

## TRANSACTIONS OF SOCIETY OF ACTUARIES 1964 REPORTS

### II. MORTALITY ON POLICIES FOR LARGE AMOUNTS

**T**HIS report presents the findings of the latest in a series of inter-company studies of the mortality on policies for large amounts. The current study includes the experience on Standard Ordinary issues of 1934 through 1962 from policy anniversaries in 1958 to policy anniversaries in 1963. The previous report (*TSA, 1959 Reports*, p. 47) covered the experience from 1953 to 1958 anniversaries.

The experience covered in this report is based on a total exposure of \$87,574,062,000 (more than double that in the last study) and on actual claims of \$380,260,000 on 5,217 lives.

The study is by amounts of insurance on a select policy-year basis. The basic requirement for inclusion of a policy is that it be the result of one or more applications to a contributing company for a total of at least \$50,000 on a life during a ninety-day period and that the "classification amount," as defined in the instructions, shall be at least \$50,000. The detailed instructions relating to the study were published in the Appendix to the *1949 Reports (TSA, I, 602)*. They were modified in 1950 to request inclusion of group insurance in the "classification amount" where this could conveniently be done. The instructions were revised again in 1959 to include, for the issues of 1959 and subsequent years, information as to the purpose of insurance and the estimated current annual income of the insured at time of issue. The Committee felt that there would be widespread interest in analyses of the experience by purpose of insurance and according to income even for a limited volume of data.

The instructions for the previous study called for a subdivision of the experience, where possible, according to the presence or absence of a decreasing term element. This subdivision was requested for both permanent and term plans. In the current study, the subdivision has been restricted to permanent plans only, because the volume of experience in the last study on term plans with a decreasing-term element had been quite small. Furthermore, in the current study the classification of permanent plans with a supplementary term element was broadened to include policies with a level as well as a decreasing term element.

In the current study, companies were asked, for the first time, to contribute their experience for the issue age group 0-9 and to subdivide their experience for issue ages 65 and over into ages 65-69 and 70 and over.

The current study is limited to the experience in the first twenty-five

policy years, since the Committee felt that the experience on large-amount policies issued more than twenty-five years ago would have little significance today.

The rates of mortality used to calculate expected deaths were derived from the Committee's annual reports on the mortality under Standard Ordinary medically examined issues for all amounts during the period from 1958 to 1963 anniversaries, modified to include nonmedical experience at policy durations 16 and over. These mortality rates, together with a brief description of the method used in deriving them, are given in Table E of the Appendix.

The names of the twenty contributing companies and their proportionate contributions to the exposures in this study are given in Table A of the Appendix. Almost 95 per cent of the exposure in the present investigation was submitted by the seventeen companies which also contribute to the annual studies of mortality on Standard Ordinary medically examined issues, but there are some marked differences in the relative proportions of the experience contributed by these companies to the two investigations. Since the level of mortality varies between companies, the basis of expected deaths differs slightly from what it would have been if each company's experience on Standard Ordinary medically examined issues for all amounts had been weighted in proportion to its contribution to the study of policies for large amounts. It is estimated that, if this had been done, the mortality ratio on policies for large amounts would have been about  $2\frac{1}{2}$  percentage points higher in the aggregate.

Eighteen of the twenty contributing companies submitted their entire experience separately for males and females, and the other two submitted a portion of their experience in this manner. The data subdivided by sex represented 97 per cent of the total exposure on permanent plans and 95 per cent of the total exposure on term plans. Fifteen companies were able to subdivide their permanent-plan experience as between policies with and those without a supplementary term element, while four companies did so for only part of their contributions. The subdivided data comprised 82 per cent of the total exposure on permanent plans.

EXPERIENCE BY AGE AT ISSUE, POLICY YEAR, CLASSIFICATION  
AMOUNT, AND PLAN OF INSURANCE

The results of the experience are summarized by age at issue and plan in Table 1, by policy year and plan in Table 2, and by classification amount and plan in Table 3. The number of lives terminated by death is shown in parentheses after the amount of actual claims; duplications have

been eliminated in arriving at the total number of deaths shown in these tables.

