

MORTALITY FROM EXTERNAL CAUSES AMONG
INDUSTRIAL POLICYHOLDERS OF THE METROPOLITAN
LIFE INSURANCE COMPANY 1911 TO 1920

BY

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In November, 1918, we presented before this Society a paper which gave the mortality data relating to accidents, suicides and homicides among industrial policyholders of the Metropolitan Life Insurance Company for the six year period, 1911 to 1916. The purpose of the present paper is to extend the tables and interpretations so as to include the years 1917 to 1920. The extension of the period under review to a whole decade makes available the facts for a much larger number of deaths, close to one hundred thousand, for which detailed data are available. It also serves to stabilize the rates for the several types of accident and more especially for the finer divisions of sex, color and age at which the number of cases is never large. Finally, the experience of the latter four years, 1917 to 1920, of the decade are of singular importance because they exhibit the facts for a group of insured wage earners during the period of industrial expansion incident to and following the war. We shall be able to see how closely the industrial population reacts to serious changes in the environment such as the stresses of war and of increased industrial activity always bring about.

This discussion will attempt to answer two sets of questions:

First: What was the underlying trend of mortality from accidents, suicides and homicides during the decade? To what extent did war conditions retard or accelerate the downward fall of death rates from these conditions? What is the outlook for further control of mortality from external causes?

Second: What are the color, sex and age characteristics of mortality from accidents, suicides and homicides? What underlying changes in these characteristics of mortality are disclosed by a comparison of the first five with the last five years of the decade?

We shall, as before, consider these deaths from external violence under four main heads, the division being made with respect to the element of human volition involved in the fact of

injury. The first group consists of the accidental deaths, those accomplished by chance or through personal negligence without deliberate intent to kill, maim or incapacitate. The second group of external causes of death consists of the suicides, or cases where there was deliberate intent to accomplish self-destruction. Under the third class, we consider all deaths (except war deaths) which arise from the impulse of one person to kill or injure another. These latter are "homicides." For each of these main classes of violence, we shall endeavor further to distinguish the means or agency of injury. The fourth class are the war deaths which in the last half of the decade formed so large a part of the total group.

During the ten year period covered by this investigation, there were 98,297 deaths from external violence of all kinds. They constituted 8.2 per cent. of all deaths in the total mortality experience of the decade. The following table gives the incidence of the three chief groups of external causes represented in our records:

TABLE 1.

MORTALITY FROM EXTERNAL CAUSES OF DEATH. CLASSIFIED ACCORDING TO MAIN GROUPS.

Deaths and Death Rates per 100,000 Persons Exposed and Per Cent. of Total Mortality from External Causes Represented in Each Main Group. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Class of external violence	No. of deaths	Per cent. of total, all causes of death	Per cent. of total, external causes of death	Death rate per 100,000
TOTAL EXTERNAL CAUSES.....	98,297	8.2	100.0	96.6
Accidents and unspec. violence*	72,007	6.0	73.3	70.8
Suicides.....	10,068	.8	10.2	9.9
Homicides.....	6,899	.6	7.0	6.8
War deaths.....	9,323	.8	9.5	9.2

*Excludes "war deaths."

The total death rate for the decade was 96.6 per 100,000, which, as we shall see later, is considerably in excess of the rate for external causes prevailing in the general population of the expanding Registration Area. Close to three quarters of these

deaths were due to accidents. If "war deaths" were included, as perhaps they should be to follow classification practice, the proportion would reach nearly 82.8 per cent. Suicides comprise 10.2 per cent. and homicides 7.0 per cent. additional. We shall consider in detail first the group of accidents.

I. ACCIDENTS INCLUDING UNSPECIFIED VIOLENCE

The general accident problem in the United States, and especially as it affects the wage earner, should interest us because of the very considerable mortality which results from this group of causes. It would appear that the special conditions of American life and industry still give rise to hazards which result in an extraordinarily high fatal accident rate. When compared with accident mortality in England and Wales, the American figures show up especially badly. In the year 1920, the fatal accident rate of England and Wales was 36.9 per 100,000. In the Registration Area of the United States, the rate was 71.0 per 100,000. In other words, the general accident rate for England and Wales was 52 per cent. of that for the expanding Registration Area of the United States. Even when we consider the chief types of fatal accidents, such as falls, burns, drowning, and steam railroad accidents, the rates as recorded for the United States are much above the figures for England and Wales. We shall see later when we consider the facts by sex and age, that the rates for the Industrial policyholders are, for the significant periods of life, highest of all.

Trend of the Death Rate for Accidents.

Even if the accident fatality rate in America is still high as compared with European countries, the general tendency of the mortality has been strikingly downward. A more decided downward trend was observed among insured wage earners (13 per 1,000,000 fewer deaths per year) than in the population of the United States Registration Area, (ages 1 to 74 years)—11 per 1,000,000 fewer deaths per year. The accident experience of the years 1913, and 1916, 1917 and 1918 was much above the line of secular trend for the decade. In 1913, the excessive accident death rate was caused by higher death rates for burns, accidental drowning, falls, machine accidents, street car and

wagon accidents. During the war years affecting the United States, the higher accident death rates were due to excessive mortality from burns (1916, 1917, 1918), machine accidents (1917, 1918), railroad accidents (1916, 1917, 1918), street-car accidents (1917, 1918), and automobile accidents (1917, 1918). The following table and graph show how far the war years departed from the downward trend exhibited during the six years preceding the intensification of war activities in this country and Canada. After the war, the death rates dropped appreciably, in fact to the minimum which the improvement in the earlier years of the decade suggested as a possibility.

Death Rates per 100,000 from **ACCIDENTS AND UNSPECIFIED VIOLENCE 1911 TO 1920**

*Metropolitan Life Insurance Company, Industrial Department and
United States Registration Area, Ages 1 to 74 years.*

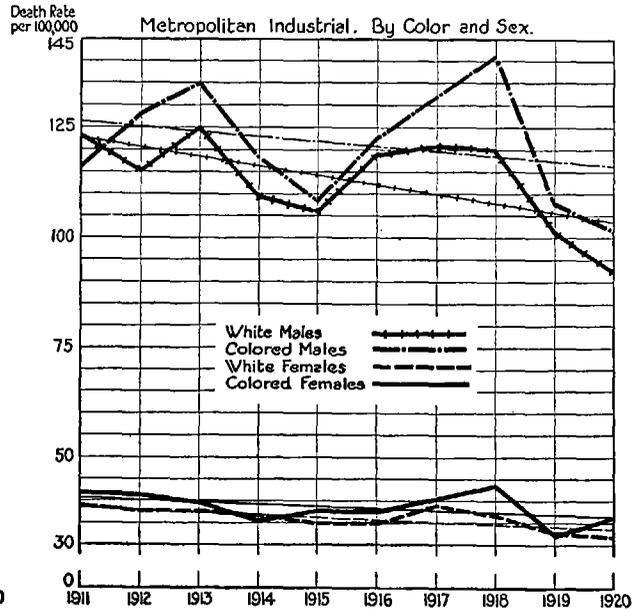
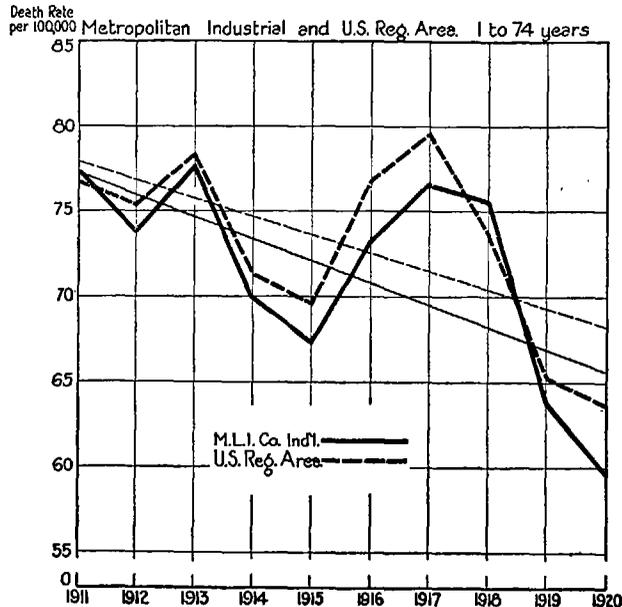


CHART I

The greatest decline in the decade was accomplished among white males; among whom, the rate dropped 25.3 per cent. between 1911 and 1920. White females showed the next greatest improvement, followed by colored females and colored males, respectively. It is also noteworthy that this decline is most pronounced in the last few years of the decade, indicating that the outlook is still favorable for marked declines in the future. The mean rates for the last five years are in every color and sex class below those for the first five years.*

TABLE 2.

MORTALITY FROM ACCIDENTAL AND UNSPECIFIED FORMS OF VIOLENCE,**
CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	70.8	112.0	35.5	120.6	38.3	72.6
1916 to 1920	69.2	109.6	34.6	120.2	37.6	71.3
1920	59.6	92.3	31.7	101.8	35.8	63.7
1919	63.8	101.2	32.8	107.9	32.1	65.3
1918	75.5	119.5	36.3	141.0	43.3	73.6
1917	76.5	120.7	38.5	131.9	40.3	79.5
1916	73.2	118.7	34.8	122.7	37.5	76.7
1911 to 1915	72.9	115.3	36.8	121.1	39.0	74.1
1915	67.3	105.8	34.7	108.5	37.7	69.6
1914	69.9	109.3	36.5	118.2	35.5	71.3
1913	77.6	124.9	37.2	134.8	39.6	78.3
1912	73.8	115.2	37.2	128.4	41.2	75.4
1911	77.4	123.6	38.8	116.5	41.6	76.7
Uniform annual decrement, †						
1911 to 1920	-1.303	-2.179	-.564	-1.148	-.504	-1.088
Per cent. decline, 1920 since 1911 ...	-23.0	-25.3	-18.3	-12.6	-13.9	-16.9
1916-1920 since 1911-1915	-5.1	-4.9	-6.0	-.7	-3.6	-3.8

*Another measure of the rate of fall in the death rate is the ratio,
uniform annual decrement

mean death rate for decade, 1911 to 1920 . Computed from materials

in Table 2, these ratios for, "Accidents and Unspecified Forms of Violence" are as follows: *Persons*:—1.8; *white males*:—1.9; *white females*:—1.6; *colored males*:—1.0; *colored females*:—1.3; *U. S. Reg. Area (1 to 74 years)*:—1.5. In order to keep this paper within reasonable limits, these calculations were not shown on subsequent tables.

