.94	1927	56.42
1948	67.16	1937	60.71	1926	55.02
1947	66.50	1936	60.31	1925	55.51
1946†	65.57	1935	60.25	1924	55.62
1945†	64.95	1934	59.45	1923	54.55
1944†	64.40	1933	59.19	1922	55.04
1943†	63.86	1932	58.80	1921	55.08
1942†	64.26	1931	57.90	1919-1920	51.14
1941	63.42	1930	57.36	1911-1912	46.63
1940	62.93	1929	55.78		

Gain, 1950 since 1911-1912, 21.6 years.

* The figures for 1948 to 1950 relate to the total Industrial Department—Weekly and Monthly Premium-Paying business combined; prior to 1948 the figures pertain to the Weekly business alone. The expectation of life at birth for the total is about two fifths of a year greater than that for the Weekly Premium-Paying business.

† The figures for the years 1942-1946 and 1950 exclude military and civilian deaths from enemy action.

Considering the childhood diseases individually, the postwar decline in mortality was most rapid for diphtheria which, during the war years, experienced a rise in death rates. Except for 1946, the rates in the period are lower than any recorded before; the drop has been steady from 2.2 per 100,000 at ages 1-14 years in 1946 to only 0.3 in 1950. With the resumption of the immunization program interrupted by the war, the campaign against diphtheria has practically eliminated the disease. In 1948, there were 634 deaths from this condition in the general population of the United States, more than one half of them in the South.

The death rate from whooping cough at ages 1-14 years in this experience was 0.4 per 100,000 in 1950, just half the rate in 1946. Here, too,

immunization has been successful, especially with its more widespread use in recent years. There have also been important improvements in the medical care of those with the disease.

Although it is possible to immunize against scarlet fever for short periods, the long-term drop in mortality from the disease is generally ascribed to a decrease in the virulence of the causative organism. It is also likely that the improved standard of living has increased resistance to the disease. Medical treatment of scarlet fever has been greatly advanced

TABLE 6

DEATH RATES FROM PRINCIPAL COMMUNICABLE DISEASES OF CHILDHOOD
BY COLOR AND SEX, AGES 1-14 YEARS*
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

COLOR, SEX; CAUSE OF DEATH	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons.....	1.3	2.6	2.9	3.1	5.4	51.8	-75.9%	-97.5%
Measles.....	0.5	1.2	1.6	0.6	2.0	11.5	-75.0	-95.7
Scarlet fever.....	.1	.2	.1	.2	.4	7.0	-75.0	-98.6
Whooping cough.....	.4	.6	.5	.6	.8	9.5	-50.0	-95.8
Diphtheria.....	.3	.6	.7	1.7	2.2	23.7	-86.4	-98.7
White Males.....	0.9	1.9	3.0	2.8	5.1	51.1	-82.4	-98.2
White Females.....	1.4	3.2	2.6	3.2	5.6	51.1	-75.0	-97.3
Colored Males.....	2.3	2.8	4.4	4.5	3.6	58.2	-36.1	-96.0
Colored Females.....	2.2	2.8	3.6	4.6	6.2	60.2	-64.5	-96.3

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

by the use of sulfa drugs, the antibiotics, and special serums. The death rate from scarlet fever among Industrial policyholders at ages 1-14 years was only 0.1 per 100,000 in 1950, three quarters less than in 1946.

The death rate from measles at ages 1-14 years has also been reduced by three quarters since 1946, to a level of 0.5 per 100,000 in 1950. Successful immunity against measles has been made possible with gamma globulin, a blood product from wartime research. It has also been used to abort mild cases of measles.

The benefit from these gains against the principal communicable diseases of childhood is not only in lives saved from an early death, but also in a reduction of the complications that take their toll in later life.

TUBERCULOSIS—ALL FORMS

Mortality from tuberculosis has been moving to lower levels at an accelerated rate in this group of insured lives. A 40 percent reduction from 1946 to 1950 brought the death rate to only 18.8 per 100,000 Industrial policyholders at ages 1-74 in the latter year. For white females, the death rate was more than halved; the reduction among white males was just one third. Colored females had somewhat less than a 50 percent decrease in their tuberculosis death rate from 1946 to 1950, while for colored males the decline was almost 40 percent. For each color-sex category the rate of improvement was greatest at ages 15-24 years, where it averaged about 60 percent. Further details are shown in Table 7.

Among white persons in 1950, the tuberculosis death rate for males at ages 1-74 years was practically three times that for females, the rate for the latter being only 8.4 per 100,000. The corresponding ratio of male to female mortality for colored persons was 1.45.

Compared with white policyholders, the colored still have a particularly poor record for tuberculosis. Among males in 1950, the death rate for the colored at ages 1-74 years was $2\frac{1}{2}$ times that for the whites; for females the ratio was as high as $4\frac{1}{2}$.

Each color-sex category had its lowest death rate at ages 5-14 years, but only males show a steady rise with each advance in age. White females have a high point in mortality at ages 25-44 years, but this is rapidly being leveled. As with males, the peak in white female mortality from tuberculosis is at ages 65-74 years. Although colored females generally record their highest mortality at ages 15-24 years, there is a tendency for this peak to shift to the next higher age group, 25-44 years.

Many elements have contributed to the improvement in tuberculosis in the postwar period. Benefits have accrued, indirectly, from our rising standard of living. Recent promotion of mass X-ray examinations has increased the reported numbers of new cases, many while still at the minimal stage of tuberculosis. Early case-finding on a large scale, coupled with prompt and full treatment, offers the best possibilities for further gains against the disease. Such case-finding is also helpful in isolating open cases, from which the disease spreads. There have been, rather recently, medical and surgical advances in the treatment of tuberculosis that have both improved the chances of recovery and reduced the period of illness. The growing attention paid to the rehabilitation of discharged tuberculosis patients is also bringing many benefits. Tuberculosis will undoubtedly be reduced to a minor cause of death before long.

TABLE 7
DEATH RATES FROM TUBERCULOSIS—ALL FORMS
BY COLOR, SEX, AND AGE
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD YEARS	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons								
1-74*	18.8	21.3	24.3	27.9	31.3	91.7	-39.9%	-79.5%
White Males								
1-74*	24.4	26.4	30.4	33.1	36.4	93.2	-33.0%	-73.8%
1-4	4.5	4.2	4.0	4.9	8.9	28.3	-49.4	-84.1
5-14	1.3	1.2	1.2	1.7	2.1	9.2	-38.1	-85.9
15-24	5.1	4.8	7.3	9.4	13.5	63.8	-62.2	-92.0
25-44	24.9	28.1	34.5	37.7	42.1	139.8	-40.9	-82.2
45-64	72.6	81.1	89.9	97.5	102.4	185.5	-29.1	-60.9
65-74	116.9	114.6	121.0	119.2	118.4	159.0	-1.3	-26.5
White Females								
1-74*	8.4	10.2	12.3	14.7	17.3	68.3	-51.4%	-87.7%
1-4	4.5	3.9	6.4	4.7	8.9	28.1	-49.4	-84.0
5-14	1.8	1.3	2.5	2.2	3.0	12.5	-40.0	-85.6
15-24	6.4	8.8	10.5	16.2	20.4	107.9	-68.6	-94.1
25-44	12.4	15.2	19.0	22.9	25.1	95.3	-50.6	-87.0
45-64	11.3	13.8	14.7	17.5	20.5	64.9	-44.9	-82.6
65-74	26.0	32.4	31.0	30.3	31.7	79.1	-18.0	-67.1
Colored Males								
1-74*	57.1	66.1	69.4	80.5	93.0	216.5	-38.6%	-73.6%
1-4	25.0	14.5	19.0	12.1	33.7	129.1	-25.8	-80.6
5-14	5.0	9.1	4.3	10.0	11.8	62.4	-57.6	-92.0
15-24	35.5	51.8	57.6	73.5	86.9	310.8	-59.1	-88.6
25-44	80.4	90.5	91.3	116.5	128.4	284.3	-37.4	-71.7
45-64	115.3	133.4	145.5	154.1	174.3	239.7	-33.8	-51.9
65-74	140.7	141.3	157.0	115.1	136.1	183.1	+3.4	-23.2
Colored Females								
1-74*	39.4	49.2	52.6	69.0	73.8	215.4	-46.6%	-81.7%
1-4	9.7	18.4	12.6	14.0	21.5	120.5	-54.9	-92.0
5-14	8.8	4.7	6.3	14.0	15.7	89.7	-43.9	-90.2
15-24	59.7	71.0	86.5	131.8	143.0	423.9	-58.3	-85.9
25-44	57.4	79.9	80.0	94.5	97.0	254.1	-40.8	-77.4
45-64	37.4	45.4	42.2	49.8	57.0	126.2	-34.4	-70.4
65-74	46.2	40.6	66.9	63.8	50.2	104.4	-8.0	-55.7

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

PNEUMONIA AND INFLUENZA

By the close of World War II, the sulfa drugs and penicillin had brought the death rate from pneumonia to what seemed, at the time, a very low level. Since then, antibiotics have been developed which have proved to be even more effective against pneumonia. From 1946 to 1950, the death rate from pneumonia and influenza combined⁷ among Industrial policyholders at ages 1-74 fell by almost half, reaching a low of 11.3 per 100,000. The age pattern of the recent mortality reductions is mixed, as may be seen in Table 8. Between 1926-1930—before the introduction of the pneumonia serums, the sulfa drugs, and the antibiotics—and 1950 the death rates for pneumonia and influenza fell almost 90 percent.

The ratio of male to female death rates from pneumonia and influenza at ages 1-74 years is almost 2 for white persons and about $1\frac{1}{3}$ for the colored; the differences between the sexes are most marked at ages 45-64, the later years of productive life. The death rate for the colored at ages 1-74 is nearly twice that for the white persons in the case of males; among females the ratio is about $2\frac{3}{4}$.

Reliable vaccines against pneumonia and influenza that may be utilized generally are not yet available. Meanwhile, the usual precautionary measures against infection are the best means to forestall these conditions. With more widespread use of the present efficient treatments for pneumonia, especially among the colored, the mortality for this group of diseases should be reduced further.

