

PROCEEDINGS

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MORTALITY FROM EXTERNAL CAUSES AMONG INDUSTRIAL
POLICYHOLDERS OF THE METROPOLITAN LIFE
INSURANCE COMPANY, 1911-1914.

BY

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The "External Causes" considered in this paper form Group XIII of the International List of Causes of Death and include Titles 155 to 186 of this list. The group is, of course, very broad; it is uniform in composition only to the extent that it represents all causal agencies other than disease and the destructive processes that go on either as a result of normal functioning or of maladjustment within the body. The causes in the group we are considering point to forces and processes which are external to the organism. We may subdivide the inclusions into three fairly homogeneous classes: first, suicides; second, homicides; and third, accidents. The last is the largest of the three and is probably of most interest to the members of this Society.

The growth of casualty insurance, the recent spread of compensation legislation, the development of the Safety First movement, the very existence of our Society all point unmistakably to the need for an accurate measure of the prevalence of the external causes of death in the community. The industrial experience of the Metropolitan Life Insurance Company for the year 1914 shows 8,245 deaths from external causes among the premium paying policyholders alone, and these formed 7.7 per cent. of the deaths from all causes. The deaths corresponded to 11,131 claims in an amount of \$1,521,873. We have not only a large number of cases in this experience

but the exposure is in itself a considerable sample of the total industrial population of the United States and Canada. The ten million policyholders in the Industrial Department of the Company include men, women, and children of the working classes who are

TABLE I.

MORTALITY FROM EXTERNAL CAUSES. 1911-1914.

Experience of Metropolitan Life Insurance Company—Industrial Department.

Int'l List No.	Cause of Death.	Number of Deaths.	% of Total Deaths, All Causes.	Death Rates per 100,000 Living.
155-163	All external causes	32,057	7.87	94.4
164	Suicide—all forms	4,369	1.07	12.9
165	Poisoning by food	425	.10	1.3
166	Other acute poisonings	788	.19	2.3
167	Conflagration	406	.10	1.2
168	Burns (conflagration excepted)	2,996	.74	8.8
169	Absorption of deleterious gases	910	.22	2.7
170	Accidental drowning	3,616	.89	10.6
171	Traumatism by firearms	675	.17	2.0
172	Traumatism by cutting or piercing instruments	52	.01	.2
173	Traumatism by fall	4,430	1.09	13.0
174	Traumatism in mines and quarries	461	.11	1.4
175	Traumatism by machines	596	.15	1.8
	Traumatism by crushing	6,683	1.64	19.7
	175A—Steam railroad accidents and injuries	2,972	.73	8.8
	175B—Electric railroad accidents and injuries	1,129	.28	3.3
	175C—Automobile accidents and injuries	1,227	.30	3.6
	175D—Other vehicular accidents and injuries	1,084	.27	3.2
	175E—Other crushing	271	.07	.8
176	Injuries by animals	160	.04	.5
177	Starvation	10	+	+
178	Excessive cold	127	.03	.4
179	Effects of heat	920	.23	2.7
180	Lightning	67	.02	.2
181	Electricity (lightning excepted)	286	.07	.8
182-184	Homicide—all forms	2,378	.58	7.0
185	Fractures (cause not specified)	545	.13	1.6
186	Other external violence	1,157	.28	3.4

especially subject to hazards not only in their occupations but in their every-day life in urban communities. The Metropolitan does not transact an accident insurance business as such, yet its general experience provides the largest body of insurance returns on accidental deaths in the country.

I shall consider the deaths from the above causes in the four years from 1911-1914, inclusive. In all, 32,057 were recorded. Table I gives the number of deaths from the principal causes included in the group, the percentage of total deaths all causes, and the death rate per hundred thousand exposed.

The first title in numerical importance is "traumatism by crushing." This includes the railroad, street car, automobile, and other vehicular accidents. In all 6,683 deaths are represented. Following, in the order mentioned, are "traumatism by fall," "suicide," "accidental drowning," "burns," and "homicides." This order of the inclusions and the death rates per hundred thousand exposed correspond fairly closely with figures for the Registration Area of the United States for the last year available, namely, 1913.