**Excludes "War deaths."

†Annual decrement, in units of the death rate per 100,000 lives exposed, of the straight line of secular trend for the decade 1911 to 1920. For method of determining the equation of the straight line of best fit, from a series of independent observation equations, see "Theory of Errors and Method of Least Squares," page 72, *L. D. Weld*, MacMillan Co., 1916.

Color, Sex and Age Incidence of Fatal Accidents

The second point of interest with reference to fatal accidents is their incidence according to color, sex and age. The death rate already quoted, 70.8 per 100,000, is a composite which must be broken down to disclose the inherent characteristics of fatal accidents in homogeneous groups of the population. The facts are presented in the following table and in the chart on page 48.

TABLE 3.

MORTALITY FROM ACCIDENTAL AND UNSPECIFIED VIOLENCE,* CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

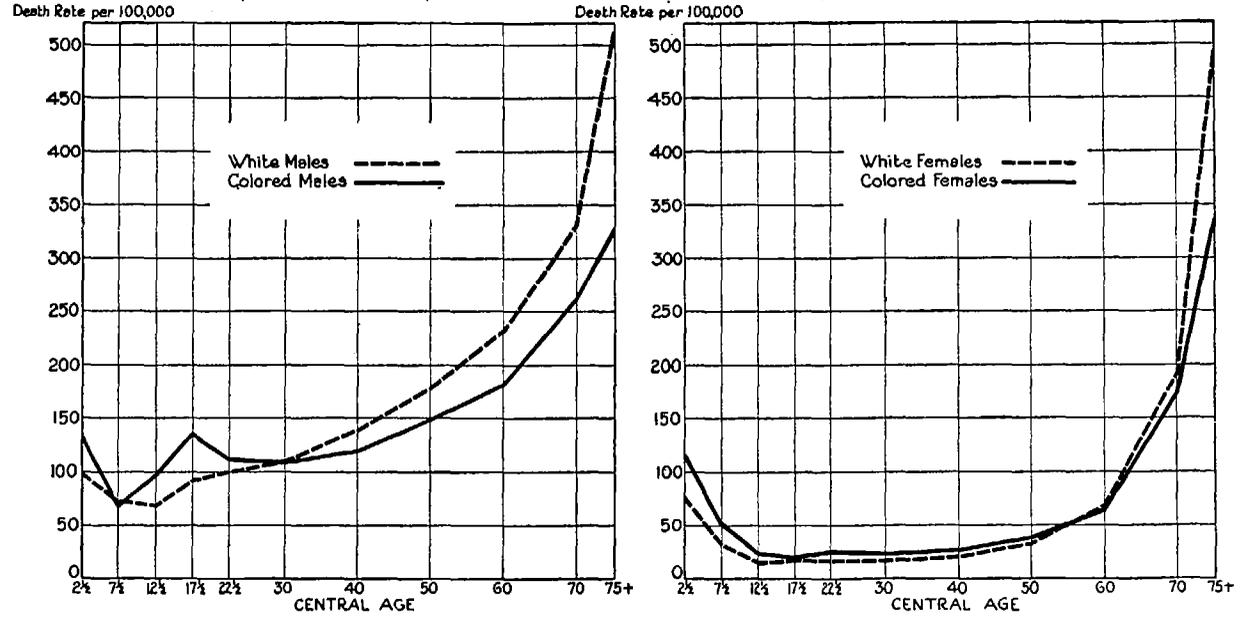
Age Period	Persons	White		Colored	
		Male	Female	Male	Female
All ages— one and over	70.8	112.0	35.5	120.6	38.3
1 to 4	89.2	97.2	75.9	133.0	116.2
5 to 9	53.1	73.0	33.2	68.5	51.9
10 to 14	43.9	68.6	15.5	95.8	23.5
15 to 19	55.8	91.1	16.9	134.0	19.4
20 to 24	54.8	99.3	16.3	111.2	23.6
25 to 34	54.5	107.8	15.6	108.1	22.3
35 to 44	66.2	138.6	19.9	119.5	25.7
45 to 54	88.2	178.1	33.4	148.3	37.8
55 to 64	129.3	232.1	67.9	180.9	64.4
65 to 74	240.5	330.6	190.0	260.7	173.5
75 and over	488.7	512.6	498.7	326.1	341.3

*Excludes "War Deaths."

CHART II

MORTALITY FROM ACCIDENTS & UNSPECIFIED VIOLENCE

Death Rates per 100,000 Persons Exposed. Classified by Age Periods.
White and Colored Groups Compared for Each Sex Class.
Experience of Metropolitan Life Insurance Co. Industrial Department, 1911 to 1920.



Irrespective of color or of sex, the accident death rate varies considerably with age; in fact, we may distinguish three divisional periods of modal age incidence. These are the period of early childhood, the period of occupational stress in early adult life, and finally the period of old age. Considering the group as a whole, we find that the highest accident death rate under 55 was recorded between the ages 1 and under 5 years. There is a sharp decline in the rate from the figure under 5 years of age (89.2 per 100,000) to the rate at the age group 10 to 14 years (43.9 per 100,000). This latter rate is the minimum for any age period. Beginning with the age group 15 to 19 years, there is a gradually rising rate with virtually each advancing age period. For the white male and white female groups, the minimum accident death rate is recorded, as for the total experience, between 10 and 14 years; but for colored males, the minimum rate is reached between 5 and 9 years and, for colored females, between 15 and 19 years. Only the white males exhibit a progressively increasing accident death rate with advancing age, beginning with the period 15 to 19 years. White and colored females both show a rather stationary tendency in the mortality rate between 15 and 35 years of age and a rapidly rising rate thereafter. Between 15 and 34 years, colored males show a tendency toward decline; thereafter, they exhibit a rising death rate.

Color Ratio of Accident Mortality

The fatal accident rates of the white and colored races are, as we have seen, very different. We find, for example, that under 5 years of age, colored children, both males and females show a fatal accident rate close to a half higher than that of white children. In the period 5 to 9 years, colored males show a fatal accident rate just a little less than the white male rate. Between 15 and 19 years, however, we observe the maximum percentage of excess of colored male over white male accident mortality. Colored females, on the other hand, show their maximum percentage of excess in accident mortality between 5 and 9 years of age. After the age period 25 to 34 years, colored, males show a lower mortality than white males, which condition is probably the result of their safer occupational conditions. A similar condition of lower mortality prevails among the colored females after 45 to 54 years, but the cause for this is difficult to ascertain.

Sex Ratio of Accident Mortality

The differences in the stresses of occupation and of life generally between the sexes are clearly reflected in the accident death rates. Considering white lives first, there was an excess of the accident rate for males over the rate for females in every age period. The maximum percentage of excess of male accident mortality is found between 35 and 44 years of age, when the male rate is nearly seven times greater. Among white lives, the excess of male over female accident mortality increases with each age period up to 45; after 45, the excess becomes regularly less. Colored persons did not show any such increase with age in the excess percentage of male over female mortality. The maximum percentage of excess of males over females among colored persons is found between the ages 15 and 19 years, where colored males show a fatal accident rate nearly seven times that of colored females. These facts are exhibited in the following table:

TABLE 4.

MORTALITY FROM ACCIDENTAL AND UNSPECIFIED VIOLENCE.*

Percentage, Male of Female Mortality at Specified Age Periods for Each Color Class. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Percentage, Male of Female Mortality	
	White	Colored
All ages—one and over.....	315.5	314.9
1 to 4	128.1	114.5
5 to 9	219.9	132.0
10 to 14	442.6	407.7
15 to 19	539.1	690.7
20 to 24	609.2	471.2
25 to 34	691.0	484.8
35 to 44	696.5	465.0
45 to 54	533.2	392.3
55 to 64	341.8	280.9
65 to 74	174.0	150.3
75 and over	102.8	95.5

*War deaths excluded.

FATAL ACCIDENTS ACCORDING TO SPECIFIC MEANS OR
NATURE OF INJURY

The greatest interest must always attach to the figures for the specific means of injury; for it is upon these that accident prevention campaigns must be based. From this point of view, it would seem to be of the very greatest importance that the classification of accidents would be such as to forward the prevention movement. Unfortunately, this is not quite the case. The classification of accidents according to the INTERNATIONAL LIST is not entirely suited to this purpose, since it gives at best the means of injury rather than the nature or the origin of the hazard. We must, however, present the figures as we have them arranged according to the requirements of the INTERNATIONAL LIST OF CAUSES OF DEATH. In the future, we hope to present our accident experience in a more constructive manner, namely, to show the source of the accident, whether arising in industry, in or about the home, on public highways or in the use of other public facilities. Under each one of these heads, a more minute classification should lead to valuable measures of prevention. In the meanwhile, we present the figures as we have them. The following table shows the number of deaths and the rate per 100,000 for each one of the specific forms of accident:

TABLE 5.