MALIGNANT NEOPLASMS⁸

Although malignant neoplasms are generally considered a condition typical of midlife and later, they are, nevertheless, the leading disease among the causes of death for white children at ages 5-14 years (see Table 3). Among Industrial policyholders at ages 1-74 years, malignant neoplasms ranked second to diseases of the heart in each color-sex category. There was, at most, only a small increase in mortality from this condition during the postwar period, the death rate at ages 1-74 years rising by 2.8 percent from 85.7 per 100,000 in 1946 to 88.1 in 1950. For white males at these ages, the rate moved upward, but white females experienced a gradual reduction in death rates since 1946. In the case of colored males, there was a steady rise in death rates for the same period, the increase from 1946 to 1950 amounting to 16.1 percent. For colored females, the trend has been generally upward.

⁷ This combination continues the series presented in the two earlier surveys. Pneumonia is present as a complication in a large proportion of deaths from influenza.

⁸ The malignant neoplasms include leukemia and Hodgkin's disease along with the other cancers.

TABLE 8
DEATH RATES FROM PNEUMONIA AND INFLUENZA COMBINED
BY COLOR, SEX, AND AGE
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD YEARS	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons								
1-74*	11.3	12.8	15.3	16.6	20.4	95.3	-44.6%	-88.1%
White Males								
1-74*	13.7	16.0	19.1	20.2	24.1	103.5	-43.2%	-86.8%
1-4	12.6	18.2	18.8	19.1	24.5	163.5	-48.6	-92.3
5-14	2.3	2.8	3.3	3.5	5.0	19.7	-54.0	-88.3
15-24	2.3	2.6	3.0	3.5	5.1	29.0	-54.9	-92.1
25-44	6.6	7.5	9.6	9.0	13.8	77.1	-52.2	-91.4
45-64	36.1	41.4	49.7	53.7	58.1	234.0	-37.9	-84.6
65-74	116.9	132.2	161.3	170.5	191.2	551.8	-38.9	-78.8
White Females								
1-74*	7.1	8.2	9.5	10.7	13.7	72.6	-48.2%	-90.2%
1-4	12.2	17.1	19.4	19.6	22.8	142.0	-46.5	-91.4
5-14	2.1	2.4	2.1	2.8	3.6	19.4	-41.7	-89.2
15-24	2.2	1.7	2.4	2.4	3.6	22.7	-38.9	-90.3
25-44	3.3	3.7	4.8	4.9	7.0	45.6	-52.9	-92.8
45-64	12.3	12.4	15.4	19.8	24.4	135.7	-49.6	-90.9
65-74	65.3	79.4	86.2	92.9	120.8	467.4	-45.9	-86.0
Colored Males								
1-74*	25.9	28.2	31.4	36.5	44.8	206.6	-42.2%	-87.5%
1-4	19.2	31.1	29.5	38.4	59.4	406.6	-67.7	-95.3
5-14	1.4	3.5	2.9	5.1	3.9	39.0	-64.1	-96.4
15-24	4.2	10.1	5.2	7.6	12.1	93.7	-65.3	-95.5
25-44	16.1	18.6	24.8	21.0	30.6	187.5	-47.4	-91.4
45-64	67.4	72.0	78.0	98.1	113.4	377.9	-40.6	-82.2
65-74	226.4	168.6	216.5	255.2	272.1	790.5	-16.8	-71.4
Colored Females								
1-74*	19.4	17.5	22.8	25.8	33.0	155.4	-41.2%	-87.5%
1-4	27.1	12.3	23.1	29.9	44.9	339.1	-39.6	-92.0
5-14	2.1	7	5.6	2.7	5.1	39.0	-58.8	-94.6
15-24	4.0	7.7	9.4	8.7	12.7	84.2	-68.5	-95.2
25-44	14.5	10.9	18.2	20.4	23.6	119.7	-38.6	-87.9
45-64	39.7	41.8	46.3	59.4	68.1	259.6	-41.7	-84.7
65-74	148.7	144.2	143.2	157.2	221.6	653.7	-32.9	-77.3

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

The data according to age in Table 9 show that the reductions in death rates from malignant neoplasms were concentrated, for the most part, among white females in the age groups within 25-74 years.

In 1950, white females at ages 1-74 years had a death rate of 80.0 per 100,000 from the malignant neoplasms; for white males, the rate was 20 percent higher. Among the colored, on the other hand, the death rate for females, 92.7 per 100,000, was somewhat higher than for males. Whereas the death rate for colored females is appreciably higher than that for white females, the situation is reversed in the case of males.

The color-sex differentials just noted in the level and trends of mortality from the malignant neoplasms reflect both the progress in the control of these conditions and the improvement in quality of diagnosis. The latter is undoubtedly an important factor in the apparently rising mortality for colored persons. On the whole, white females have benefited most so far from the campaigns for the control of cancer. The situation may be studied in Table 10, where the trend of mortality from the malignant neoplasms during 1946-1950 is shown according to the organ or part of the body affected.

Cancers of the digestive organs and the peritoneum are by far the most important of the malignant neoplasms among males. White males showed reductions in mortality for these sites in 1949 and 1950. In the case of white females the death rate has moved consistently downward from 1946 to 1950. Colored males experienced an upward trend in the death rates during 1946-1950, but there was little change for colored females.

Cancer of the female genital organs accounts for almost one quarter of the deaths from malignant neoplasms among white females at ages 1-74 years; among colored females, the ratio is almost one third. For white females, the death rate for these cancers has improved somewhat from 1946 to 1950, while the rate for colored females has been practically stationary. In 1950, the death rate for cancer of the genital organs for the colored females was more than 50 percent greater than that for white females.

There has been little change in the death rates from cancer of the breast from 1946 to 1950 among both white and colored females. The rates at ages 1-74 years for both races were not far different in 1950, namely 14.8 per 100,000 for white females and 15.1 for colored females.

During the period 1946-1950, the death rates from cancer of the prostate remained fairly stationary. However, the rate in 1950 for colored males at ages 1-74 years, 9.1 per 100,000, was fully 50 percent above that for white males.

Since 1946 only white males and colored females gave any indication of a reduction in mortality from cancer of the buccal cavity.

TABLE 9
DEATH RATES FROM MALIGNANT NEOPLASMS
BY COLOR, SEX, AND AGE
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD YEARS	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons								
1-74* . . .	88.1	87.0	88.7	87.6	85.7	86.2	+ 2.8%	+ 2.2%
White Males								
1-74* . . .	96.1	95.0	95.8	94.6	89.1	83.5	+ 7.9%	+ 15.1%
1-4 . . .	11.0	12.8	13.4	16.0	10.9	6.8	+ .9	+ 61.8
5-14 . . .	7.7	6.9	6.5	8.1	6.8	3.8	+ 13.2	+ 102.6
15-24 . . .	8.8	9.3	8.7	8.8	8.4	6.4	+ 4.8	+ 37.5
25-44 . . .	31.1	32.9	30.0	30.6	26.3	27.0	+ 18.3	+ 15.2
45-64 . . .	306.2	302.7	313.9	302.1	285.8	281.8	+ 7.1	+ 8.7
65-74 . . .	1016.3	981.3	985.6	978.7	956.3	845.5	+ 6.3	+ 20.2
White Females								
1-74* . . .	80.0	79.6	81.9	82.0	83.0	91.2	- 3.6%	- 12.3%
1-4 . . .	11.9	10.3	9.8	10.4	10.8	6.4	+ 10.2	+ 85.9
5-14 . . .	5.9	4.6	4.7	5.2	5.2	2.8	+ 13.5	+ 110.7
15-24 . . .	6.9	6.4	5.6	6.3	6.8	5.1	+ 1.5	+ 35.3
25-44 . . .	43.5	41.3	45.2	46.5	46.0	50.9	- 5.4	- 14.5
45-64 . . .	253.3	262.8	268.8	266.8	269.6	309.6	- 6.0	- 18.2
65-74 . . .	697.8	680.4	692.1	683.8	702.9	753.0	- .7	- 7.3
Colored Males								
1-74* . . .	88.5	86.8	85.6	78.7	76.2	52.4	+ 16.1%	+ 68.9%
1-4 . . .	3.8	6.2	10.5	8.1	4.0	3.5	- 5.0	+ 8.6
5-14 . . .	8.5	7.7	1.4	3.7	3.1	3.3	+ 174.2	+ 157.6
15-24 . . .	3.5	6.9	12.0	3.7	8.2	4.8	- 57.3	- 27.1
25-44 . . .	30.2	30.6	29.4	25.9	30.6	22.7	- 1.3	+ 33.0
45-64 . . .	288.9	294.7	279.5	263.8	249.9	175.2	+ 15.6	+ 64.9
65-74 . . .	927.7	827.5	870.8	810.7	748.3	479.7	+ 24.0	+ 93.4
Colored Females								
1-74* . . .	92.7	87.0	90.9	86.1	88.2	89.3	+ 5.1%	+ 3.8%
1-4 . . .	5.8	10.2	6.3	4.0	3.9	5.5	+ 48.7	+ 5.5
5-14 . . .	3.3	3.3	6.3	2.1	4.9	2.5	- 32.7	+ 32.0
15-24 . . .	10.5	7.9	7.2	11.0	5.6	6.9	+ 87.5	+ 52.2
25-44 . . .	66.5	56.8	62.2	60.2	64.2	73.8	+ 3.6	- 9.9
45-64 . . .	305.4	290.1	312.4	284.1	294.5	303.0	+ 3.7	+ .8
65-74 . . .	649.8	637.0	602.4	617.0	614.6	525.0	+ 5.7	+ 23.8

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

TABLE 10
DEATH RATES FROM CANCER ACCORDING TO ORGAN OR PART AFFECTED
BY COLOR AND SEX, AGES 1-74 YEARS*
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

COLOR, SEX	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Digestive Organs and Peritoneum								
White Males...	39.6	40.4	41.9	41.9	41.8	47.2	- 5.3%	- 16.1%
White Females...	26.7	27.5	28.6	29.3	30.3	38.8	- 11.9	- 31.2
Colored Males...	42.4	43.4	42.6	39.0	34.3	31.1	+ 23.6	+ 36.3
Colored Females	28.1	27.3	27.6	27.2	27.6	27.7	+ 1.8	+ 1.4
Female Genital Organs								
White Females...	18.7	18.8	19.3	20.1	19.8	24.3	- 5.6%	- 23.0%
Colored Females	29.3	29.1	29.6	29.6	30.8	36.6	- 4.9	- 19.9
Breast								
White Females...	14.8	14.1	14.9	14.2	14.4	12.7	+ 2.8%	+ 16.5%
Colored Females	15.1	12.8	14.3	12.9	14.4	13.1	+ 4.9	+ 15.3
Prostate								
White Males...	6.0	5.5	5.3	5.7	5.8	4.6	+ 3.4%	+ 30.4%
Colored Males...	9.1	8.0	10.1	8.9	9.4	4.1	- 3.2	+122.0
Buccal Cavity								
White Males...	2.9	3.0	3.1	3.5	3.3	5.7	- 12.1%	- 49.1%
White Females...	.5	.4	.4	.6	.5	.8	0	- 37.5
Colored Males...	2.0	2.3	2.2	1.3	1.9	2.7	+ 5.3	- 25.9
Colored Females	.7	.5	.4	.7	1.0	1.1	- 30.0	- 36.4