Part A of Tables 1, 2, and 3 presents all data entering this study, without subdivision by sex or term element. Parts B and C of these tables show the experience separately for males and females, without regard to the inclusion of a supplementary term element. Since not all companies were able to subdivide their experience by sex, the totals of the claims shown in Parts B and C are less than the corresponding figures in Part A. In Part D of these tables, the experience on male lives is presented separately for permanent plans with and without a supplementary term element. There, too, not all the experience included in Part B is subdivided in Part D. Because of the very small volume of business on female lives with a supplementary term element, no analysis was made of the experience on female lives, according to the inclusion of such benefit.

The main features of the experience are summarized below.

#### *All Data*

1. The aggregate mortality ratio of 93 per cent on permanent plans was significantly lower (at the 95 per cent confidence level) than the experience on Standard Ordinary medically examined issues for all amounts of insurance regardless of plan. The mortality ratio of 104 per cent on term plans was not significantly higher than that experience.
2. Except for issue ages under 20, mortality ratios tended to decrease with advance in age at issue on both permanent and term plans. The mortality ratios exceeded 100 per cent at (a) issue ages 10-39 on permanent plans and (b) issue ages 20-49 on term plans. The favorable experience at issue ages 50 and over on both permanent and term plans probably reflects the careful medical selection of risks for large amounts at these ages.
3. There was no clear-cut trend in the mortality ratios by duration, although mortality was slightly higher at durations 1-10 than at the later durations.
4. As the classification amount increased, the mortality ratios for both permanent and term plans generally showed a downward trend. The principal exception was in the "classification amount" of \$1,000,000 and over. The high mortality ratio of 342 per cent on term plans in this "classification amount" reflects one death claim on which \$3,625,000 was paid. (This claim involved insurance issued by several companies at issue ages ranging from 36 through 41 with the policy year at death ranging from the fifth to the eleventh.)

**TABLE 1**  
**LARGE-AMOUNT ISSUES OF 1934 TO 1962**  
**EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES**  
**BY AGE AT ISSUE AND PLAN OF INSURANCE**  
**Expected Deaths Based on Corresponding Standard Ordinary Issues Experience**  
**(Amounts Shown in \$1,000 Units)**

ISSUE AGE	PERMANENT PLANS		A/E	TERM PLANS		A/E	ALL PLANS		A/E
	Actual Claims*	Expected Claims		Actual Claims*	Expected Claims		Actual Claims*	Expected Claims	
A. Male and Female Lives, with and without Term Element									
00-09.....	\$ 165 (3)	\$ 211	†	\$ 0 (0)	\$ 0	†	\$ 165 (3)	\$ 211	†
10-19.....	1,262 (16)	1,141	<i>111%</i>	0 (0)	15	†	1,262 (16)	1,156	<i>109%</i>
20-29.....	10,581 (177)	8,109	130	2,188 (48)	1,118	<i>196%</i>	12,769 (209)	9,227	138
30-39.....	65,497 (1,043)	60,783	108	13,927 (261)	11,952	117	79,424 (1,222)	72,735	109
40-49.....	127,297 (1,938)	134,417	95	26,801 (457)	26,197	102	154,098 (2,268)	160,614	96
50-59.....	94,554 (1,373)	115,111	82	14,967 (260)	16,182	92	109,521 (1,571)	131,293	83
60-69.....	21,772 (311)	25,665	85	770 (14)	871	<i>88</i>	22,542 (322)	26,536	85
70 and over.....	479 (6)	632	†	0 (0)	0	†	479 (6)	632	†
All.....	\$321,607 (4,558)	\$346,069	93%	\$58,653 (1,000)	\$56,335	104%	\$380,260 (5,217)	\$402,404	94%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE 1—Continued