MORTALITY FROM ACCIDENTAL AND UNSPECIFIED VIOLENCE.*

Deaths and Death Rates per 100,000 Persons Exposed by Specified Causes and by Color and Sex. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Cause of Death	Persons		Rate per 100,000			
	Deaths	Rate per 100,000	White		Colored	
			Males	Fe-males	Males	Fe-males
ACCIDENTS AND UNSPECIFIED VIOLENCE—TOTAL*	72007	70.8	112.0	35.5	120.6	38.3
Poisoning by food.....	969	1.0	1.0	.8	1.3	1.4
Other acute poisonings.....	2006	2.0	2.2	1.6	3.1	1.9
Conflagration.....	1031	1.0	1.2	.7	1.8	1.8
Burns — conflagration excepted.....	8776	8.6	7.4	9.0	8.3	13.8
Absorption of deleterious gases—conflagration excepted.....	2828	2.8	4.1	1.9	2.6	1.1
Accidental drowning.....	9734	9.6	18.2	2.2	21.0	1.7
Traumatism by firearms....	2094	2.1	3.3	.4	8.5	1.5
Traumatism by cutting or piercing instruments.....	152	.1	.2	† —	.6	.2
Traumatism by fall.....	11343	11.2	15.9	8.0	12.0	5.1
Traumatism in mines and quarries (total).....	1316	1.3	2.7	† —	3.8	† —
—in mines.....	1224	1.2	2.5	† —	3.6	† —
—in quarries.....	92	.1	.2	† —	.2	† —
Traumatism by machines..	1806	1.8	3.5	.2	5.2	.2
Steam railroad accidents and injuries.....	7688	7.6	14.9	1.3	15.8	1.8
Street car accidents and injuries.....	2806	2.8	4.8	1.2	3.8	1.0
Automobile accidents and injuries.....	7533	7.4	12.6	3.8	7.9	2.2
Injuries by other vehicles...	2722	2.7	5.1	.7	4.5	.5
Landslide, other crushing...	654	.6	1.3	† —	1.9	.1
Injuries by animals.....	377	.4	.7	† —	1.0	† —
Effects of heat.....	1754	1.7	2.5	1.0	3.5	1.3
Lightning.....	176	.2	.3	† —	.5	.1
Electricity — lightning excepted.....	877	.9	2.0	† —	.9	† —
Other accidental and unspecified violence*	5365	5.3	8.2	2.4	12.6	2.5

*War deaths excluded.

†Less than .05 per 100,000, or no deaths reported.

Thus, among all accidents included in the above table, falls were the most frequent of the specified forms of violence. There were 11,343 deaths from falling recorded among insured wage

earners over the ten year period 1911 to 1920, at a rate of 11.2 per 100,000 exposed. Accidental drowning was next in importance with 9,734 deaths at a rate of 9.6 per 100,000. Burns, excluding burns in conflagrations, followed with 8,776 deaths, or at a rate of 8.6 per 100,000 exposed. Railroad accidents and injuries showed 7,688 deaths, producing a rate of 7.6 per 100,000. Almost as serious were the automobile accidents and injuries recorded in 7,533 cases, with a death rate of 7.4 per 100,000 exposed. A detailed discussion of the facts for some of the more important of these modes of injury in external causes of death follows:

This picture of the relative importance of the various forms of accident is somewhat misleading in view of the fact that it is a combination of the experience for ten years in which there has been a very marked change in the rank of the several causes. Thus, in the last five years of the decade, automobile accidents and injuries lead the list of the single causes. They were responsible for 14.4 per cent. of all the accident fatalities. In the previous five year period, they were responsible for only 5.5 per cent. and this cause was one of the smaller ones in the list. As a compensation, there has been a marked decline in the proportion of fatal falls and in the proportion of drownings to total accidents.

TRAUMATISM BY FALL

The deaths from this cause present an interesting distribution by age and, also, by color and sex as is shown in the following table:

TABLE 6.
MORTALITY FROM TRAUMATISM BY FALL, * CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.
Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	11.2	15.9	8.0	12.0	5.1
1 to 4	9.1	10.6	6.9	17.1	10.3
5 to 9	3.8	5.4	2.2	6.1	1.4
10 to 14	2.8	4.4	1.1	5.1	1.9
15 to 24	3.6	6.7	.8	5.3	1.8
25 to 34	5.9	12.5	1.7	8.4	2.1
35 to 44	10.9	25.1	3.0	14.7	2.8
45 to 54	17.5	35.7	8.0	20.1	5.3
55 to 64	33.7	54.5	23.6	30.5	14.0
65 and over	114.9	115.6	126.1	46.5	60.2

*Falls from steam railroad trains, street cars, automobiles and other vehicles, as well as falls in mines or quarries, from machinery (travelling cranes, for example), and falls in burning buildings are classified under other headings. Not *all* falls are classified under "Traumatism by fall."

The rates are high in early childhood and decline to a minimum in adolescence or in early adult life and rise again regularly to a maximum in old age. This is in accordance with common knowledge, for children and old people suffer most from fatal falls. Males in both races have higher rates at virtually every age period than females. With the exception of the early years of childhood, the colored have lower rates than the whites. This is probably associated with the safer conditions of life in the areas where the great mass of colored policyholders live, as compared with the more hazardous conditions prevailing in the larger towns and cities where the white policyholders reside.

This is one of the forms of accident which has shown a very salutary decline in the decade. Between 1911 and 1920, the fall was 44.7 per cent. among the insured; among white females, it was even as high as 56.2 per cent. The decline is greater among the insured than in the general population of the Registration Area of the United States. Chart III, on page 75, and Table 7, show how marked is the tendency toward a further fall in the death rate from this cause.

TABLE 7.

MORTALITY FROM TRAUMATISM BY FALL, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department and U. S. Registration Area (Ages 1 to 74 years.)

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	11.2	15.9	8.0	12.0	5.1	9.6
1916 to 1920	9.9	14.0	7.2	10.8	4.6	8.6
1920	7.3	8.9	6.3	8.4	4.2	7.1
1919	8.0	10.7	6.1	9.3	3.5	7.2
1918	10.4	14.5	7.2	12.1	6.7	8.5
1917	11.9	17.4	8.2	12.5	4.6	10.2
1916	13.1	20.2	8.5	12.4	4.0	10.7
1911 to 1915	12.8	18.5	9.0	13.5	5.6	10.8
1915	11.9	17.0	8.5	12.4	5.5	10.3
1914	12.6	17.6	9.4	12.9	5.3	10.6
1913	13.7	19.7	9.5	16.9	6.3	11.0
1912	12.7	18.1	9.2	14.5	4.7	11.1
1911	13.2	20.3	8.5	10.5	6.3	10.8
Uniform annual decrement, 1911 to 1920.....	-.627	-1.078	-.343	-.488	-.175	-.448
Per cent. decline:						
1920 Since 1911.....	-44.7	-56.2	-25.9	-20.0	-33.3	-34.3
1916-1920 Since 1911-1915.....	-22.7	-24.3	-20.0	-20.0	-17.9	-20.4

TRAUMATISM FROM ACCIDENTAL DROWNING

Deaths from accidental drowning are concentrated in the ages of childhood and of early adolescence when water sports are popular. The highest rate is attained in the age period 15 to 24. After that age, the death rate declines to a fairly stationary level, about 7.0 per 100,000. The death rate is very much higher among males than among females, reflecting the greater appeal of water sports to boys and young men. The rates are also higher for colored males than for white males. The figures by color, sex and age are as shown in the following table:

TABLE 8.

MORTALITY FROM ACCIDENTAL DROWNING,* CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	9.6	18.2	2.2	21.0	1.7
1 to 4	5.7	8.4	3.2	4.0	1.7
5 to 9	9.8	17.9	2.0	11.2	1.8
10 to 14	13.4	22.4	2.8	39.5	2.9
15 to 24	14.1	24.6	3.7	37.1	2.4
25 to 34	7.7	15.5	1.5	20.8	1.1
35 to 44	6.4	14.8	1.0	12.7	1.5
45 to 54	7.2	16.9	1.5	12.3	1.5
55 to 64	6.7	16.2	1.2	8.9	1.2
65 and over	7.7	18.3	1.6	11.6	1.1

*Under this heading are classified, first, the deaths from drowning that are known to be accidental and, second, those which are not definitely reported as accidental but which can not be identified as suicidal or homicidal.

The incidence of drowning shows a favorable downward tendency in the ten year period as shown by the chart on page 228. The 1920 rate was 34 per cent. lower than that for 1911 and the mean death rate for the second quinquennium is 22.0 per cent. below that for the first quinquennium. The greatest declines are manifested after age 35. Unfortunately, the rate has not been much reduced at those ages where the incidence of drowning is highest.

TABLE 9.

MORTALITY FROM ACCIDENTAL DROWNING, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	9.6	18.2	2.2	21.0	1.7	8.1
1916 to 1920	8.5	16.5	1.8	18.8	1.4	7.1
1920	6.7	12.5	1.6	17.2	1.4	5.8
1919	8.6	16.9	1.9	16.0	1.5	6.9
1918	9.4	18.2	2.1	20.3	.8	6.8
1917	8.7	17.0	1.5	20.5	1.2	7.4
1916	9.7	18.7	2.0	20.7	2.3	8.7
1911 to 1915	10.9	20.5	2.7	23.7	2.1	9.4
1915	11.9	21.2	4.1	24.1	2.8	9.8
1914	10.0	19.1	2.5	19.9	1.6	8.7
1913	12.1	22.4	2.8	29.6	3.5	10.3
1912	10.2	19.1	2.2	25.1	1.6	8.9
1911	10.2	20.5	1.7	19.9	.9	9.5
Uniform annual decrement, 1911 to 1920	-.378	-.710	-.070	-.825	-.069	-.423
Per cent. decline:						
1920 Since 1911	-34.3	-39.0	-5.9	-13.6	+55.6	-38.9
1916-1920 Since 1911-1915 .	-22.0	-19.5	-33.3	-20.7	-33.3	-24.5

BURNS (CONFLAGRATION EXCEPTED)

This continues to be an important source of accident mortality. The decline during the ten year period is relatively small among insured and does not show up at all among the general population. The campaign against accidents has apparently had very little influence on this mode of injury.

The deaths are heavily concentrated in early childhood, reach their minimum in adult life, and rise again to another, but lower, maximum in old age. The rates are higher for colored than for white persons; and higher for females than for males. This is a reflection of the greater domestic accident hazard of women than of men. The data on color, sex and age are given in the following table:

TABLE 10.

MORTALITY FROM BURNS (CONFLAGRATION EXCEPTED),* CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	8.6	7.4	9.0	8.3	13.8
1 to 4	40.3	38.8	38.5	58.6	68.8
5 to 9	9.9	6.0	12.1	8.5	30.3
10 to 14	2.6	1.4	3.5	2.5	6.9
15 to 24	2.7	1.9	2.9	2.9	6.6
25 to 34	3.1	2.4	3.2	4.4	4.7
35 to 44	4.5	4.2	4.2	5.6	5.8
45 to 54	6.6	4.9	6.9	6.0	11.9
55 to 64	10.1	6.7	10.4	10.8	22.4
65 and over	22.8	10.2	26.6	22.4	59.1

*Burns and scalds due to railroad machinery, and mining accidents, as well as those caused by electricity and lightning are not classified under this heading. This explains, to some extent, the comparatively low rate for males.