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

TABLE 10—Continued

COLOR, SEX	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Respiratory System, excluding Larynx								
White Males. . . .	18.9	17.2	16.7	14.9	12.9	2.9†	+ 46.5%	+551.7†
White Females. . .	2.8	3.1	3.2	2.9	2.6	1.4†	+ 7.7	+100.0†
Colored Males. . .	13.2	12.3	10.5	10.2	9.8	1.7†	+ 34.7	+676.5†
Colored Females. .	3.6	2.3	3.7	2.3	2.3	1.2†	+ 56.5	+200.0†
Skin								
White Males. . . .	1.3	1.2	1.1	1.0	.8	2.0	+ 62.5%	- 35.0%
White Females. . .	.7	.7	.7	.8	.7	1.0	0	- 30.0
Colored Males. . .	.5	.4	.4	.5	.4	.6	+ 25.0	- 16.7
Colored Females. .	.5	.5	.5	.5	.4	.7	+ 25.0	- 28.6
Leukemia and Aleukemia								
White Males. . . .	5.2	4.8	4.3	5.0	3.4	1.8	+ 52.9%	+188.9%
White Females. . .	4.0	3.4	3.4	3.4	3.4	1.7	+ 17.6	+135.3
Colored Males. . .	3.4	2.8	3.9	2.8	4.1	1.0	- 17.1	+240.0
Colored Females. .	3.3	1.8	1.9	2.0	1.6	1.0	+106.3	+230.0
Hodgkin's Disease								
White Males. . . .	2.0	1.7	1.6	1.9	1.5	1.1	+ 33.3%	+ 81.8%
White Females. . .	1.0	1.0	.8	1.0	1.0	.6	0	+ 66.7
Colored Males. . .	1.9	1.0	1.4	1.0	1.1	.7	+ 72.7	+171.4
Colored Females. .	1.0	1.0	.7	.8	.4	.4	+150.0	+150.0

† 1930 only.

Cancer of the respiratory system, excluding the larynx, has increased rapidly in importance for all but white females during 1946-1950. Although these rises may be attributed, in part, to better diagnostic techniques and facilities, further study is needed to establish fully the reasons for this rapid upward trend. Many cancers of the respiratory system were discovered in the course of mass X-ray campaigns for tuberculosis.

White males experienced a steady rise in mortality from cancer of the skin since 1946; the other color-sex categories had practically no change.

Mortality from leukemia among both white and colored persons showed no definite trend during 1946-1950, but three of the color-sex categories had highest rates in the terminal year. Although the death rates from Hodgkin's disease for white persons remained level, there was a definite upward trend in the rates for colored persons. The latter situation is very likely the result of improved diagnosis.

The cancer mortality picture tends to be clouded by a number of extraneous factors. The increasing use of hospital facilities in general and advances in diagnostic techniques bring to light many cases of cancer that would earlier have been attributed to other conditions. Better certification of causes of death has also brought more deaths to the cancer rubric. In these circumstances, it is encouraging to find that for certain organs or sites, there is already definite evidence of reductions in cancer mortality. The present widespread educational campaigns directed toward the public and the increase of cancer diagnostic facilities should improve the chances of finding the disease in its early stages when it is most amenable to treatment or cure.

THE PRINCIPAL CARDIOVASCULAR-RENAL DISEASES

This group includes, for the most part, chronic diseases of the heart, diseases of the coronary arteries, chronic nephritis, cerebral hemorrhage, and arteriosclerosis.⁹ The importance of the cardiovascular-renal diseases may be gauged from the fact that they accounted for almost one half of the deaths in the general population of the United States in 1949. For that year, it has been estimated that 9,200,000 persons in the country had some cardiovascular-renal condition, the rate being over 6 per 100 total population.¹⁰

For the entire body of Industrial policyholders at ages 1-74 years, the death rate from the cardiovascular-renal diseases declined from 1946 to 1950, when it reached a level of 215.2 per 100,000. The decline since 1946 amounted to 7.5 percent and since 1926-1930 to 31.2 percent. On the whole, the death rate for white males showed little change during the postwar period. For white females there was a consistent reduction in rates; the improvement from 1946 to 1950 was 14.3 percent. The death rates for colored males and females also moved downward, the reductions from 1946 to 1950 amounting to 7.8 percent and 16.4 percent respectively.

Generally speaking, both white and colored females experienced sub-

⁹ The specific inclusions are detailed in the two earlier surveys.

¹⁰ S. D. Collins, *Statistical Studies of Heart Disease; V. Illness from Heart and Other Cardiovascular-renal Diseases in General Morbidity Surveys of Families*, Public Health Reports, vol. 64, p. 1439, November 18, 1949.

stantial reductions in death rates at each age group beginning with 5-14 years, as may be seen in Table 11. However, white males had their most pronounced improvement at ages 15-24 years, but they did not show any appreciable change for the age groups within 25-74 years. On the other hand, colored males had a rise in mortality at ages 15-24 years, but rather consistent declines at ages 45-74 years. The reason for the relatively poor showing for white males at the main productive ages, compared with the other color-sex categories, is not clear.¹¹ It has been suggested that it may reflect the strains of modern economic activity. The improved situation observed for most color-sex age classes, other than white males at ages 25-74 years, may possibly be attributed to a number of factors, chief among which are the reduction in infections which often lead to some impairment of the cardiovascular-renal system, the easing of household burdens of women, and the upgrading of the occupations of colored males.

The relative importance of the major components of the cardiovascular-renal group, and the trends for these conditions, may be gauged in Table 12. Among white males at ages 1-74 years, organic diseases of the heart and diseases of the coronary arteries were almost equal in importance in 1950, each accounting for more than one third of the cardiovascular-renal group. However, among white females almost one half of the deaths of this group were attributed to organic diseases of the heart, while diseases of the coronary arteries accounted for just one fifth; practically the same situation is found for colored males. Colored females also had almost half of the cardiovascular-renal deaths classed as organic diseases of the heart, but only about one ninth as diseases of the coronary arteries. A significant finding in Table 12 is that the death rate from diseases of the coronary arteries for white males at ages 1-74 years in 1950 is over three times that for white females and almost twice that for colored males.

For each color-sex category, except white males, the death rate from the combination of diseases of the heart and coronary arteries has tended downward from 1946 to 1950. The subdivisions of this combination show, in Table 12, that in each instance (including white males) the death rates for organic diseases of the heart recorded considerable improvement. On the other hand, the rates for diseases of the coronary arteries for white males rose from 1946 to 1949; for white females they have been stationary since 1947. In the case of colored males and females, the death rates for diseases of the coronary arteries have tended upward, very likely as a

¹¹ I. M. Moriyama and T. D. Woolsey, *Statistical Studies of Heart Disease; IX. Race and Sex Differences in the Trend of Mortality from the Major Cardiovascular-renal Diseases*, Public Health Reports, vol. 66, p. 355, March 23, 1951.

TABLE 11
DEATH RATES FROM THE CARDIOVASCULAR-RENAL DISEASES
BY COLOR, SEX, AND AGE
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD YEARS	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons								
1-74*	215.2	221.0	230.1	232.2	232.7	312.9	- 7.5%	-31.2%
White Males								
1-74*	272.0	277.0	285.6	283.7	277.6	335.1	- 2.0%	-18.8%
1- 4	3.4	4.0	4.0	4.1	3.2	8.5	+ 6.3	-60.0
5-14	3.9	4.7	3.8	4.6	5.1	15.5	-23.5	-74.8
15-24	9.8	12.4	13.6	14.6	15.6	32.4	-37.2	-69.8
25-44	86.9	89.1	93.7	89.5	94.2	115.9	- 7.7	-25.0
45-64	874.5	891.7	895.5	897.6	869.9	967.4	+ 5.5	- 9.6
65-74	3129.1	3157.7	3350.1	3315.4	3210.5	4076.1	- 2.5	-23.2
White Females								
1-74*	148.6	154.8	163.9	170.1	173.3	263.0	-14.3%	-43.5%
1- 4	4.3	3.3	4.3	3.7	4.4	8.1	- 2.3	-46.9
5-14	3.8	3.7	4.3	4.0	5.8	18.4	-34.5	-79.3
15-24	8.9	9.7	9.1	11.1	11.8	32.7	-24.6	-72.8
25-44	41.5	42.8	47.5	46.8	49.8	94.5	-16.7	-56.1
45-64	395.3	415.6	438.3	461.4	462.5	710.3	-14.5	-44.3
65-74	2096.8	2172.1	2290.9	2364.9	2408.0	3300.7	-12.9	-36.5
Colored Males								
1-74*	309.0	308.2	331.2	321.3	335.3	493.3	- 7.8%	-37.4%
1- 4	3.8	<i>10.5</i>	<i>2.0</i>	<i>7.9</i>	15.1	15.1	-51.9	-74.8
5-14	7.2	9.7	11.3	5.8	9.2	20.8	-21.7	-65.4
15-24	24.5	24.8	15.7	14.1	15.3	40.2	+60.1	-39.1
25-44	116.4	114.9	121.0	116.7	122.5	254.6	- 5.0	-54.3
45-64	938.9	970.1	1052.8	988.1	1039.5	1515.4	- 9.7	-38.0
65-74	3552.4	3396.6	3657.3	3760.5	3843.5	4916.3	- 7.6	-27.7
Colored Females								
1-74*	272.2	288.3	289.0	300.2	325.7	464.1	-16.4%	-41.3%
1- 4	5.8	4.0	6.3	4.0	4.0	13.3	+45.0	-56.4
5-14	8.7	5.4	11.3	5.0	15.5	24.7	-43.9	-64.8
15-24	20.5	16.4	14.5	20.9	21.5	51.3	- 4.7	-60.0
25-44	111.8	126.0	117.9	136.4	141.4	256.4	-20.9	-56.4
45-64	815.8	878.6	883.0	927.7	977.4	1407.7	-16.5	-42.0
65-74	3086.1	3201.4	3237.4	3212.6	3616.7	4448.3	-14.7	-30.6

* Death rates standardized for age.
Note: Rates in italics are based upon fewer than 10 deaths.