ISSUE AGE	PERMANENT PLANS		A/E	TERM PLANS		A/E	ALL PLANS		A/E
	Actual Claims*	Expected Claims		Actual Claims*	Expected Claims		Actual Claims*	Expected Claims	
B. Male Lives, with and without Term Element									
00-09	\$ 165 (3)	\$ 150	†	\$ 0 (0)	\$ 0	†	\$ 165 (3)	\$ 150	†
10-19	1,112 (14)	866	<i>128%</i>	0 (0)	15	†	1,112 (14)	881	<i>126%</i>
20-29	9,546 (163)	7,176	133	2,068 (45)	1,057	<i>196%</i>	11,614 (192)	8,233	141
30-39	58,706 (962)	54,908	107	13,038 (247)	11,120	117	71,744 (1,129)	66,028	109
40-49	116,648 (1,786)	119,374	98	25,600 (430)	24,369	105	142,248 (2,096)	143,743	99
50-59	85,515 (1,253)	99,104	86	13,967 (247)	15,023	93	99,482 (1,440)	114,127	87
60-69	19,372 (274)	21,601	90	720 (13)	846	<i>85</i>	20,092 (286)	22,447	90
70 and over	278 (4)	429	†	0 (0)	0	†	278 (4)	429	†
All	\$291,342 (4,180)	\$303,608	96%	\$55,393 (946)	\$52,430	106%	\$346,735 (4,804)	\$356,038	97%
C. Female Lives, with and without Term Element									
00-09	\$ 0 (0)	\$ 58	†	\$ 0 (0)	\$ 0	†	\$ 0 (0)	\$ 58	†
10-19	150 (2)	227	†	0 (0)	0	†	150 (2)	227	†
20-29	510 (9)	658	†	0 (0)	13	†	510 (9)	671	†
30-39	3,443 (49)	3,391	<i>102%</i>	240 (4)	193	†	3,683 (52)	3,584	<i>103%</i>
40-49	6,593 (101)	9,281	71	235 (5)	564	†	6,828 (106)	9,845	69
50-59	4,947 (70)	11,456	43	80 (2)	423	†	5,027 (72)	11,879	42
60-69	1,696 (31)	3,432	<i>49</i>	0 (0)	14	†	1,696 (31)	3,446	<i>49</i>
70 and over	201 (2)	203	†	0 (0)	0	†	201 (2)	203	†
All	\$ 17,540 (256)	\$ 28,706	61%	\$ 555 (11)	\$ 1,207	<i>46</i>	\$ 18,095 (266)	\$ 29,913	60%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE 1—Continued

ISSUE AGE	PERMANENT PLANS					
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
	D. Male Lives without Term Element			E. Male Lives with Term Element		
00-09.....	\$ 100 (2)	\$ 144	†	\$ 0 (0)	\$ 0	†
10-19.....	1,062 (14)	731	145%	0 (0)	4	†
20-29.....	6,105 (102)	4,617	132	1,563 (39)	1,372	114%
30-39.....	38,557 (605)	36,711	105	9,145 (214)	8,672	105
40-49.....	83,422 (1,271)	87,914	95	7,701 (183)	8,218	94
50-59.....	62,511 (939)	76,681	82	2,230 (50)	2,114	105
60-69.....	15,693 (210)	17,679	89	0 (0)	33	†
70 and over.....	258 (3)	362	†	0 (0)	0	†
All.....	\$207,708 (2,971)	\$224,839	92%	\$20,639 (480)	\$20,413	101%

TABLE 2  
 LARGE-AMOUNT ISSUES OF 1934 TO 1962  
 EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES  
 BY DURATION AND PLAN OF INSURANCE  
 Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
 (Amounts Shown in \$1,000 Units)

POLICY YEARS	PERMANENT PLANS			TERM PLANS			ALL PLANS		
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
A. Male and Female Lives, with and without Term Element									
1-2.....	\$ 34,231 (500)	\$ 36,660	93%	\$ 6,834 (132)	\$ 3,185	83%	\$ 41,065 (610)	\$ 44,845	92%
3-5.....	67,988 (939)	70,681	96	16,429 (244)	13,026	126	84,417 (1,137)	83,707	101
6-10.....	80,709 (1,199)	84,389	96	14,175 (236)	13,563	105	94,884 (1,381)	97,952	97
11-15.....	56,135 (970)	60,915	92	10,736 (211)	9,643	111	66,871 (1,128)	70,558	95
16-20.....	42,950 (757)	50,280	85	5,204 (115)	5,973	87	48,154 (842)	56,253	86
21-25.....	39,594 (703)	43,144	92	5,275 (126)	5,945	89	44,869 (795)	49,089	91
All.....	\$321,607 (4,558)	\$346,069	93%	\$58,653 (1,000)	\$56,335	104%	\$380,260 (5,217)	\$402,404	94%

\* Number of lives involved shown in parentheses.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE 2—Continued