As previously noted, the accident prevention programme has not affected the incidence of this cause. Among white males, the rate in 1920 was actually higher than in 1911. It was also higher among colored females. The higher incidence among females and also at the ages of childhood and extreme old age point very definitely to the home as the principal source of the hazard. The trend of the death rate for this cause is shown in Chart III on page 75, and the figures are shown by single calendar years in Table 11.

This high domestic hazard shows no tendency toward improvement. Apparently, no effort has as yet been directed to safeguarding conditions of the home.

TABLE 11.
MORTALITY FROM BURNS (CONFLAGRATION EXCEPTED), CLASSIFIED BY
COLOR AND BY SEX.

*Death Rates per 100,000 Persons Exposed. Single Years in
Period, 1911 to 1920.*

Experience of Metropolitan Life Insurance Company, Industrial
Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	8.6	7.4	9.0	8.3	13.8	7.4
1916 to 1920	8.5	7.6	8.7	8.3	13.2	7.5
1920	8.1	6.8	8.3	7.8	15.1	7.0
1919	8.1	7.1	8.6	7.5	10.4	7.1
1918	9.0	8.3	8.7	9.8	14.2	7.7
1917	8.9	8.0	9.2	7.7	12.6	8.4
1916	8.8	7.7	9.0	8.5	13.8	7.5
1911 to 1915	8.8	7.1	9.4	8.3	14.4	7.2
1915	8.6	7.1	8.9	8.1	15.3	6.7
1914	8.4	6.7	9.5	6.7	12.3	7.1
1913	9.0	7.9	9.4	8.5	13.9	7.4
1912	9.1	7.6	9.5	8.7	15.7	7.6
1911	8.8	6.3	9.8	9.6	14.8	7.3
Uniform annual decrement, 1911 to 1920.....	-.070	+ .045	-.146	-.089	-.203	0.0
Per cent. decline: 1920 Since 1911....	- 8.0	+ 7.9	-15.3	-18.7	+ 2.0	- 4.1
1916-1920 Since 1911-1915	- 3.4	+ 7.0	- 7.4	—	- 8.3	+ 4.2

RAILROAD ACCIDENTS AND INJURIES

Fatalities arising out of railroad accidents are still an important element in mortality, even if the number of deaths has declined appreciably in recent years. The 7,688 deaths registered in the ten year period corresponded to a rate of 7.6 per 100,000 insured. The deaths occurred very largely among males. The white male rate was 14.9 and the colored male rate 15.8 per 100,000. The rates for white and colored females were 1.3 and 1.8 per 100,000 respectively. Among the males, the deaths become frequent after age fifteen and continue at a level of about twenty per 100,000 up to age 55. The rate rises to its maximum after 55. The table below shows the data for railroad accidents and injuries according to the several color, sex and age classes:

TABLE 12.

MORTALITY FROM RAILROAD ACCIDENTS AND INJURIES, CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	7.6	14.9	1.3	15.8	1.8
1 to 14	2.4	4.0	.9	3.7	.7
15 to 19	8.1	14.6	1.4	19.0	1.2
20 to 24	10.3	21.7	.8	22.5	1.4
25 to 34	10.1	23.8	.9	17.1	1.9
35 to 44	9.4	22.0	1.2	19.3	2.2
45 to 54	10.3	23.7	2.0	21.3	2.1
55 to 64	13.8	31.0	3.3	24.9	2.9
65 and over	16.7	37.2	4.3	25.7	8.0

The decline in the mortality rate during the ten year period is very marked. The rate for 1920 is close to 45 per cent. less than for 1911 and the rate for white males has declined almost to a half of the original figure. The tendency is still markedly downward and there is every indication that the next few years will see a continuation in the improvement. There is still much to be accomplished before the figures reach the low levels for railroad accidents in European countries. The following table presents the data for railroad accidents and injuries by single years from 1911 to 1920.

TABLE 13.

MORTALITY FROM RAILROAD ACCIDENTS AND INJURIES, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 years
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	7.6	14.9	1.3	15.8	1.8	10.6
1916 to 1920	6.9	13.2	1.5	14.9	2.0	9.4
1920	5.2	9.9	1.2	10.6	1.8	7.3
1919	5.7	10.5	1.6	11.5	1.9	7.4
1918	7.8	14.7	1.6	17.9	2.8	10.3
1917	8.5	16.5	1.8	17.5	1.7	11.4
1916	7.9	15.3	1.3	18.5	1.8	11.4
1911 to 1915	8.5	17.2	1.1	17.0	1.6	12.0
1915	7.4	15.0	1.0	16.0	1.1	9.9
1914	7.5	15.1	1.0	16.0	1.3	10.7
1913	9.0	18.8	1.1	16.9	1.2	13.0
1912	9.2	18.5	1.4	17.6	2.2	13.6
1911	9.5	19.2	1.3	18.6	2.2	13.0
Uniform annual decrement, 1911 to 1920.....	-.398	-.944	+.035	-.622	+.025	-.634
Per cent. decline:						
1920 Since 1911....	-45.3	-48.4	-7.7	-43.0	-18.2	-43.8
1916-1920 Since 1911-1915	-18.8	-23.3	+36.4	-12.4	+25.0	-21.7

AUTOMOBILE ACCIDENTS AND INJURIES

Automobile accidents and injuries now constitute the most important single cause of accident fatality; for the ten year period combined, this cause occupied fourth place in the list. The increase in the rate from 2.3 per 100,000 in 1911 to 11.1 in 1920 is one of the truly menacing features in the whole mortality experience of the insured and of the general population of the United States and Canada. The increment has been at an annual average of one per 100,000 in the death rate and among white males this annual increment is close to two per 100,000. Chart

III, on page 75, shows how truly serious the phenomenon is in the utter lack of any tendency toward abatement of the rate. The present situation obviously calls for vigorous measures on the part of the constituted authorities, especially in view of the ever-increasing use of this method of transportation.

The deaths are much more frequent among males than among females and are concentrated heavily among children. In this experience one-third the deaths are among children under fifteen years. The rates reach a maximum at ages five to nine, when children play more or less unprotected in the streets and highways. The rates stay fairly level between ages 15 and 45 when they begin to rise again to the maximum, which is attained after age 65. The following table presents the death rates by color, sex and age. But this is obviously only a temporary picture representing what has happened in a period of rapid change. It is at best only suggestive of what is now occurring in the several classes of the population.

TABLE 14.

MORTALITY FROM AUTOMOBILE ACCIDENTS AND INJURIES, CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	7.4	12.6	3.8	7.9	2.2
1 to 4	7.1	8.7	5.6	7.0	3.3
5 to 9	14.0	20.5	7.9	15.7	5.0
10 to 14	8.0	13.2	3.0	10.9	1.4
15 to 19	4.8	8.1	2.0	4.5	1.0
20 to 24	5.1	9.1	2.3	5.2	1.9
25 to 34	4.3	8.5	1.8	4.4	1.8
35 to 44	4.8	9.5	2.1	7.2	1.8
45 to 54	6.3	12.7	3.1	6.5	2.0
55 to 64	11.1	19.7	6.4	14.1	3.6
65 and over	16.7	30.8	9.0	19.9	5.2

The death rates for the single calendar years 1911 to 1920 are shown in Table 15.

TABLE 15.

MORTALITY FROM AUTOMOBILE ACCIDENTS AND INJURIES, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	7.4	12.6	3.8	7.9	2.2	6.8
1916 to 1920	10.0	16.7	5.1	11.3	3.3	9.0
1920	11.1	18.9	6.0	10.1	3.2	10.2
1919	10.7	18.0	5.5	12.8	3.6	9.3
1918	10.3	17.2	5.3	12.7	3.2	9.1
1917	9.7	15.9	5.0	12.5	3.6	8.9
1916	7.4	12.9	3.4	8.2	2.5	7.3
1911 to 1915	4.0	7.0	2.0	3.8	1.0	3.9
1915	5.4	9.4	2.6	5.7	1.3	5.9
1914	4.8	8.5	2.4	4.2	.8	4.3
1913	4.1	7.5	1.9	3.8	1.2	3.9
1912	3.0	4.8	1.8	2.9	.7	2.9
1911	2.3	4.0	1.1	1.9	1.1	2.2
Uniform annual decrement, 1911 to 1920....	+1.096	+1.822	+ .579	+1.303	+ .356	+ .958
Per cent. decline: 1920 Since 1911	+382.6	+372.5	+445.5	+431.6	+190.9	+363.6
1916-1920 Since 1911	+150.0	+138.6	+155.0	+197.4	+230.0	+130.8
-1915.....						

STREET CAR ACCIDENTS AND INJURIES

Fatalities registered as street car accidents and injuries in this experience included deaths, not only of persons riding on or operating street cars, but also those deaths on elevated and subway trains and on tracks and rights of way of street railways, interurban roads operated electrically, subways and elevated railroads. There were registered 1,600 deaths from this cause, the corresponding rate being 3.0 per 100,000 exposed in the ten

years under observation. The rate is highest among white males and least among colored females.

The rates are higher under age 5 and after age 35 than at other periods of life. There is considerable variation, however, from age to age as is shown in the following table:

TABLE 16.

MORTALITY FROM STREET CAR ACCIDENTS AND INJURIES, CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	2.8	4.8	1.2	3.8	1.0
1 to 4	2.4	3.0	1.8	3.0	1.7
5 to 9	2.2	2.8	1.5	3.4	1.6
10 to 14	1.5	2.6	.5	1.9	.5
15 to 19	1.7	2.7	.5	3.6	.7
20 to 24	1.4	2.7	.6	1.4	.1
25 to 34	1.8	4.1	.4	2.0	.2
35 to 44	3.1	7.0	.8	4.4	.8
45 to 54	4.5	9.7	1.6	5.5	1.8
55 to 64	7.3	14.2	3.4	9.8	2.9
65 and over	11.7	22.2	5.7	15.8	4.0

It is important to note the great decline in the rate in the ten year period. The figure for 1920 is exactly half that for 1911. A curious change of tendency occurred in the years 1916, 1917 and 1918 when the rate went up very appreciably, both in the experience of the Metropolitan and in the general population. Since then, however, the rate has declined rapidly, making the picture for the decade a satisfactory one. The experience by single years between 1911 and 1920 is given herewith:

TABLE 17.