TABLE 12

DEATH RATES FROM EACH OF THE MAJOR CARDIOVASCULAR-RENAL DISEASES
 BY COLOR AND SEX, AGES 1-74 YEARS*
 METROPOLITAN LIFE INSURANCE COMPANY
 INDUSTRIAL DEPARTMENT, 1926 TO 1950

CAUSE OF DEATH	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926-1930	1946	1926-1930
White Males								
All cardiovascular-renal diseases	272.0	277.0	285.6	283.7	277.6	335.1	- 2.0%	18.8%
Diseases of heart and coronary arteries (including angina pectoris)	209.5	214.7	219.1	214.6	206.3	182.2	+ 1.6	+ 15.0
Organic diseases of heart (1909 class)	107.4	111.4	116.0	117.8	119.2	157.9	- 9.9	- 32.0
Diseases of coronary arteries	100.8	102.0	101.5	95.1	85.3	8.2†	+18.2	+1129.3†
Angina pectoris	1.3	1.3	1.6	1.7	1.8	16.1	-27.8	- 91.9
Chronic nephritis	20.2	19.5	21.2	23.1	25.3	76.8	-20.2	- 73.7
Cerebral hemorrhage and paralysis without specified cause	28.0	29.3	31.6	32.6	33.4	60.4	-16.2	- 53.6
Diseases of the arteries	.8	.9	.8	.8	.8	15.6	0	- 94.9
Other cardiovascular-renal diseases	13.5	12.6	12.9	12.6	11.8	.1	+14.4	+13400.0
White Females								
All cardiovascular-renal diseases	148.6	154.8	163.9	170.1	173.3	263.0	-14.3%	43.5%
Diseases of heart and coronary arteries (including angina pectoris)	98.6	102.5	106.8	110.1	112.2	133.7	-12.1	- 26.3
Organic diseases of heart (1909 class)	68.5	72.2	76.0	78.9	83.0	123.6	-17.5	- 44.6
Diseases of coronary arteries	29.8	29.9	30.3	30.7	28.6	3.5†	+ 4.2	+751.4†
Angina pectoris	.3	.4	.5	.5	.6	6.6	-50.0	- 95.5
Chronic nephritis	14.6	14.9	16.6	18.2	19.0	65.5	-23.2	- 77.7
Cerebral hemorrhage and paralysis without specified cause	26.2	28.1	31.3	32.5	33.2	53.1	-21.1	- 50.7
Diseases of the arteries	.7	.6	.6	.6	.7	8.0	0	- 91.3
Other cardiovascular-renal diseases	8.5	8.7	8.6	8.7	8.2	2.7	+ 3.7	+ 214.8
Colored Males								
All cardiovascular-renal diseases	309.0	308.2	331.2	321.3	335.3	493.3	- 7.8%	37.4%
Diseases of heart and coronary arteries (including angina pectoris)	198.0	195.0	209.8	195.8	208.3	234.0	- 4.9	- 15.4
Organic diseases of heart (1909 class)	142.4	145.4	156.5	148.5	159.3	221.1	-10.7	- 35.6
Diseases of coronary arteries	54.8	49.3	52.5	46.5	47.2	3.9†	+16.1	+1305.1†
Angina pectoris	.8	.3	.8	.8	1.6	9.0	-50.0	- 91.1
Chronic nephritis	41.9	37.6	41.6	46.0	46.1	139.7	- 9.1	- 70.0
Cerebral hemorrhage and paralysis without specified cause	48.8	54.1	58.9	60.4	63.9	96.0	-23.6	- 49.2
Diseases of the arteries	1.0	1.0	1.1	.8	.7	21.4	+42.9	- 95.3
Other cardiovascular-renal diseases	19.3	20.5	19.8	18.3	16.3	2.2	+18.4	+ 777.3
Colored Females								
All cardiovascular-renal diseases	272.2	288.3	289.0	300.2	325.7	464.1	-16.4%	41.3%
Diseases of heart and coronary arteries (including angina pectoris)	162.2	168.7	168.5	177.1	185.9	214.4	-12.7	- 24.3
Organic diseases of heart (1909 class)	130.0	137.5	137.9	146.1	156.7	204.6	-17.0	- 36.5
Diseases of coronary arteries	31.8	30.7	30.1	30.5	28.0	2.8†	+13.6	+1035.7†
Angina pectoris	.4	.5	.5	.5	1.2	7.0	-66.7	- 94.3
Chronic nephritis	38.1	38.1	39.4	42.6	49.8	121.2	-23.5	- 68.6
Cerebral hemorrhage and paralysis without specified cause	57.3	65.2	66.3	67.1	75.6	110.9	-24.2	- 48.3
Diseases of the arteries	.4	.3	1.1	.7	1.1	14.9	-63.6	- 97.3
Other cardiovascular-renal diseases	14.2	16.0	13.7	12.7	13.3	2.7	+ 6.8	+ 425.9

* Death rates standardized for age.

† 1930 only.

Note: Rates in italics are based on fewer than 10 deaths.

result of better diagnostic facilities. Mortality from both chronic nephritis and cerebral hemorrhage has decreased rapidly from 1946 to 1950 for each color-sex category. These reductions may reflect, largely, the transfer of deaths from chronic nephritis and cerebral hemorrhage to other cardiovascular-renal conditions as a result of better diagnosis and certification of cause of death. However, in the case of chronic nephritis, some improvement may be due to the control of infections generally.

Most deaths from organic heart disease during childhood and adolescence are of rheumatic origin. The death rate for white males at ages 1-24 years from this condition decreased by more than two fifths from 1946 to 1950, while for white females it fell by almost one half. However, there was only a small reduction in mortality from acute rheumatic fever among white children during the same period.

A number of recent developments are probably advancing the control of the cardiovascular-renal diseases. New therapeutic agents, such as chemical substances and antibiotics, are particularly effective against the infections that damage the cardiovascular-renal system. Some of these new drugs have been particularly successful in treating subacute bacterial endocarditis, a condition of infectious origin. Anticoagulants promise benefits in cases of coronary disease. Special diets, such as those low in sodium and the rice diet, have become popular where there is hypertension. For the relief of certain cases of hypertension surgical procedures have been used with success. An outstanding development is the surgical technique used to correct the congenital defect found in "blue babies."

Research for the control of the cardiovascular-renal diseases has recently been given a great impetus by many voluntary and governmental agencies. The Life Insurance Medical Research Fund is currently supporting medical studies in this field. The American Heart Association, a voluntary health agency, supports basic research, stimulates community services for cardiac patients, and engages in public health education activities. The National Heart Institute, a part of the United States Public Health Service, supports research in this field with Federal funds and also carries on some studies of its own; it also cooperates with the States in their local health programs.

DIABETES MELLITUS

The period of declining mortality from diabetes mellitus observed among Industrial policyholders as a group, which started in 1940, continued into 1948; the death rate then rose to 16.5 per 100,000 at ages 1-74 years in 1950. The data in Table 13 show that a low point in 1948 was experienced by white males, white females, and colored males; for colored

TABLE 13
DEATH RATES FROM DIABETES MELLITUS
BY COLOR, SEX, AND AGE
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD YEARS	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Total Persons								
1-74*	16.5	15.9	14.7	15.8	16.1	18.4	+ 2.5%	- 10.3%
White Males								
1-74*	11.8	11.2	9.2	10.4	10.6	13.3	+ 11.3%	- 11.3%
1- 4	<i>0.5</i>	<i>0.5</i>	<i>.....</i>	<i>0.2</i>	<i>0.6</i>	1.2	- 16.7	- 58.3
5-14	<i>.3</i>	<i>.2</i>	<i>.4</i>	<i>.4</i>	<i>.7</i>	1.6	- 57.1	- 81.3
15-24	<i>.5</i>	<i>1.1</i>	<i>1.2</i>	<i>1.2</i>	<i>1.0</i>	3.0	- 50.0	- 83.3
25-44	<i>3.9</i>	<i>3.9</i>	<i>2.8</i>	<i>3.6</i>	<i>3.8</i>	5.2	+ 2.6	- 25.0
45-64	<i>35.8</i>	<i>35.4</i>	<i>25.8</i>	<i>33.4</i>	<i>30.7</i>	40.8	+ 16.6	- 12.3
65-74	<i>141.4</i>	<i>123.4</i>	<i>117.2</i>	<i>110.5</i>	<i>124.0</i>	126.4	+ 14.0	+ 11.9
White Females								
1-74*	20.5	20.2	19.5	20.9	21.2	23.4	- 3.3%	- 12.4%
1- 4	<i>1.0</i>	<i>0.2</i>	<i>0.8</i>	<i>0.6</i>	<i>0.5</i>	1.3	+100.0	- 23.1
5-14	<i>1.0</i>	<i>.6</i>	<i>.8</i>	<i>.5</i>	<i>1.1</i>	2.0	- 9.1	- 50.0
15-24	<i>1.1</i>	<i>1.4</i>	<i>1.0</i>	<i>1.9</i>	<i>1.8</i>	2.9	- 38.9	- 62.1
25-44	<i>2.6</i>	<i>2.7</i>	<i>2.5</i>	<i>3.5</i>	<i>3.8</i>	5.8	- 31.6	- 55.2
45-64	<i>62.4</i>	<i>58.3</i>	<i>57.7</i>	<i>63.5</i>	<i>64.2</i>	79.5	- 2.8	- 21.5
65-74	<i>277.5</i>	<i>288.0</i>	<i>273.0</i>	<i>276.8</i>	<i>276.0</i>	238.9	+ .5	+ 16.2
Colored Males								
1-74*	12.4	9.9	8.9	10.3	10.5	11.9	+ 18.1%	+ 4.2%
1- 4	<i>.....</i>	<i>.....</i>	<i>.....</i>	<i>2.0</i>	<i>.....</i>	3.2	<i>.....</i>	-100.0
5-14	<i>.7</i>	<i>.7</i>	<i>2.9</i>	<i>.....</i>	<i>.7</i>	1.2	0	- 41.7
15-24	<i>2.3</i>	<i>.5</i>	<i>1.6</i>	<i>1.1</i>	<i>3.3</i>	2.8	- 30.3	- 17.9
25-44	<i>5.4</i>	<i>4.5</i>	<i>3.3</i>	<i>4.8</i>	<i>5.1</i>	6.4	+ 5.9	- 15.6
45-64	<i>38.0</i>	<i>28.5</i>	<i>28.1</i>	<i>31.6</i>	<i>28.3</i>	38.1	+ 34.3	- .3
65-74	<i>125.3</i>	<i>114.0</i>	<i>76.1</i>	<i>105.1</i>	<i>109.9</i>	86.7	+ 14.0	+ 44.5
Colored Females								
1-74*	24.8	23.6	24.2	20.9	21.4	23.2	+ 15.9%	+ 6.9%
1- 4	<i>.....</i>	<i>.....</i>	<i>.....</i>	<i>2.0</i>	<i>.....</i>	<i>1.4</i>	<i>.....</i>	-100.0
5-14	<i>.6</i>	<i>.6</i>	<i>1.4</i>	<i>.....</i>	<i>1.9</i>	2.2	- 68.4	- 72.7
15-24	<i>2.6</i>	<i>2.8</i>	<i>1.5</i>	<i>2.9</i>	<i>1.2</i>	2.8	+116.7	- 7.1
25-44	<i>8.8</i>	<i>7.1</i>	<i>6.6</i>	<i>7.9</i>	<i>8.0</i>	13.5	+ 10.0	- 34.8
45-64	<i>85.1</i>	<i>92.3</i>	<i>89.1</i>	<i>70.1</i>	<i>77.0</i>	84.0	+ 10.5	+ 1.3
65-74	<i>244.1</i>	<i>190.8</i>	<i>227.2</i>	<i>201.3</i>	<i>188.7</i>	144.0	+ 29.4	+ 69.5