Table II presents a series of death rates per 100,000 for the external causes taken as a group, by color, sex, and age period.

TABLE II.

MORTALITY FROM EXTERNAL CAUSES CLASSIFIED BY COLOR, SEX, AND AGE PERIOD.

Death rates per 100,000 living. 1911-1914.

Experience of Metropolitan Life Insurance Company—Industrial Department.

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages	94.4	145.1	46.0	188.1	57.9
Under 5	97.6	105.0	83.2	152.8	126.5
5-9	51.7	68.6	32.4	70.6	52.4
10-14	42.3	65.6	15.4	86.1	26.0
15-19	65.4	96.6	25.0	182.0	33.2
20-24	83.7	130.1	28.4	231.7	71.1
25-34	93.8	160.0	30.3	248.4	55.0
35-44	108.4	216.3	34.1	213.2	50.3
45-54	132.6	269.8	51.3	196.2	51.7
55-64	180.4	339.2	89.4	220.1	62.9
65-74	297.4	440.2	220.4	299.8	167.9
75 and over	522.8	584.0	506.1	355.4	417.3

Colored males show the highest death rates, all ages combined, namely, 188.1 per hundred thousand; then follow the white males, colored females and white females in the order named. Males in both races have markedly higher death rates than females. Considering the several age periods we note a fairly high rate in the ages under five, which declines until the age period "15-19" is reached; then the rate increases regularly without break among "persons" and among white males and white females.

We shall now analyze the figures for a few of the more important conditions included under the term "external causes." There were 4,369 suicides in the four years covered. Table III presents the death rates per hundred thousand by color and sex, for the several age periods.

TABLE III.

MORTALITY FROM SUICIDE CLASSIFIED BY COLOR, SEX AND AGE PERIOD.

*Death rates per 100,000 living. 1911-1914.**Experience of Metropolitan Life Insurance Company—Industrial Department.*

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages.....	12.9	21.8	6.8	11.4	5.0
Under 5.....	—	—	—	—	—
5-9.....	—	—	—	—	—
10-14.....	.5	.5	.3	1.0	.9
15-19.....	6.9	6.1	8.1	5.4	5.3
20-24.....	14.7	21.4	9.0	18.4	12.2
25-34.....	17.7	30.1	11.0	15.9	8.1
35-44.....	22.2	45.9	10.9	18.7	5.2
45-54.....	26.8	62.1	10.1	14.4	2.5
55-64.....	33.9	79.1	10.2	21.8	2.1
65-74.....	33.9	81.5	9.4	5.2	1.9
75 and over.	38.2	97.7	8.5	—	—

Suicide is a much more frequent cause of death among the whites than among the colored. White males have a death rate close to twice that of colored males at "All ages," the differences being more marked at the advanced years. It is very remarkable that the highest death rate from suicide occurs among white males in the age period "75 and over." Among females the death rate is always low and shows reductions at the advanced ages. Among white females the death rate is less than one tenth as high as among white males at the older ages. The maximum death rate is found in the age period "25-34." The number of cases for colored females is too small to justify comparisons; the death rate is very low, however.

Of the 4,369 deaths, 1,696 or 38.8 per cent. resulted from poisoning. This mode of suicide was most common among females, and especially among the colored females, where 67.5 per cent. of all the suicides were so effected. Firearms accounted for 22.8 per cent. of all suicides, but among the colored males the proportion rose to 37.1 per cent. The proportion of deaths from suicide varies considerably with occupation. The highest proportion is found among bakers, where 5.4 per cent. of all the deaths were from this cause.

Table IV shows the death rates per hundred thousand for homicide, all forms, arranged by color, sex and age period for the four years 1911-1914.

TABLE IV.

MORTALITY FROM HOMICIDE CLASSIFIED BY COLOR, SEX AND AGE PERIOD.

Death rates per 100,000 living. 1911-1914.