MORTALITY FROM STREET CAR ACCIDENTS AND INJURIES, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	2.8	4.8	1.2	3.8	1.0	2.6
1916 to 1920	2.5	4.3	1.2	3.5	1.0	2.4
1920	1.8	2.9	1.1	1.4	.5	1.9
1919	2.4	4.4	.9	1.5	1.6	2.2
1918	3.1	4.8	1.7	5.6	.4	2.8
1917	3.0	5.1	1.2	5.8	1.7	2.9
1916	2.6	4.4	1.2	3.5	.9	2.4
1911 to 1915	3.1	5.5	1.2	4.2	.9	2.8
1915	2.2	3.9	.9	2.1	.9	2.3
1914	2.7	4.5	1.1	4.2	1.4	2.5
1913	3.6	6.4	1.4	4.6	1.2	3.1
1912	3.5	6.4	1.4	4.6	.5	3.0
1911	3.6	6.7	1.3	5.8	.5	3.2
Uniform annual decrement, 1911 to 1920	-.152	-.327	-.019	-.304	+.028	-.106
Per cent. decline:						
1920 since 1911	-50.0	-56.7	-15.4	-75.9	—	-40.6
1916-1920 since 1911-1915	-19.4	-21.8	—	-16.7	+11.1	-14.3

TRAUMATISM BY MACHINES

A total of 1,806 deaths from traumatism by machines is recorded. This title includes deaths by means of machines in most industries and through mechanisms such as elevators which are not always concerned in industrial processes. The deaths are almost entirely among males, the rates for white and colored males being 3.5 and 5.2 per 100,000, respectively. The rates for females may be disregarded. The deaths are concentrated in the age periods of working life as is shown in the following table:

TABLE 18.

MORTALITY FROM TRAUMATISM BY MACHINES,* CLASSIFIED BY COLOR FOR MALES, AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons in Total Experience	White Males	Colored Males
All ages—one and over	1.8	3.5	5.2
1 to 14	.4	.6	1.3
15 to 19	2.6	4.7	6.7
20 to 24	1.9	4.0	5.2
25 to 34	2.0	4.0	6.8
35 to 44	2.7	6.9	5.3
45 to 54	3.3	7.7	9.4
55 to 64	3.5	8.7	7.2
65 and over	2.9	7.3	5.0

*Deaths caused by machinery accidents in mines and quarries are classified under title No. 173 (Traumatism in mines and quarries); those due to locomotives are charged to one of the subtitles of title No. 175 (Steam railroad accidents and injuries) of the INTERNATIONAL LIST OF CAUSES OF DEATH, (1909 Revision).

There has been virtually no improvement from this cause of accidental mortality. In fact, the trend in this ten year period is slightly upward among the insured, and decidedly so in the general population. This points definitely to the effect of war conditions upon the trend of fatal industrial accidents. Prior to 1916 the tendency of this death rate was downward and during the war decidedly upward. Since 1919 no marked downward fall has been observed. The following table, and Chart IV on page 76, presents the figures for the individual years in the decade:

TABLE 19.

MORTALITY FROM TRAUMATISM BY MACHINES,* CLASSIFIED BY COLOR FOR MALES AND FEMALES.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department, and U. S. Registration Area (Ages 1 to 74 years.)

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	1.8	3.5	.2	5.2	.2	2.4
1916 to 1920	1.8	3.6	.2	5.6	.3	2.6
1920	1.7	3.5	.1	4.0	.2	2.5
1919	1.6	2.8	.2	5.9	.6	2.5
1918	2.4	4.6	.2	8.2	.4	3.0
1917	2.0	4.0	.2	5.0	.1	2.9
1916	1.7	3.4	.1	5.3	.2	2.3
1911 to 1915	1.7	3.3	.1	4.8	.1	2.2
1915	1.4	2.9	.2	3.4	—	1.9
1914	1.5	3.3	.1	2.9	.2	2.0
1913	2.0	4.1	.1	5.4	.3	2.5
1912	1.7	3.2	.2	5.6	—	2.4
1911	1.8	3.4	.2	6.9	.2	2.2
Uniform annual de- crement, 1911 to 1920....	+ .013	+ .019	- .001	- .011	+ .028	+ .055
Per cent. decline: 1920 Since 1911	- 5.6	+ 2.9	- 50.0	- 42.0	—	+ 13.6
1916-1920 Since 1911 -1915.....	+ 5.9	+ 9.1	+ 100.0	+ 16.7	+ 200.0	+ 18.2

INJURIES BY OTHER VEHICLES

With the development of the automobile in the last decade as the chief mode of transportation, there has been, of course, a marked decline in the use of other vehicles and a corresponding drop in the mortality arising out of the use of vehicles. In 1920, the rate per 100,000 had declined to 1.8 from a figure of 3.1 in 1911, which represents a decline of 42 per cent. In the ten year period, a total of 2,722 was registered. These were concentrated heavily among the males, the white males showing a rate of 5.1, colored males a rate of 4.5 per 100,000, respectively. The

rates for white and colored females were .7 and .5 per 100,000, respectively. The distribution of the deaths and the corresponding rates show considerable variation from age period to age period with a general tendency toward increase with advancing age. The following table gives the rates per 100,000 by color, sex and age period:

TABLE 20.

MORTALITY FROM INJURIES BY OTHER VEHICLES, CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed, 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department.

Age Period	Persons	White		Colored Males
		Males	Females	
All ages—one and over.....	2.7	5.1	.7	4.5
1 to 4	3.0	3.9	2.1	3.7
5 to 9	2.9	4.7	1.2	3.6
10 to 14	1.6	2.7	.5	2.3
15 to 19	2.0	3.5	.4	3.8
20 to 24	2.4	5.1	.4	2.9
25 to 34	2.2	5.1	.3	3.3
35 to 44	2.6	6.4	.3	4.4
45 to 54	3.5	8.0	.7	7.9
55 to 64	4.2	9.7	.7	10.2
65 and over	6.9	14.0	2.4	14.9

It is noteworthy that the marked decline in the incidence of this form of fatal accident has been accomplished almost entirely in the last half of the decade. This is consistent with the increased use of the automobile. The figures for the individual years of the decade are given below:

TABLE 21.

MORTALITY FROM INJURIES BY OTHER VEHICLES, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l. Dept.					U. S. Reg. Area Ages 1 to 74 years
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	2.7	5.1	.7	4.5	.5	3.0
1916 to 1920	2.3	4.6	.6	3.8	.3	2.6
1920	1.8	3.6	.3	2.8	.4	1.9
1919	2.2	4.4	.5	3.2	.3	2.2
1918	2.5	5.0	.7	3.4	.5	2.6
1917	2.5	4.9	.6	3.9	.4	3.0
1916	2.8	5.4	.7	6.0	.2	3.2
1911 to 1915	3.1	5.8	1.0	5.5	.6	3.6
1915	3.0	5.6	.8	6.2	.2	3.4
1914	2.9	5.4	.9	4.4	.6	3.6
1913	3.4	6.4	1.4	3.6	.7	3.7
1912	3.4	6.2	.9	7.3	1.0	3.6
1911	3.1	5.5	1.0	6.0	.7	3.7
Uniform annual decrement, 1911 to 1920	-.158	-.233	-.082	-.365	-.056	-.203
Per cent. decline:						
1920 Since 1911	-41.9	-34.5	-70.0	-53.3	-42.9	-48.6
1916-1920 Since 1911-1915	-25.8	-20.7	-40.0	-30.9	-50.0	-27.8

ABSORPTION OF DELETERIOUS GASES

Nearly all of the deaths reported under this heading were caused by the accidental inhalation of illuminating gas. There was, of course, a small number of deaths due to the absorption of other poisonous gases and vapors such as, sewer gas, anaesthetic vapors, and gases evolved in the domestic and industrial operation of stoves and furnaces. The facts on the color, age and sex incidence for this cause of death are given in the following table:

TABLE 22.

MORTALITY FROM ABSORPTION OF DELETERIOUS GASES,* CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages— one and over	2.8	4.1	1.9	2.6	1.1
1 to 14	.8	.9	.6	.7	.6
15 to 24	1.5	2.0	1.1	1.9	.9
25 to 34	2.2	3.6	1.4	2.8	1.3
35 to 44	3.4	6.6	1.9	3.3	.9
45 to 54	5.6	10.6	3.2	6.0	.8
55 to 64	9.1	17.0	5.7	2.6	1.7
65 and over	16.8	27.9	12.0	6.6	5.7

*Deaths reported as due to "asphyxia by gas," "gas poisoning," "illuminating gas poisoning," etc., although not reported as accidental, are classified here unless identified as due to suicide or homicide.

There is a successive rise in the death rate from one age group to the other. The minimum rate was observed in early childhood and the maximum in old age.

We show below a table for the single calendar years 1911 to 1920.

TABLE 23.

MORTALITY FROM ABSORPTION OF DELETERIOUS GASES, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 years
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	2.8	4.1	1.9	2.6	1.1	2.7
1916 to 1920	2.9	4.4	1.9	3.0	1.3	2.8
1920	2.3	3.3	1.7	2.4	.8	2.4
1919	2.6	3.8	1.9	1.4	.9	2.5
1918	3.6	5.7	2.1	3.9	1.9	3.1
1917	3.3	4.9	2.1	4.5	1.9	3.2
1916	2.9	4.5	1.8	3.3	1.4	2.9
1911 to 1915	2.6	3.8	1.9	2.0	.8	2.6
1915	2.3	3.6	1.6	1.3	.5	2.3
1914	2.9	4.2	2.1	1.5	1.3	2.7
1913	2.5	3.4	1.9	2.2	1.0	2.5
1912	3.0	4.3	2.2	3.7	.7	2.9
1911	2.3	3.4	1.8	1.5	.7	2.6
Uniform annual decrement, 1911 to 1920.....	+.027	+.061	-.011	+.070	+.058	+.003
Per cent. decline:						
1920 Since 1911....	—	- 2.9	- 5.6	+60.0	+14.3	- 7.7
1916-1920 Since 1911-1915	+11.5	+15.8	0.0	+50.0	+62.5	+ 7.7

TRAUMATISM BY FIREARMS

The maximum death rate for this cause was recorded in the age group 15 to 19 years. This high death rate in childhood and early adolescence points to the reckless disposition of firearms in and about the home, and to the heedless use of these instruments in the pursuit of outdoor sports. The high death rates from accidental gunshot wounds at these ages represent a considerable part of the total mortality and, if the death rate at this age division of life is to be materially reduced, some workable restrictions upon the sale and use of firearms to and by older children and adolescents must be put into operation.