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

females, it occurred in 1947. Considering the postwar period alone, only white females had a lower death rate from diabetes in 1950 than in 1946. This improvement was concentrated, for the most part, at ages 5-44 years.

The reduction in diabetes mortality during the war years and the immediate postwar years may be due, in part, to food shortages and changes in the types of diet. The resumption of earlier food habits may have contributed to the recent rise in the death rate for diabetes. Another factor possibly contributing to this recent rise may be the diabetes detection campaigns started within the last few years. Along with the mild cases of diabetes thus uncovered, there are many of the more severe type. These campaigns may also influence physicians to report the disease more completely on death certificates.

Among both white and colored persons, the death rate from diabetes among females was practically twice that for males. Also, for each sex, the rate for colored persons was somewhat greater than that for whites for the age group 1-74 years as a whole. However, at ages 65-74 years, the colored had lower rates than white persons, a situation probably due to poorer diagnosis and reporting of the disease.

Because of the improved mortality at the younger ages, the longevity outlook for diabetics has greatly improved. According to the experience of the George F. Baker Clinic in Boston, the expectation of life at age 30, as derived from the mortality records for diabetics in the early insulin era 1922-1925, was only 16.8 years. The corresponding figure from records for 1939-1947 was 29.5 years; however, this is almost 11 years under the expectation of life for white persons of age 30 in the general population in 1939-1941. The death rate for diabetics at ages under 40 in 1939-1947 was four times that for white persons in the North in 1939-1941, after adjustment for differences in their age and sex composition.¹² From ages 40 to 59, the ratio of diabetic to general population mortality was $2\frac{1}{2}$, and at ages 60 to 79 it was almost two.

DISEASES OF THE PUERPERAL STATE

The death rate from the diseases of the puerperal state among white female Industrial policyholders at ages 15-44 years fell by more than half in the few years from 1946 to 1950, the rate for the last year being only 5.1 per 100,000. The corresponding rate for colored females in 1950 was appreciably higher, namely 17.2 per 100,000. Moreover, the rate of improvement was much less for colored females than for white females. The data in Table 14 show that the postwar reduction in mortality was

¹² The North includes the New England, Middle Atlantic, and North Central States. Most of the diabetics in the George F. Baker Clinic are in this area.

most rapid for puerperal septicemia and least rapid, though sizable, for puerperal toxemia. These benefits come not only from the widespread use of modern methods of controlling infections, but also from advances in antepartum and postpartum care and from the continuing trend to hospital confinement. The trend in the death rates in this insurance ex-

TABLE 14
DEATH RATES FROM DISEASES OF THE PUERPERAL STATE, ACCORDING TO
CAUSE, BY COLOR, AGES 15-44 YEARS*
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1946 TO 1950

CAUSE OF DEATH	DEATH RATES PER 100,000 FEMALES					PERCENTAGE CHANGE 1950 SINCE
	1950	1949	1948	1947	1946	1946
White Females						
Puerperal State—Total.	5.1	5.9	7.3	9.3	10.6	-51.9%
Puerperal septicemia.	0.4	0.8	1.1	1.5	1.8	-77.8
Puerperal toxemia. . . .	1.5	1.4	1.7	2.4	2.3	-34.8
Other puerperal.	3.2	3.7	4.5	5.4	6.5	-50.8
Colored Females						
Puerperal State—Total.	17.2	17.3	17.9	24.4	21.3	-19.2%
Puerperal septicemia.	3.3	3.8	4.4	5.8	5.0	-34.0
Puerperal toxemia. . . .	4.5	5.0	5.1	4.8	5.1	-11.8
Other puerperal.	9.4	8.5	8.4	13.8	11.2	-16.1

* Death rates standardized for age.

perience is confirmed by the maternal mortality rates for the general population shown in Table 15.

MISCELLANEOUS DISEASES OF SPECIAL INTEREST

The death rates at ages 1-74 years for a few causes of special interest are shown, in Table 16, for white and colored males and females in each year from 1946 to 1950.

Acute Poliomyelitis.—There were particularly severe outbreaks of acute poliomyelitis in 1946 and in 1949. The relatively high level of cases of

poliomyelitis recorded in postwar years may reflect an improvement in the reporting of nonparalytic cases. There is also a possibility that the reports may include cases of a virus infection whose symptoms are similar to those of nonparalytic poliomyelitis.

Syphilis.—The death rate from syphilis and its related conditions among Industrial policyholders fell by more than two fifths from 1946 to 1950. The rate of improvement was about the same for each color-sex category. The intensive public health measures against syphilis have been eminently successful. A major element in this effort is the use of new chemotherapies for treatment. Benefits should accrue also, in time, in a reduced mortality from heart disease of syphilitic origin.

TABLE 15
MATERNAL DEATH RATES PER 1,000 LIVE BIRTHS, ACCORDING TO
CAUSE, BY COLOR, AGES 15-44 YEARS
UNITED STATES, 1946 TO 1948

CAUSE OF DEATH	DEATH RATES PER 1,000 LIVE BIRTHS					
	White Females			Colored Females		
	1948	1947	1946	1948	1947	1946
Puerperal State—Total . . . . .	.9	1.1	1.3	3.0	3.3	3.6
Puerperal septicemia . . . . .	.3	.4	.5	.8	1.0	1.2
Puerperal toxemia . . . . .	.2	.3	.3	1.0	1.0	1.0
Other puerperal . . . . .	.4	.4	.5	1.2	1.3	1.4

Ulcer of the Stomach and Duodenum.—During the decade prior to 1946 there was a marked downward trend in the mortality from ulcer of the stomach. Since then, the death rate has shown an improvement for white males and colored females. For white females, the rate was stationary, while for colored males there was an upward trend. There has been no appreciable change in the level of mortality from ulcer of the duodenum since 1930.

Increasing use of X-ray techniques and the gastroscope is improving the differentiation in diagnosis between ulcer of the stomach, ulcer of the duodenum and cancer of the stomach. Medical treatments for ulcers of the stomach or duodenum are increasing in efficiency. The more effective new developments in surgical treatment have reduced the mortality in radical operations very sharply.

Diarrhea and Enteritis.—After a long period of rapid decline, the death

rate from diarrhea and enteritis at ages 1-74 years maintained itself at a low level of about 1.0 per 100,000 in the postwar years 1946-1950. At this low level, further gains against diarrhea and enteritis become increasingly difficult, even with the new advances for the control of infections.

Appendicitis.—In 1950, the death rate at ages 1-74 years from appendicitis was only 1.7 per 100,000, about half the figure for 1946. This rate of improvement was experienced by white males, white females and colored females; for colored males, the rate of decline was smaller. A factor in this improvement is the routine use of antibiotics before surgery as a precaution against infection; their postoperative use has also been beneficial. Though not so tangible, a substantial contribution toward lower mortality from appendicitis has also been made by the general educational campaigns that stress the need for medical advice and the avoidance of laxatives at times of abdominal pain.

Biliary Calculi.—Only white females, among whom the death rates are highest, experienced a reduction in mortality from biliary calculi from 1946 to 1950. For each other color-sex category the death rates, which are very low, show little change over this period. In the improvement among white females, important factors are the trend toward earlier treatment and the new chemotherapies.

EXTERNAL CAUSES OF DEATH

The external causes of death include suicide, homicide, and accidents. Table 3 shows that fatal accidents feature most prominently in the mortality picture at ages 1-44 years. For white males, it is among the five leading causes of death at all age periods; it accounts for over one half of the deaths at ages 15-24 years. Homicide ranked third among colored males at ages 15-24 years and fourth at ages 25-44 years; it was fifth among colored females at ages 15-24 years. Suicide was fifth in place as a cause of death among white males at ages 15-44 years.

Suicide.—Following the close of World War II, the suicide rate rose in 1946 for each color-sex category, but it did not reach prewar levels. For white males, among whom the suicide rate is highest, Table 17 shows that a level of about 12 per 100,000 at ages 1-74 years was maintained during 1947-1949. The rate dropped to a postwar minimum in 1950 for white males and females and for colored males. Many suicides can be prevented, especially at the older ages where the rates are high, by a social and economic environment conducive to sound mental health.