Experience of Metropolitan Life Insurance Company—Industrial Department.

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages	7.0	5.3	1.9	52.3	13.5
Under 5 . . . .	.5	.4	.6	1.9	—
5-9 . . . . .	.5	.5	.5	2.0	—
10-14 . . . . .	.9	.8	.6	3.3	.9
15-19	5.5	4.2	1.8	40.4	13.3
20-24	13.2	8.7	3.7	101.8	30.9
25-34	16.4	12.1	3.3	109.3	25.0
35-44	11.3	10.0	3.0	64.7	14.5
45-54	7.0	9.8	2.0	35.5	4.5
55-64	4.6	6.9	1.0	20.9	6.9
65-74	2.9	4.3	1.3	13.0	1.9
75 and over .	2.4	—	—	47.4	15.5

The death rate was highest among colored males, where the figure was 52.3. This is nearly ten times the homicide rate for white males. Colored females show a death rate of 13.5 per hundred thousand; white females a rate of only 1.9 per hundred thousand. Among white males the death rate was highest at the age period "25-34"; this was also observed among colored males, where the startling figure of 109.3 is found. The death rate is not much lower in the preceding age period, "20-24," for colored males, namely, 101.8 per hundred thousand.

Firearms were the commonest mode of homicide, 64.3 per cent. being so effected. The proportion among colored males was 71.6 per cent. Cutting or piercing instruments rank next in frequency as a means of injury.

We have now to consider the third and largest group of the external causes, namely, those popularly designated as "accidents." There were 25,310 such deaths in the experience of this company in the four years stated. Table V presents the death rates per hundred thousand, by color, sex and age period.

TABLE V.

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

*Death rates per 100,000 living. 1911-1914.**Experience of Metropolitan Life Insurance Company—Industrial Department.*

Age Period.	Persons.	White Male.	White Female.	Colored Male.	Colored Female.
All ages.....	74.5	118.0	37.4	124.5	39.4
Under 5.....	97.1	104.6	82.6	150.8	126.5
5-9.....	51.1	68.1	31.9	68.6	52.4
10-14.....	41.0	64.3	14.5	81.8	24.1
15-19.....	53.0	86.3	15.2	136.3	14.6
20-24.....	55.7	100.0	15.8	111.5	28.0
25-34.....	59.7	117.8	16.0	123.2	22.0
35-44.....	74.9	160.3	20.2	129.7	30.6
45-54.....	98.8	197.8	39.2	146.2	44.7
55-64.....	141.9	253.1	78.2	177.4	53.9
65-74.....	260.5	354.3	209.7	281.6	164.2
75 and over.	482.2	486.3	497.6	308.0	401.9

Again the highest death rate at "All ages" is found among the colored males. They are followed by the white males, the colored females and the white females in the order mentioned. In both races, the rate for males is over three times as high as for females. Considering the age periods without distinction of race and sex we find a fairly high rate in the ages under 5, namely, 97.1. The death rate declines appreciably in the next age period and remains fairly constant up to and including the age period "25-34." From this point onward the death rate rapidly rises and attains the high figure of 482.2 per hundred thousand in the age period "75 and over." It is significant that this rate is obtainable on a large exposure, the total number of deaths in this period being 594. Among white males the death rate from accidents is already high at the ages when employment begins, namely, "15-19," where it is 86.3 per hundred thousand. This rate likewise increases with advancing age. The rate for white females remains relatively low at all age periods up to and including "45-54." At the older ages the accidents become extremely frequent, and in the advanced ages "75 and over" the death rate, 497.6 per hundred thousand, is even higher than among white males.

The death rate among colored males reaches a high point earlier in life than among the whites. It is 136.3 in the age period "15-19." Strangely enough, beginning with "35-44" and continuing through the rest of life, the rate for the colored males is lower

than for the white males. Nothing of especial interest is discerned in the accident rates for the colored females.