TABLE 24.

MORTALITY FROM TRAUMATISM BY FIREARMS,* CLASSIFIED BY COLOR,
SEX AND BY AGE PERIOD.*Death Rates per 100,000 Persons Exposed. 1911 to 1920.*Experience of Metropolitan Life Insurance Company. Industrial
Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages — one a n d over.....	2.1	3.3	.4	8.5	1.5
1 to 4	1.2	1.3	.8	3.0	3.0
5 to 9	1.4	2.0	.6	5.1	1.3
10 to 14	3.5	5.7	.5	10.3	3.0
15 to 19	4.6	7.2	.8	19.9	.8
20 to 24	2.7	4.0	.3	14.1	3.3
25 to 34	1.8	2.6	.2	9.8	1.5
35 to 44	1.5	2.1	.2	6.8	1.3
45 to 54	.6	1.2	.2	1.5	.3
55 to 64	.7	1.4	.3	1.3	—
65 and over	.6	1.3	.2	1.7	—

*Under this title are classified, also, deaths reported from "gunshot wound," "shot," etc., without qualification as to accidental, suicidal or homicidal character. Every effort is made to obtain definite information, however, in such cases, and they constitute only a small proportion of the 1,029 deaths classified here.

The death rate from accidental gunshot injuries showed a slight rising tendency throughout the decade. There was a more decided increase for white males than for the other three color and sex classes. The following table gives the facts for the individual calendar years of the decade:

TABLE 25.
MORTALITY FROM TRAUMATISM BY FIREARMS, CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 years
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	2.1	3.3	.4	8.5	1.5	2.5
1916 to 1920	2.2	3.5	.5	8.8	1.4	2.5
1920	2.3	3.6	.5	10.1	1.7	2.6
1919	2.2	3.4	.5	10.7	1.3	2.8
1918	2.4	4.2	.5	8.4	1.5	2.5
1917	1.9	3.0	.5	5.8	1.7	2.4
1916	1.9	3.1	.3	8.4	.8	2.3
1911 to 1915	1.9	3.0	.4	8.1	1.7	2.4
1915	1.7	2.7	.4	5.7	1.7	2.3
1914	2.0	2.7	.4	10.2	1.9	2.5
1913	2.2	3.5	.5	9.3	1.5	2.5
1912	2.0	3.1	.3	7.9	2.1	2.3
1911	1.7	2.8	.3	7.3	1.1	2.3
Uniform annual decrement, 1911 to 1920.....	+ .047	+ .085	+ .021	+ .181	- .010	+ .036
Per cent. decline:						
1920 Since 1911....	+35.3	+28.6	+66.7	+38.4	+54.5	+13.0
1916-1920 Since 1911-1915	+15.8	+16.7	+25.0	+ 8.6	-17.6	+ 4.2

ACCIDENT FATALITIES ARISING OUT OF OR IN THE COURSE OF EMPLOYMENT

The statistical records on accident fatalities among insured wage earners were compiled so that it was possible to show the number and proportion of accidental deaths due to occupational causes. The series of data with respect to this disease begins with the year 1912. During the nine year period (1912 to 1920), 29 per cent. of the deaths from all types of accidents were due to occupational causes. The death rate from fatal industrial accidents over the nine year period was 36.0 per 100,000 white males at ages 15 years and over. It should be understood that this death rate represents the number of fatal industrial accidents in relation to the total number of white males at ages 15 and over, and not to the number gainfully employed in industrial pursuits.

This measure of industrial accident mortality is sufficiently sensitive, however, to show the effect of industrial conditions during the war upon the death rate for this cause. Prior to the war, the highest death rate prevailed in the year 1913, (45.7); this was followed by a sharp drop to 27.5 in 1915, the lowest rate in the nine year period. This marked decline in fatal industrial accidents may have been due to the rapid extension of safety work in American industry as a consequence of the development of workmen's compensation legislation. But, the gains were soon offset by the marked increase in industrial activity which followed the outbreak of the Great War. The death rate for fatal industrial accidents among these insured white males, ages 15 years and over, rose from a minimum of 27.5 in 1915 to 40.9 in 1918, an increase of nearly 50 per cent. in three years. In 1919, a lower rate (32.1) was observed and in 1920, a slight rise to 34.9 was recorded. The proportion of deaths due to industrial causes in the total accidents reported for each of the important specific types of injury are shown in the following table:

TABLE 26.

NUMBER OF DEATHS FROM ALL ACCIDENTS; NUMBER AND PROPORTION ARISING FROM INDUSTRIAL CAUSES.

White Males 15 Years of Age and Over.

Metropolitan Life Insurance Company, Industrial Department, 1912-1920.

Type of Accident	Deaths, all form of Accidents	Occupational Accidents	
		Deaths	Percentage of total Accidents
Total Specified Causes.....	27,074	7,835	28.9
Conflagration.....	284	61	21.5
Burns.....	787	222	28.2
Absorption of deleterious gases.....	1,420	103	7.3
Accidental drowning.....	4,174	308	7.4
Traumatism by fall.....	4,826	1,164	24.1
Traumatism in mines and quarries..	966	899	93.1
Traumatism by machines.....	1,223	976	79.8
Railroad accidents and injuries.....	4,816	1,846	38.3
Street car accidents and injuries....	1,325	238	18.0
Automobile accidents and injuries..	2,546	224	8.8
Other vehicular accidents and injuries.....	1,331	471	35.4
Other crushing accidents and injuries	371	247	66.6
Injuries by animals.....	179	73	40.8
Electricity—lightning excepted.....	642	436	67.9
Fractures—cause not specified.....	568	12	2.1
Other external violence.....	1,616	555	34.3

Nearly all of the accidents in mines and quarries were occupational in origin. Injuries by animals were sustained in the course of occupational pursuits in 41 per cent., for railroad accidents and injuries in 38 per cent., for burns in 28 per cent., for traumatism by machines in 80 per cent., and for electricity in 68 per cent. of the total accidents recorded on this group of adult white males.

These statistics suggest the compilation of further data to show what number and proportion of accidents are due to other than industrial hazards. As indicated in the preceding portion of this paper, plans are at present under way to show what parts of the total accident experience are contributed by hazards arising in and about the home, from the use of public highways, and of vehicles thereon, and in buildings and other public facilities.

CHART III.

Death Rates per 100,000 from
SPECIFIED FORM OF ACCIDENTAL INJURY 1911 TO 1920

M.L.I. Co. Industrial Dept. ———

U.S. Reg. Area Ages 1 to 74 - - - -

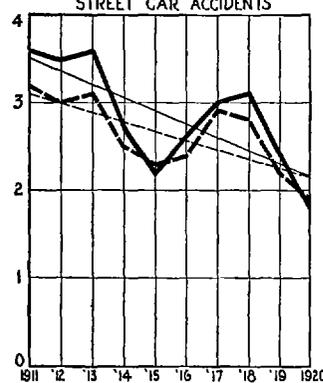
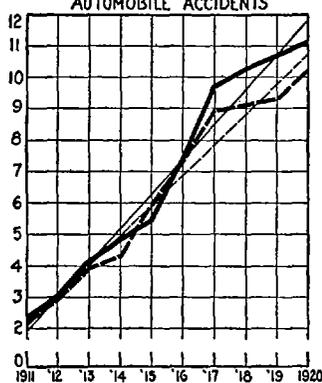
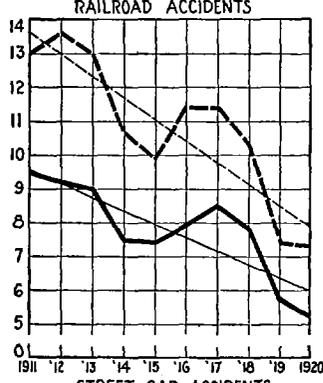
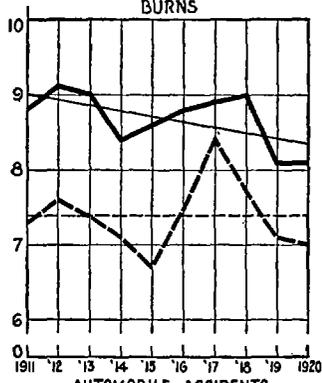
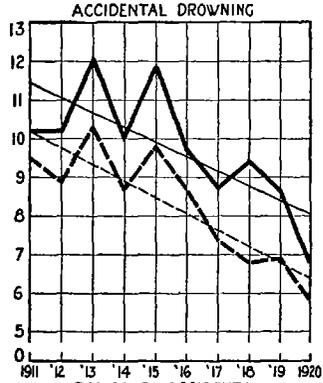
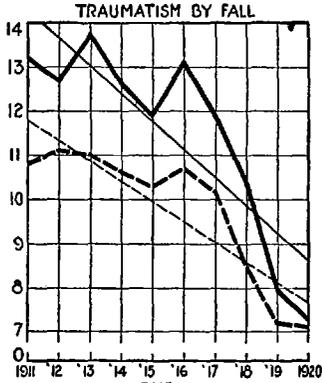
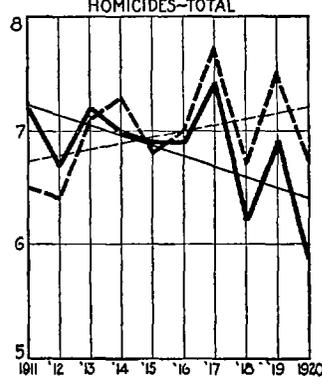
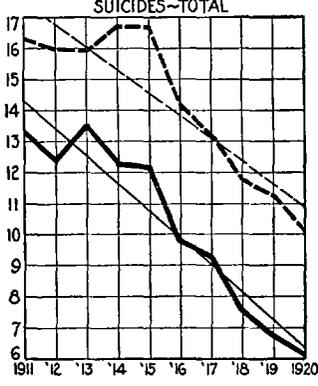
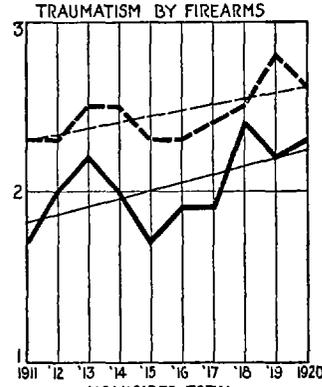
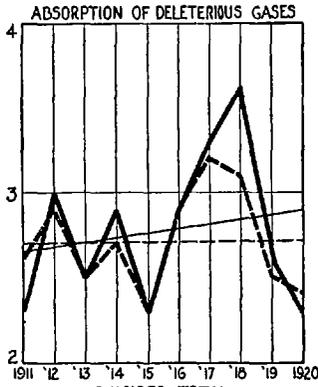
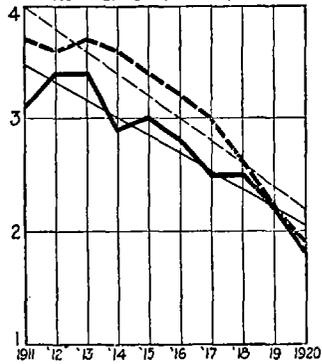
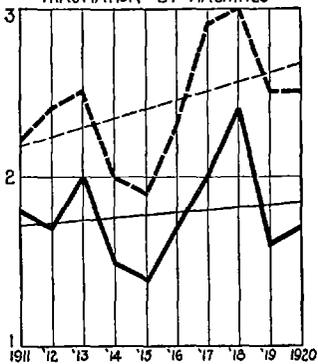