Homicide.—On the whole, the homicide rate decreased from 1945 to 1950. In 1950, the homicide rate at ages 1-74 years was 22.4 per 100,000

TABLE 16
DEATH RATES FROM MISCELLANEOUS DISEASES OF SPECIAL INTEREST
BY COLOR, SEX, AND SPECIFIED AGE GROUPS
METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD, COLOR, SEX	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Acute Poliomyelitis								
1-24,* Total	1.6	3.0	2.0	.8	2.4	1.8	-33.3%	- 11.1%
White Males . . .	2.2	4.3	2.4	.8	3.3	2.1	-33.3	+ 4.8
White Females . .	1.3	2.0	1.7	.9	1.8	1.6	-27.8	- 18.8
Colored Males . .	.5	1.2	2.0	.5	2.7	1.7	-81.5	- 70.6
Colored Females .	.4	1.6	1.7	.3	.3	1.5	+33.3	- 73.3
Syphilis, Locomotor Ataxia and General Paralysis of the Insane								
1-74,* Total	2.6	2.8	3.5	4.0	4.6	12.1	-43.5%	- 78.5%
White Males . . .	2.9	3.1	3.7	4.3	5.2	15.2	-44.2	- 80.9
White Females . .	.9	.9	1.2	1.4	1.5	5.0	-40.0	- 82.0
Colored Males . .	13.7	18.4	22.1	24.2	26.9	49.0	-49.1	- 72.0
Colored Females .	6.9	6.6	9.7	10.0	12.1	24.8	-43.0	- 72.2
Ulcer of the Stomach								
1-74,* Total	2.5	2.4	2.7	2.6	2.8	4.1	-10.7%	- 39.0%
White Males . . .	4.3	4.3	4.8	4.6	5.0	6.4	-14.0	- 32.8
White Females . .	.7	.7	.8	.7	.7	1.7	0	- 58.8
Colored Males . .	4.0	3.6	3.9	3.8	3.3	6.7	+21.2	- 40.3
Colored Females .	1.2	.8	1.2	1.5	1.6	4.6	-25.0	- 73.9
Ulcer of the Duodenum								
1-74,* Total	1.9	1.5	1.4	1.9	1.6	1.5	+18.8%	+ 26.7%
White Males . . .	3.5	2.8	2.5	3.6	2.9	2.7	+20.7	+ 29.6
White Females . .	.5	.4	.5	.4	.4	.5	+25.0	0
Colored Males . .	2.4	1.4	1.6	1.5	1.6	1.2	+50.0	+100.0
Colored Females .	.6	.7	.6	.3	.6	.5	0	+ 20.0

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

TABLE 16—Continued

AGE PERIOD, COLOR, SEX	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Diarrhea and Enteritis								
1-74,* Total . . . . .	.9	1.0	1.1	1.2	1.1	8.3	-18.2%	- 89.2%
White Males . . . . .	.9	1.0	1.0	1.2	1.3	8.1	-30.8	- 88.9
White Females . . . . .	.7	.9	1.1	1.1	.9	7.4	-22.2	- 90.5
Colored Males	1.7	1.1	1.0	1.3	1.2	14.4	+41.7	- 88.2
Colored Females	1.3	1.8	1.6	1.5	2.0	15.4	-35.0	- 91.6
Appendicitis								
1-74,* Total	1.7	2.0	2.3	2.9	3.2	14.1	-46.9%	- 87.9%
White Males	2.0	2.3	2.9	3.3	3.7	16.1	-45.9	- 87.6
White Females	1.2	1.6	1.7	2.2	2.5	11.9	-52.0	- 89.9
Colored Males	4.1	3.1	3.1	4.7	4.4	17.1	- 6.8	- 76.0
Colored Females	1.9	2.5	2.8	3.8	3.5	14.7	-45.7	- 87.1
Biliary Calculi (Gallstones)								
1-74,* Total	1.3	1.3	1.5	1.5	1.6	2.8	-18.8%	- 53.6%
White Males . . . . .	.9	.9	1.1	1.1	1.0	1.4	-10.0	- 35.7
White Females	1.7	1.9	2.0	2.0	2.3	4.5	-26.1	- 62.2
Colored Males . . . . .	.3	.2	.1	.3	.2	.4	+50.0	- 25.0
Colored Females . . . . .	.9	1.0	.8	.8	1.0	1.8	-10.0	- 50.0

for colored males, and 7.6 for colored females, about ten times the corresponding rates for white persons.

Accidents, total.—The death rate from accidents, all forms, for white males at ages 1-74 years declined by more than one fifth from 1946 to 1950, reaching a low point of 58.0 per 100,000. During the same period, the rate for white females fell by over one seventh, with a low of 15.6 per 100,000 in 1950. There was also a downward trend in the fatal accident rates for the colored, but in this instance the low point occurred in 1949. Many public and private agencies have strengthened their accident prevention activities during the postwar period; prominent among them are the National Safety Council and the American Red

TABLE 17

DEATH RATES FROM EXTERNAL VIOLENCE BY COLOR, SEX, AND SPECIFIED
AGE GROUPS—METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, 1926 TO 1950

AGE PERIOD, COLOR, SEX	DEATH RATES PER 100,000						PERCENTAGE CHANGE 1950 SINCE	
	1950	1949	1948	1947	1946	1926- 1930	1946	1926- 1930
Suicide								
1-74*								
White Males.....	11.0	11.9	11.8	12.0	11.3	17.8	- 2.7%	- 38.2%
White Females.....	3.5	3.8	3.7	3.9	4.4	5.2	- 20.5	- 32.7
Colored Males.....	5.6	6.8	6.6	5.7	6.2	8.7	- 9.7	- 35.6
Colored Females.....	2.2	1.5	1.5	2.1	2.5	3.5	- 12.0	- 37.1
Homicide								
1-74*								
White Males.....	2.1	2.9	2.6	3.2	3.2	6.1	- 34.4%	- 65.6%
White Females.....	.8	.8	.8	1.1	.9	1.7	- 11.1	- 52.9
Colored Males.....	22.4	21.0	28.4	26.5	28.9	48.4	- 22.5	- 53.7
Colored Females.....	7.6	6.7	7.9	5.6	8.4	13.0	- 9.5	- 41.5
Accidents—Total								
1-74*								
White Males.....	58.0	59.0	62.7	66.4	75.1	107.8	- 22.8%	- 46.2%
White Females.....	15.6	15.8	16.7	18.2	18.5	32.9	- 15.7	- 52.6
Colored Males.....	62.4	56.0	65.6	62.6	73.9	117.4	- 15.6	- 46.8
Colored Females.....	21.4	18.8	21.4	20.0	22.8	40.7	- 6.1	- 47.4
Motor Vehicle Accidents								
1-74*								
White Males.....	25.7	23.2	24.3	26.2	27.9	34.6	- 7.9%	- 25.7%
White Females.....	7.4	6.1	6.5	7.5	7.0	11.6	+ 5.7	- 36.2
Colored Males.....	25.6	19.8	21.9	21.1	24.7	32.1	+ 3.6	- 20.2
Colored Females.....	9.2	6.6	6.7	5.1	6.8	10.3	+ 35.3	- 10.7
Occupational Accidents								
15-64*								
White Males.....	15.2	13.5	16.7	17.4	15.9	34.7	- 4.4%	- 56.2%
White Females.....	.2	.1	.1	.2	.2	.3	0	- 33.3
Colored Males.....	10.8	9.4	13.4	14.5	14.6	36.4	- 26.0	- 70.3
Colored Females.....	.2	.2	.4	.1	.2	.6	-100.0	-100.0
Home Accidents								
1-74*								
White Males.....	7.9	8.8	9.2	8.4	10.0	13.5	- 21.0%	- 41.5%
White Females.....	5.1	5.7	6.3	6.2	7.3	11.6	- 30.1	- 56.0
Colored Males.....	12.2	12.0	14.5	10.8	15.3	16.2	- 20.3	- 24.7
Colored Females.....	8.3	9.4	10.6	9.6	11.5	17.6	- 27.8	- 52.8

* Death rates standardized for age.

Note: Rates in italics are based upon fewer than 10 deaths.

Cross. The organization of the President's Highway Safety Conference and the President's Conference on Industrial Safety has given great impetus to the safety movement. Implementing the recommendations of these Conferences would save many thousands of lives from accidental death.

Motor Vehicle Accidents.—The death rate for motor vehicle accidents for white males and females and for colored males at ages 1–74 years declined from 1946 to a low point in 1949. As a matter of fact, the death rates for white and colored males in 1949 were lower than in 1943, when wartime restrictions on the use of motor fuel were in effect. However, each color-sex class showed a sharp rise in rates in 1950, largely because of the record-breaking motor vehicle mileage that year.

Occupational Accidents.—Mortality from occupational accidents among both white and colored males reached a minimum in 1949. The rise in 1950 was relatively moderate. In that year, white males at ages 15–64 years had a death rate of 15.2 per 100,000 for occupational accidents; colored males had a rate of 10.8. The rise in 1950 may perhaps be attributed to the increase in employment associated with the defense program.

Home Accidents.—The death rates from home accidents at ages 1–74 years declined sharply from 1946 to 1950. In the latter year, the rates per 100,000 were 7.9 for white males, 5.1 for white females, 12.2 for colored males, and 8.3 for colored females. The problem is still sizable and is receiving increasing attention from public and private agencies.

CONCLUSION

The five years covered by the present study complete a forty year period of continuous accounting of the mortality experience of Industrial policyholders of the Metropolitan Life Insurance Company. These policyholders, who are very largely members of urban wage-earning families, constitute a fairly homogeneous section of the general population. This experience is, therefore, unique in the annals of American mortality investigations, for it is the only source portraying mortality trends among our urban wage-earning families. For only a fraction of the general population is there available a series of mortality data of comparable length; official mortality reports covering the entire country started only in 1933.

Although the mortality of Industrial policyholders of the Metropolitan Life Insurance Company was at a much higher level than that of the general population in 1911, when this insurance series was started, the two experiences are now about the same. This present favorable mortality record is the reward of only a few decades of intensive effort in medicine and public health and of the rise in our standard of living. The postwar

developments in these directions have been more rapid than before, and at the same time new channels of health advancement are being opened. With the means for the control of infections now at hand, increasing attention is being given to the chronic diseases and accidents. Fundamental research for better health has been greatly intensified and there is an increased readiness to put the findings into general use. Campaigns of public health education, carried on largely by the voluntary health agencies and by several life insurance companies, reach every corner of the nation. In all of these activities, the emphasis is primarily on preventive measures. The benefits accruing will become manifest in the mortality records of coming years with lower death rates for both males and females, for white and colored persons, and at all ages of life. With well over half of the total population of the United States and Canada now owning individual life insurance, these gains will undoubtedly be reflected in the mortality experience of insured lives in the years ahead.

DISCUSSION OF PRECEDING PAPER

WILMER A. JENKINS:

I would like, first, to compliment the authors of this paper for another of their informative analyses of the large body of experience among the industrial policyholders of their company. These data are, as they say, unique and of considerable value to actuaries.