It was pointed out in Table I that the most important inclusions under the general designation "accidents" are "traumatism by crushing," "traumatism by fall," "accidental drowning" and "burns." The first of these includes railroad accidents, automobile accidents and other accidents referable to vehicles, and other forms of crushing. Table VI shows the death rates per hundred thousand by color, sex and age period for the important group of "steam railroad accidents and injuries."

TABLE VI.

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

Death rates per 100,000 living. 1911-1914.

Experience of Metropolitan Life Insurance Company—Industrial Department.

Age Period.	Persons.	Males.	Females.
All ages	8.8	17.7	1.3
Under 5	1.1	1.5	.7
5-9	2.2	3.7	.7
10-14	3.6	6.5	.7
15-19	8.8	16.5	1.3
20-24	12.1	25.8	.5
25-34	12.3	27.9	1.0
35-44	11.1	26.5	.9
45-54	11.8	27.2	1.8
55-64	16.6	35.7	4.0
65-74	18.0	39.4	4.0
75 and over	18.7	32.5	10.4

The death rates are very much higher for males than for females, the differences becoming more evident during the adult years of life. The highest rate for males is obtained in the age period "65-74," when it is 39.4. The rates do not show any significant differences by color.

An examination of the returns for "burns" shows the very remarkable fact that the death rate is highest at the two extremes of life, namely, in the age periods "under 5" and "75 and over." The rates are respectively 44.5 and 43.0 per hundred thousand in these age periods, the rate for all ages being only 8.8. These differences are to be noted in both races and sexes. The white rate for ages under 5 is 42.0. Among the colored, the rate rises to 76.2 per

hundred thousand in both sexes under age 5. We have here a very clear index of the lack of proper home care for colored children in the earlier years of life. This is shown not only in the rate for burns but in like manner for falls, the colored rate for both sexes combined under age 5 being 13.9 as against 10.4 for white children under 5.

An interesting phase of this accident experience is in relation to the occupations of the deceased. I shall not attempt, however, to refer to this subject here, in view of the fact that a monograph on the occupational mortality experience of the Metropolitan Life Insurance Company is now in the hands of the U. S. Commissioner of Labor Statistics for publication.

In view of the active educational campaign which is being waged all over the country by private bodies to prevent industrial accidents and by the state, through legislation, to check other forms of violence, it is a matter of considerable interest to note the trend of the figures in the above experience during the period under observation. In the interval between 1911 and 1914, the death rate in the Industrial Department of the company showed a gratifying decrease in deaths from "external" causes. In 1911 the rate per 100,000 for "white lives" for all ages was 95.6; in 1914 the corresponding figure was 85.9. This is a reduction of 10.1 per cent. The percentage reduction in the mortality rate of these causes compares favorably with the reduction in the rates for other causes of death. Thus, for tuberculosis (all forms) in the same period the rate was reduced 9.8 per cent. The decline that we have noted is, moreover, not an accidental occurrence, but rather a fairly continuous one from year to year. In all probability we are concerned with a condition which is the result of the steady interaction of many social forces all directed to the reduction of the high accident rate.

In this paper I have purposely refrained from comparing our figures with those for the population and for other insurance companies. It has been my aim rather simply to state the facts as we found them. I am strongly tempted, however, not to close this paper without the comment that even with the reduction that has occurred in the accident rates in the last few years the prevalence of these causes is still too high. A moment's comparison with the returns of the Registrar General for England and Wales will show how unnecessarily wasteful we still are in this country with human life. In the period 1911 to 1914 our death rate for external causes,

white male lives, ages 25-34, was 160.0 per 100,000. This figure is lower than that for the Registration Area of the United States for males of the same period, from 1910 to 1912, namely, 186.2. On the other hand, in 1913 the death rate for the same group in England and Wales was 61.9, or 67 per cent. lower than for the population figure in the United States and 61 per cent. lower than the Metropolitan figure. This unfavorable condition is unfortunately one of constant occurrence. The field for work is still a very fruitful one for those who would through education, efficient business management, legislation and other means reduce the unnecessary loss of life from accidental causes in our country.