CHART IV.

Death Rates per 100,000 from
SPECIFIED FORM OF ACCIDENTAL INJURY
 and from **SUICIDES & HOMICIDES 1911 TO 1920**
 M.L.I.Co. Industrial Dept. ——— U.S. Reg. Area Ages 1 to 74 - - - -



II. SUICIDES

The suicide experience of these insured wage earners has been found to reflect the state of economic well-being of the wage working groups of the American population. Because of the more or less difficult industrial situation of the years preceding the war, the suicide death rate of this group of insured wage workers exceeded decidedly the line of secular trend for the decade. Beginning with the war years, however, there was a sharp drop in suicide mortality. The rate for the year 1920 was 54 per cent. below that for the year 1911. There was a more rapid decline in suicide mortality among insured wage earners than among the general population of the United States Registration Area. This is shown in Table 28 and in Chart IV on page 76.

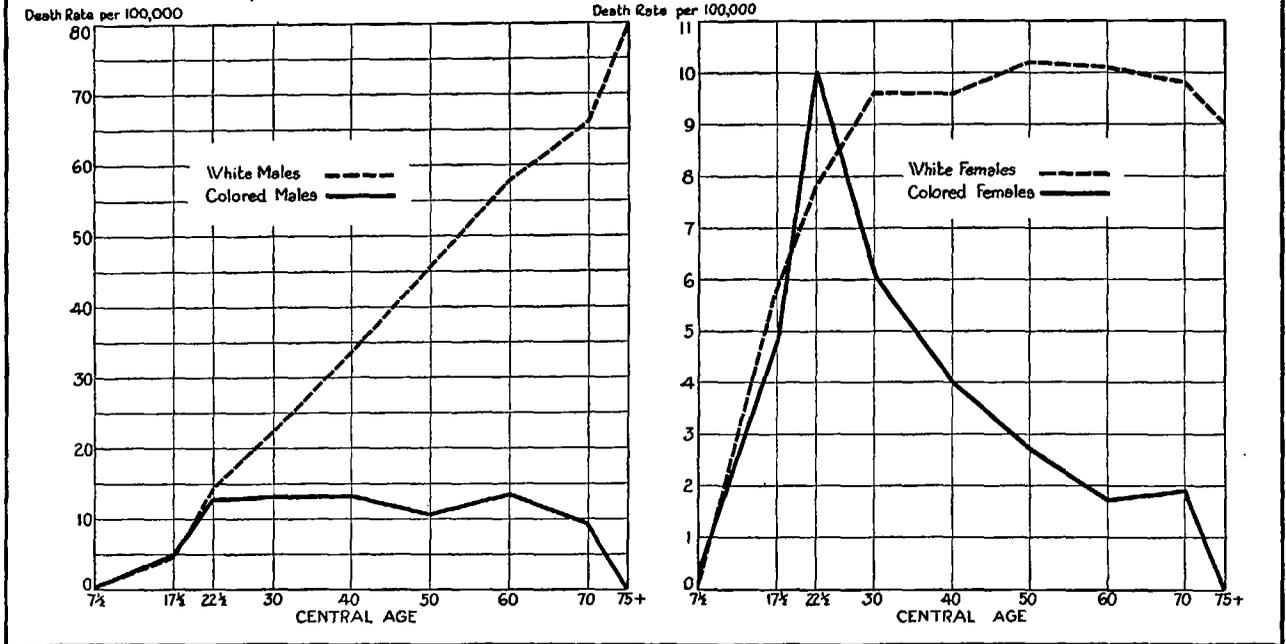
Each of the color and sex groups in this experience has a decidedly different suicide mortality curve with respect to age. For white males for the decade 1911 to 1920, there is a sharply rising death rate up to the age period 20 to 24 years. A more gradual but uniform increase with advancing age was observed between the age divisions 20 to 24 and 65 to 74 years. After that age, the rate continued to rise somewhat less sharply until the maximum was reached in old age. Among white females, there was a very sharp rise with advancing age in the suicide mortality rate under 25 years. Between 15 and 19 years, and at no other age division, the suicide death rate of white females (5.8 per 100,000) exceeds that for white males (4.4 per 100,000). This excess in the suicide death rate of white females in adolescence has been observed in many other suicide studies. After age 25, the rate for white females continues to the end of life with very little variation from a rate of about 10 per 100,000. This is decidedly in contrast to the uniform advance in the suicide rate with age among white males.

The low suicide death rate among colored persons has always been of interest to students of the comparative mortality of the two races. There is a sharp rise for colored males during childhood and adolescence to a rate of 12.8 per 100,000 in the age group 20 to 24 years. At ages beyond 25, with an unimportant variation at the ages 45 to 54 years, there is practically a stationary death rate up to about age 60. Beyond age 60, the suicide death rate of colored males declines.

CHART V.

MORTALITY FROM SUICIDES ALL FORMS

Death Rates per 100,000 Persons Exposed. Classified by Age Periods.
 White and Colored Groups Compared for each Sex Class.
 Experience of Metropolitan Life Insurance Co. Industrial Department. 1911 to 1920.



The suicide mortality experience of colored females is radically different with respect to age from that of the other three color and sex groups. The suicide death rate rises to a maximum, 10.0 per 100,000, at the age period 20 to 24 years and then declines very sharply to a second minimum in old age. At the age period 20 to 24 years, the suicide death rate of colored females exceeds that of white females. The following table, and Chart V on page 78, give the suicide death rates by color, sex and age.

TABLE 27.

MORTALITY FROM SUICIDE (ALL FORMS), CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	9.9	15.8	6.0	8.7	4.0
1 to 14	.1	.2	.1	.2	.3
15 to 19	5.1	4.4	5.8	4.9	4.8
20 to 24	10.8	14.4	7.8	12.8	10.0
25 to 34	14.0	22.4	9.6	13.1	6.1
35 to 44	17.0	33.8	9.6	13.2	4.0
45 to 54	21.0	45.7	10.2	10.6	2.7
55 to 64	25.8	57.9	10.1	13.5	1.7
65 to 74	28.6	66.0	9.8	9.4	1.9
75 and over	31.5	79.4	9.0	—	—

A table showing the trend of suicide mortality according to color, sex and age for the decade 1911 to 1920 is shown below:

TABLE 28.

MORTALITY FROM SUICIDE (ALL FORMS), CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 yrs.
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	9.9	15.8	6.0	8.7	4.0	13.9
1916 to 1920	7.8	11.6	5.3	7.2	3.1	12.0
1920	6.1	8.7	4.5	4.8	2.8	10.1
1919	6.8	9.7	4.9	7.2	3.4	11.3
1918	7.6	10.9	5.4	8.1	3.0	11.8
1917	9.3	14.6	5.8	8.2	3.2	13.2
1916	9.8	15.3	6.3	8.2	3.4	14.2
1911 to 1915	12.7	21.3	6.9	10.5	5.2	16.3
1915	12.2	19.6	7.5	7.3	6.0	16.7
1914	12.3	20.6	6.4	11.6	5.3	16.7
1913	13.5	23.3	7.0	11.7	4.8	15.9
1912	12.4	20.9	6.5	12.9	3.3	16.0
1911	13.3	22.4	7.2	9.2	6.5	16.3
Uniform annual decrement, 1911 to 1920....	-.878	-1.733	-.282	-.647	-.306	-.741
Per cent. decline: 1920 Since 1911	-54.1	-61.2	-37.5	-47.8	-56.9	-38.0
1916-1920 Since 1911	-38.6	-45.5	-23.2	-31.4	-40.4	-26.4
-1915.....						

Suicide According to Principal Means of Injury

A few facts on the means of injury employed in accomplishing suicides will be of interest. For the entire ten year experience, 31 per cent. of the suicides were accomplished by means of poison; 24 per cent. by means of firearms; 17 per cent. by asphyxia and 12 per cent. by hanging. During the decade, however, there has been a decided change in the choice of means used to accomplish self-destruction. In the first five years of the decade, suicide by poison led the list (37.3 per cent. of all suicides); in the second five years, suicide by firearms was the chief means of accidental injury (26.1 per cent.). There was an increase also in the proportion of suicides due to asphyxia (from 15.3 per cent. to 19.8 per cent.). The most important fact is the sharp

drop in the proportion of suicides due to poisoning. It may be possible that more stringent regulations on the sale of poisonous substances may have been an influence not only in lessening the proportion of suicides accomplished in this manner, but also in lowering the suicide death rate. The following table shows the proportion of all suicide deaths due to each of the principal means of injury:

TABLE 29.