More particularly I would like to call attention to and discuss one part of the paper which compares industrial insurance mortality with the U.S. population mortality. To implement this discussion, I am presenting several charts and tables which are designed to illustrate two important developments:

1. That the differing and converging trends of industrial and population over-all mortality, as shown in the authors' Table 4, have continued to a marked degree over the years 1911 to 1947
2. That, likewise, a substantial convergence seems to have occurred between population mortality and the mortality experienced under ordinary insurance over the same period

The reason for my discussion of these trends is a belief that they need emphasis. They have been noted before in various publications, but apparently have not been fully appreciated by many actuaries working mainly with ordinary insurance and annuities.

Almost all of the data entering my charts and tables have been generously furnished by the Metropolitan Life Insurance Company. Charts 1-4 show over-all death rates for each year from 1911 to 1947 for males in each of four age groups covering the range from age 35 to 74—the most important ages for ordinary insurance and annuities. Each age group shows a clear and substantial convergence between industrial insurance, population, and ordinary insurance death rates. The three experiences represented in the charts are:

1. *Industrial.* This is the experience of the Metropolitan Life Insurance Company among white males holding industrial weekly-premium, premium-paying policies. This is an aggregate experience, by lives.
2. *Population.* These death rates were derived from census and death registration data for white males in the expanding registration areas, *i.e.*, the original registration states prior to 1920, the 1920 registration states from 1920 to 1932, and the continental United States after 1932.
3. *Ordinary.* Prior to 1940, when preparation of these data was discontinued, this is the experience of the Metropolitan Life Insurance Company among white

CHART 1

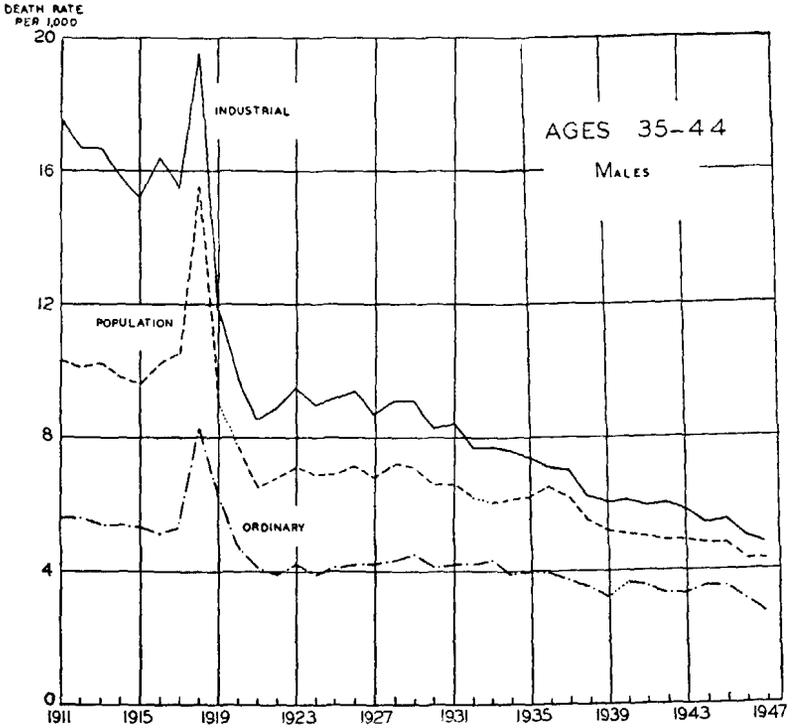


CHART 2

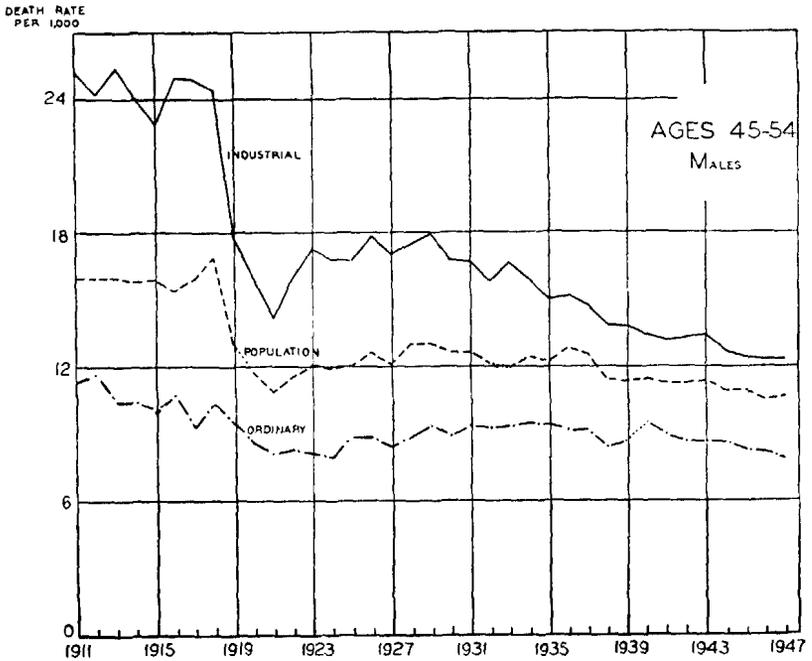


CHART 3

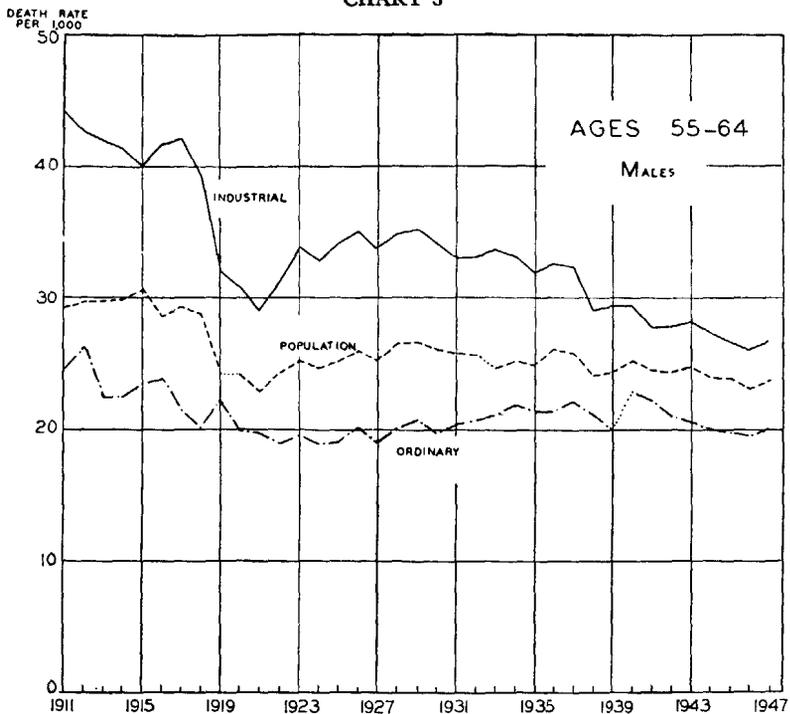
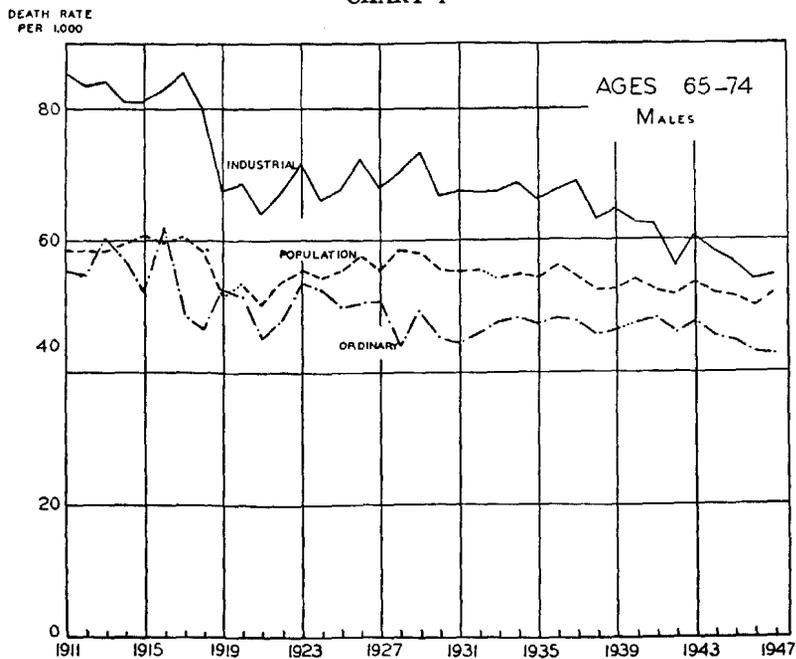


CHART 4



males holding standard ordinary, premium-paying policies. This is an aggregate experience, by lives. After 1939 the chart shows death rates derived from the data compiled by the Joint Mortality Committee for standard ordinary life insurance at durations 16 and over. This is by amounts, includes some female lives, and is for policy years ending in the indicated calendar years.

It is appreciated that there are statistical flaws in the data entering these charts. Use of the expanding registration areas doubtless tends to overstate the mortality reductions that have actually occurred in this country. The basis of the ordinary insurance figures before 1940 differs from that of the subsequent ordinary data. To indicate both of these kinds of change the charts show broken lines at the points of change. There are also the facts that from period to period the age distribution within each age group has probably changed, that the proportions of recently selected lives in the ordinary insurance experience before 1940 vary from year to year, and that a relatively small proportion of female lives enter the ordinary figures after 1939. Nevertheless, it is believed that because the curves appearing in the charts show such large changes, they can be safely assumed to indicate in a general way certain broad changes which have occurred in the basic mortality among the three groups of lives represented.

In *JIA* LXXIV, 140-41, there appear interesting charts of similar nature, comparing the British trends of annuity, ordinary insurance, and population mortality. These charts, unlike those in this discussion, do not indicate substantial differences between the trends for the three classes of lives represented.

To portray more precisely the mortality changes shown in Charts 1-4 and to show corresponding data for females, the Tables 1 and 2—one for each sex—show the same industrial insurance, population, and ordinary insurance death rates compared with each other over each of four periods—1911 to 1919, 1920 to 1929, 1930 to 1939, and 1940 to 1947. These tables measure the tendency of the three experiences to converge as time goes on. This convergence appears not only in the death rates themselves but also in the percentage differences. The convergence of industrial and population mortality is seen to be generally more pronounced among males than among females. Among males the industrial-population convergence is more substantial than the ordinary-population convergence.

Thus, while there have been many similarities between past developments in ordinary insurance, industrial insurance, and population mortality, there have been some distinct differences. These differences may have been overlooked by some actuaries because such a large section of our population owns industrial insurance, and the same is true of ordinary

insurance. A policy of caution is suggested in assuming close analogies between these three types of mortality experience.

If one may speculate, I would guess that the convergence between industrial insurance and population mortality has arisen largely from economic and social changes which have bettered the lot, and hence the mortality, of the lower-income groups more than that of our whole population. This betterment is indicated as having been almost continuous, and not limited to recent years in which, it might be said, our national social-consciousness has been emphasized. No doubt, very many causes are involved

TABLE 1
COMPARISON OF INDUSTRIAL, POPULATION, AND
ORDINARY DEATH RATES—MALES

Ages	Classification	1911-19	1920-29	1930-39	1940-47				
Death Rates per 1,000									
35-44.....	(Industrial	16.13	9.12	7.34	5.56				
	Population	10.59	7.01	6.11	4.76				
	Ordinary	5.80	4.21	3.90	3.31				
45-54.....	(Industrial	23.76	16.71	15.43	12.89				
	Population	15.66	12.08	12.18	11.00				
	Ordinary	10.40	8.51	9.06	8.52				
55-64.....	(Industrial	40.57	33.09	32.27	27.52				
	Population	28.91	25.04	25.28	24.19				
	Ordinary	23.02	19.59	20.96	20.74				
65-74.....	(Industrial	81.23	68.92	66.92	58.29				
	Population	58.41	55.32	54.58	52.10				
	Ordinary	54.47	49.48	46.67	45.57				
Excess of Industrial over Population Death Rates per 1,000									
35-44.....		5.54	52%	2.11	30%	1.23	20%	0.80	17%
45-54.....		8.10	52%	4.63	38%	3.25	27%	1.89	17%
55-64.....		11.66	40%	8.05	32%	6.99	28%	3.33	14%
65-74.....		22.82	39%	13.60	25%	12.34	23%	6.19	12%
Excess of Ordinary over Population Death Rates per 1,000									
35-44.....		-4.79	-45%	-2.80	-40%	-2.21	-36%	-1.45	-30%
45-54.....		-5.26	-34%	-3.57	-30%	-3.12	-26%	-2.48	-23%
55-64.....		-5.89	-20%	-5.45	-22%	-4.32	-17%	-3.45	-14%
65-74.....		-3.94	-7%	-5.84	-11%	-7.91	-14%	-6.53	-13%

here—sanitation, public health measures, the relative rise in the incomes of lower-income families, medical measures including great strides in campaigning against tuberculosis, lessening of industrial accidents, workmen's compensation laws, smoke abatement, the trend to paid vacations, etc.

But I would speculate that the convergence between ordinary insurance and population mortality has arisen largely from a different cause, namely class selection. More and more has ordinary insurance tended to be acquired by a cross section of the entire population.

TABLE 2
COMPARISON OF INDUSTRIAL, POPULATION, AND ORDINARY
DEATH RATES—FEMALES

Ages	Classification	1911-19	1920-29	1930-39	1940-47
Death Rates per 1,000					
35-44.....	(Industrial	9.62	6.65	4.87	3.38
	Population	8.44	5.95	4.61	3.22
	Ordinary	4.70	4.19	3.41	.....
45-54.....	(Industrial	14.80	11.52	9.81	7.40
	Population	12.51	10.06	8.68	6.81
	Ordinary	7.61	7.11	6.57	.....
55-64.....	(Industrial	29.78	24.75	22.25	17.11
	Population	23.90	20.83	18.62	15.30
	Ordinary	17.31	16.13	14.07	.....
65-74.....	(Industrial	67.93	57.76	52.86	43.46
	Population	51.59	48.27	44.23	38.44
	Ordinary	43.06	46.04	35.93	.....
Excess of Industrial over Population Death Rates per 1,000					
35-44.....		1.18 14%	0.70 12%	0.26 6%	0.16 5%
45-54.....		2.29 18%	1.46 15%	1.13 13%	0.59 9%
55-64.....		5.88 25%	3.92 19%	3.63 19%	1.81 12%
65-74.....		16.34 32%	9.49 20%	8.63 20%	5.02 13%
Excess of Ordinary over Population Death Rates per 1,000					
35-44.....		-3.74 -44%	-1.76 -30%	-1.20 -26%	.....
45-54.....		-4.90 -39%	-2.95 -29%	-2.11 -24%	.....
55-64.....		-6.59 -28%	-4.70 -23%	-4.55 -24%	.....
65-74.....		-8.53 -17%	-2.23 -5%	-8.30 -19%	.....

Obviously, both of these speculations are only statements of opinion. Other actuaries may hold different opinions, for equally good or better reasons. However, the convergences are a fact, and in my opinion an important fact which should be borne in mind when studying and interpreting various classes of mortality data, including the valuable body of statistics presented in Dr. Dublin's and Mr. Spiegelman's excellent paper.

W. RULON WILLIAMSON:

This report of mortality progress makes comparisons with conditions a quarter of a century ago. When compared with population tables there seems to be more homogeneity and more orderliness to the experience. The advance announcements as to the 1949-51 U.S. Life Table possibilities show that problems are as yet unlicked, and that if the quirks of the age distribution of the sample census remain, corrections back into the more recent yearly life-tables may be desirable.

When the same persons are used in different parts of the industrial experience, the date of birth is presumably unchanged. But in another way, the persons in the later years are quite different from the observed personnel of the older experience. The Bureau of the Census has determined that the old segregation between foreign-born and native-born citizens was no longer needed, because of the completeness of assimilation. Here in the industrial policyholders the same persons, grown older, are to be compared with the new generation with a longer period of schooling, better housing facilities, sounder health practices and better medical plant—so that today's youngsters must be decidedly different from their predecessors.

Gone for keeps is the feeling of foreordination of a scale of death rates by age. No longer can we use a life table devised from a brief period of observation and even *think* consistently that such a table represents the upward slope of mortality from infancy to old age. The curve of a cohort table is much flatter. If at age 50 we look back fifty years, those now 50 had several times the chance of dying at the turn of the century, in infancy and childhood. Looking ahead to the next fifty years, with the growing attention to heart and malignant tumors and so on, we believe that the curve from 50 onward is going to be flatter too. Just take the customary probability of death by age and restate it as a probability of surviving for a year. The white males of Table 2 in the paper, over the range of this period of observation, show an increase of .5% at infancy, .1% at ages 5-14, .2% at ages 15-24, .3% at ages 25-44, .8% at ages 45-64, and 2% at ages 65-74. The greatest gains in the chance of survival occur at the more advanced ages.

The rest of the picture of improved health deals with vitality, energy, saneness while life goes on—a sound mind in a sound body. All over the world there are more people, because disease has been checked and reproduction continues. Such papers as this add greatly to our grasp of demography, and suggest that there remains much room for sounder understanding.

ARTHUR PEDOE:

I would have wished to contribute a discussion along the lines of Mr. Jenkins's for I consider this paper worthy of it but, unfortunately, due to holidays, I got the draft of the paper only last week. The subject of the paper is one to which I have given much attention and on which in recent years I have presented two papers to the British Institute of Actuaries. In the first paper, presented five years ago, I took the opportunity to draw the attention of British actuaries to the monumental work done by Dr. Dublin and the Metropolitan Life in the field of mortality investigations of industrial policyholders. In that paper I attempted to associate trends in mortality with social changes and traced the changes in British mortality over the previous hundred years and U.S. mortality over a shorter period. I also made comparisons between mortality trends in Britain and the United States.

One factor I think you will all be interested in is that I demonstrated that in both population and insurance experience U.S. mortality showed an excess—a "bulge" I called it—relative to English mortality from ages 30 to 65 with a maximum exceeding 20% of the English mortality around age 55. In the paper I attempted to trace this divergency to its source. For this purpose I used population mortality tables for only they are analyzed by cause of death and where these did not give the material I turned to Dublin's work giving the Metropolitan experience which was also used to confirm other findings. Dublin's *Twenty-Five Years of Health Progress* published by the Metropolitan in 1937 is a classic in the subject of mortality trends and with the Supplement published in 1948 should be at the elbow of every actuary dealing with the subject.

Mr. Jenkins refers to the correspondence between industrial and ordinary (life insurance) mortality and population mortality. This idea was something new five years ago when I laid so much stress on it in my paper. I welcome the publication of Dublin and Spiegelman's work in the *Transactions* for it will draw this most important work to the attention of actuaries and it should be a tremendous satisfaction to us to know that one of our Fellows, Mortimer, is now closely associated with it.

(AUTHOR'S REVIEW OF DISCUSSION)

MORTIMER SPIEGELMAN:

I want to thank my colleagues for their fine comments and discussion. There is little I can add to Mr. Jenkins's observations regarding convergence of industrial, ordinary, and general population mortality. Other examples of converging mortality have been pointed out in various issues of the *Statistical Bulletin* of the Metropolitan Life Insurance Company. It has been shown that mortality is improving faster among the colored in our population than among the whites and that those areas of the country with the usually poorer records are gaining the more rapidly. Also pertinent is a comparison of mortality experience in England and Wales by social class for the periods 1921-23 and 1930-32 where it was found that the differential between the highest and lowest classes in the later period was not as great as in the earlier one.

Mr. Williamson has presented a novel idea in showing the rise, with advance in age, in the percentage change in the survivorship ratio from one period to the next.

Mr. Pedoe has made some timely comments regarding the relatively high mortality in the United States past the youthful ages. We have recently made a comparison of the age-specific death rates among white persons in the United States with the corresponding rates in countries of Western Europe and English-speaking countries elsewhere. It was found that up to age 35 the death rates in the United States were below those of practically all other countries in the comparison. However, this advantage was lost with advance in age. At ages 65 to 69 years, the mortality record for males in every country but Finland was as good as or better than that for our white males. The situation for females was about the same, though not quite as extreme. Within the United States, there are also appreciable variations among the states in death rates at the older ages, with some having records near the best of other countries. Considering these low rates, the emphasis being given to preventive and curative measures in the health problems of the aged, and the great numbers saved from organic impairment by the reduced incidence of infections, there is good reason for expecting appreciable reductions in death rates at the older ages in coming years. These viewpoints are discussed more fully in a paper presented by Dr. Dublin before the American Public Health Association on October 30.