SUICIDES BY INSTRUMENT OR AGENCY OF INJURY.

Metropolitan Life Insurance Company. Industrial Department.
1911 to 1915 and 1916 to 1920 Compared.

Means of Injury	Percentage of total suicide deaths		
	1911 to 1920	1916 to 1920	1911 to 1915
SUICIDES—TOTAL.....	100.0	100.0	100.0
Poison.....	30.7	22.7	37.3
Asphyxia.....	17.3	19.8	15.3
Hanging or strangulation.....	12.0	12.6	11.6
Drowning.....	5.6	6.4	4.9
Firearms.....	24.3	26.1	22.8
Cutting or piercing instruments..	5.9	6.9	5.1
Jumping from high places.....	2.0	2.6	1.4
Crushing.....	.4	.4	.5
Other means.....	1.7	2.4	1.1

III. HOMICIDES*

During the decade, 6,899 homicides were recorded among this group of insured wage earners. The rate for the decade was 6.8 per 100,000 lives exposed. The facts for homicide according to mode of injury are shown in the following table:

TABLE 30.

HOMICIDES* BY INSTRUMENT OR AGENCY OF INJURY.

Metropolitan Life Insurance Company. Industrial Department.
1911 to 1915 and 1916 to 1920 Compared.

Means of injury in homicide	Percentage of total homicide deaths		
	1911 to 1920	1916 to 1920	1911 to 1915
HOMICIDES—TOTAL.....	100.0	100.0	100.0
Firearms.....	66.8	68.5	64.6
Cutting or piercing instruments...	14.9	13.5	16.7
Other means.....	18.3	18.0	18.8

*Under "Homicide" are classified only those cases in which the fact of homicide or of attempt at homicide is clearly shown. By careful "editing" of our data relating to causes of death many cases originally reported under such terms as "gunshot wound," "cut," "poisoning," and others have been classed as homicides instead of being placed under the "accidental or unqualified" group.

It will be observed that during the decade about two-thirds of the homicides were accomplished by means of firearms. The last five years of the decade showed a slightly greater proportion of homicides due to firearms than did the first five years. The more significant reduction for a specific means of injury in proportion to total homicides occurred for homicides by cutting or piercing instruments. During the five years 1911 to 1915, 16.7 per cent. of the homicides were accomplished by cutting or piercing instruments, and in the five year period, 1916 to 1920, only 13.5 per cent. were due to homicidal injury from cutting or piercing instruments. This points to fewer stabbing affrays in recent years.

The color, sex and age characteristics of homicide mortality are shown in the following table:

TABLE 31.

MORTALITY FROM HOMICIDE (ALL FORMS), CLASSIFIED BY COLOR, SEX AND BY AGE PERIOD.

Death Rates per 100,000 Persons Exposed. 1911 to 1920.

Experience of Metropolitan Life Insurance Company. Industrial Department.

Age Period	Persons	White		Colored	
		Males	Females	Males	Females
All ages—one and over.....	6.8	5.4	2.0	50.1	14.0
1 to 14	.8	.7	.6	3.9	1.3
15 to 19	5.9	4.4	2.1	43.4	14.6
20 to 24	12.0	8.9	3.6	85.4	30.9
25 to 34	15.1	11.9	3.6	98.3	24.7
35 to 44	11.8	10.8	3.0	66.9	14.7
45 to 54	7.0	9.2	1.7	37.9	7.1
55 to 64	4.1	6.4	1.0	19.7	4.6
65 to 74	2.7	4.0	1.2	10.3	3.2
75 and over	2.9	1.6	1.3	21.7	14.6

For the entire experience of insured wage earners, the maximum death rate is observed in the age period 25 to 34 years. Among colored females, however, the maximum death rate occurred at the age group 20 to 24 years. The outstanding fact in this homicide mortality experience with respect to color is the very high death rate among negro males. This group showed a homicide death rate practically ten times that of white male policyholders; for colored females, the homicide death rate was seven times that of white females. The more serious discrepancies

MORTALITY FROM HOMICIDES ALL FORMS

Death Rates per 100,000 Persons Exposed. Classified by Age Periods
 White and Colored Groups Compared for Each Sex Class.
 Experience of Metropolitan Life Insurance Co. Industrial Department, 1911 to 1920

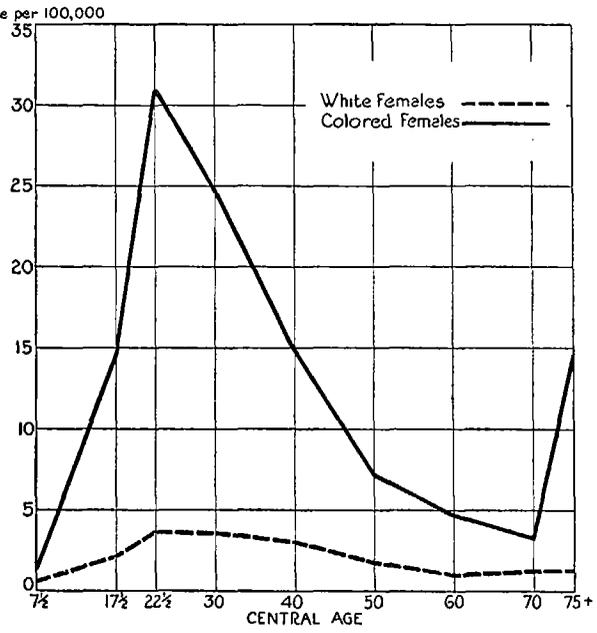
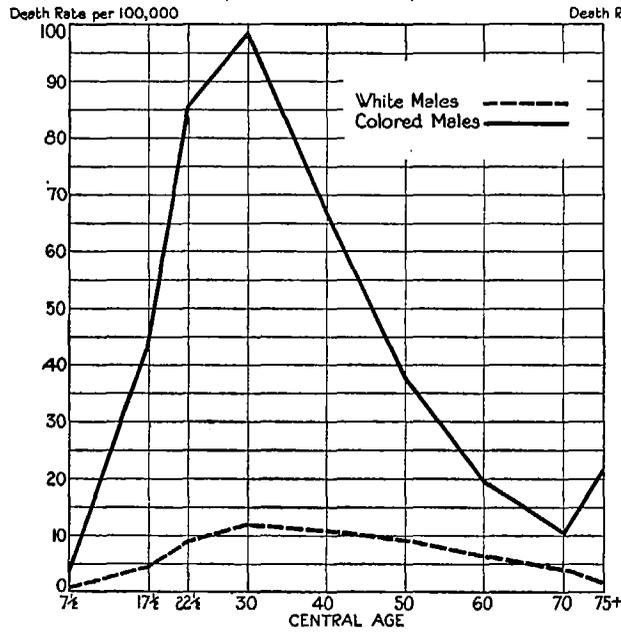


CHART VI

between the homicide death rate of negro and white males occur in the ages under 25 years.

Homicide is one of the leading causes of death among the negro population of the United States. For the mortality experience of the decade 1911 to 1920, homicide ranked next to pneumonia and tuberculosis as a cause of death among young adult colored males. The comparison of the homicide death rates of the two sexes is also of interest. Among white persons, the homicide death rate of males was nearly three times and among negroes nearly four times as great as among females of the respective races. The greatest disparity between the homicide death rates of the two sexes is found between 55 and 64 years for white persons and between 45 and 54 years for colored persons.

The trend of the homicide death rate during the ten year period is shown in the following table:

TABLE 32.
MORTALITY FROM HOMICIDE (ALL FORMS), CLASSIFIED BY COLOR AND BY SEX.

Death Rates per 100,000 Persons Exposed. Single Years in Period 1911 to 1920.

Experience of Metropolitan Life Insurance Company, Industrial Department, and U. S. Registration Area (Ages 1 to 74 years).

Year	Metropolitan Ind'l Dept.					U. S. Reg. Area Ages 1 to 74 years
	Persons	White		Colored		
		Males	Females	Males	Females	
1911 to 1920	6.8	5.4	2.0	50.1	14.0	7.0
1916 to 1920	6.6	5.4	2.0	48.8	14.0	7.1
1920	5.8	5.1	1.8	38.5	13.3	6.7
1919	6.9	5.7	2.0	51.7	14.6	7.5
1918	6.2	5.2	1.8	43.5	14.0	6.7
1917	7.4	5.6	2.4	58.6	14.0	7.7
1916	6.9	5.4	2.0	54.0	14.3	7.0
1911 to 1915	7.0	5.4	1.9	51.8	14.0	6.8
1915	6.9	5.5	2.0	49.9	15.8	6.8
1914	7.0	5.5	1.9	54.0	12.6	7.3
1913	7.2	4.8	2.1	57.8	13.1	7.1
1912	6.7	5.2	1.6	50.4	12.8	6.4
1911	7.2	5.9	2.0	46.2	15.9	6.5
Uniform annual decrement, 1911 to 1920	-.091	-.009	+ .006	-.690	-.022	+ .054
Per cent. decline:						
1920 Since 1911 ...	-19.4	-13.6	-10.0	-16.7	-16.4	+ 3.1
1916-1920 Since 1911-1915	- 5.7	0.0	+ 5.3	- 5.8	0.0	+ 4.4

From Chart IV on page 76, it will be seen that among insured wage earners, the trend of the homicide death rate, was slightly downward, whereas, in the United States Registration Area, the trend for the decade was upward. It should be recalled, however, that in the United States Registration Area, a number of Southern states were added during recent years, and this may serve to impair the comparability of the figures for the two series. These States had heavy proportions of negroes in the population. Considering only the insurance figures, it will be seen that the death rates for the years 1913 to 1917 were each year above the line of secular trend. After a rather low rate in 1918, another high death rate from homicide was experienced in 1919, followed by a drop in 1920. It is hoped that the effect of nationwide Prohibition will be ultimately to decrease the death rate from this cause. Other measures directed at the preservation of public order may in time bring about a marked reduction in fatalities from this cause.

Further details of the experience have been prepared, but not published, for single calendar years of the decade, by color, sex and by age. Certain groupings of the data by age for the first five as compared with second five years in the decade are also available in manuscript form. Quotations from unpublished data will be made gladly.