POLICY YEARS	PERMANENT PLANS			TERM PLANS			ALL PLANS		
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
<b>B. Male Lives, with and without Term Element</b>									
1-2.....	\$ 32,596 (478)	\$ 33,508	97%	\$ 6,684 (129)	\$ 7,928	84%	\$ 39,280 (585)	\$ 41,436	95%
3-5.....	62,266 (872)	63,070	99	15,620 (233)	12,188	128	77,886 (1,060)	75,258	103
6-10.....	72,794 (1,093)	72,694	100	13,086 (218)	12,165	108	85,880 (1,260)	84,859	101
11-15.....	50,392 (880)	53,533	94	9,929 (196)	8,843	112	60,321 (1,029)	62,376	97
16-20.....	38,800 (698)	44,315	88	5,079 (112)	5,619	90	43,879 (780)	49,934	88
21-25.....	34,494 (622)	36,488	95	4,995 (119)	5,687	88	39,489 (709)	42,175	94
All.....	\$291,342 (4,180)	\$303,608	96%	\$55,393 (946)	\$52,430	106%	\$346,735 (4,804)	\$356,038	97%
<b>C. Female Lives, with and without Term Element</b>									
1-2.....	\$ 1,585 (22)	\$ 3,015	53%	\$ 150 (3)	\$ 212	†	\$ 1,735 (25)	\$ 3,227	54%
3-5.....	3,297 (45)	5,636	58	150 (2)	347	†	3,447 (47)	5,983	58
6-10.....	4,296 (63)	6,982	62	70 (2)	342	†	4,366 (65)	7,324	60
11-15.....	2,319 (40)	4,146	56	85 (2)	150	†	2,404 (42)	4,296	56
16-20.....	2,076 (31)	3,787	55	50 (1)	72	†	2,126 (32)	3,859	55
21-25.....	3,967 (67)	5,140	77	50 (1)	84	†	4,017 (68)	5,224	77
All.....	\$ 17,540 (256)	\$ 28,706	61%	\$ 555 (11)	\$ 1,207	46%	\$ 18,095 (266)	\$ 29,913	60%

† Fewer than ten lives terminated by death.



TABLE 2—Continued

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POLICY YEARS	PERMANENT PLANS					
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
	D. Male Lives without Term Element			E. Male Lives with Term Element		
1-2.....	\$ 24,028 (327)	\$ 25,631	94%	\$ 4,702 (95)	\$ 3,979	118%
3-5.....	44,189 (621)	47,054	94	6,250 (126)	6,162	101
6-10.....	50,276 (727)	51,356	98	4,915 (125)	5,560	88
11-15.....	32,783 (568)	38,429	85	2,624 (76)	2,335	112
16-20.....	29,319 (530)	33,340	88	1,101 (36)	1,192	92
21-25.....	27,113 (484)	29,029	93	1,047 (34)	1,185	88
All.....	\$207,708 (2,971)	\$224,839	92%	\$20,639 (480)	\$20,413	101%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE 3  
 LARGE-AMOUNT ISSUES OF 1934 TO 1962  
 EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES  
 BY CLASSIFICATION AMOUNT AND PLAN OF INSURANCE  
 Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
 (Amounts Shown in \$1,000 Units)

CLASSIFICATION AMOUNT	PERMANENT PLANS			TERM PLANS			ALL PLANS		
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
A. Male and Female Lives, with and without Term Element									
\$ 50,000-\$ 99,999.....	\$ 77,726 (1,930)	\$ 80,880	96%	\$14,795 (403)	\$14,538	102%	\$ 92,521 (2,261)	\$ 95,418	97%
100,000- 199,999.....	122,390 (2,085)	131,152	93	22,585 (439)	22,656	100	144,975 (2,426)	153,808	94
200,000- 499,999.....	84,160 (898)	94,406	89	13,378 (178)	13,896	96	97,538 (1,007)	108,302	90
500,000- 999,999.....	24,480 (139)	26,795	91	2,820 (25)	3,759	75	27,300 (156)	30,554	89
1,000,000 and over.....	12,851 (41)	12,836	100	5,075 (5)	1,486	†	17,926 (44)	14,322	125
All.....	\$321,607 (4,558)	\$346,069	93%	\$58,653 (1,000)	\$56,335	104%	\$380,260 (5,217)	\$402,404	94%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE 3—Continued

CLASSIFICATION AMOUNT	PERMANENT PLANS			TERM PLANS			ALL PLANS		
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
B. Male Lives, with and without Term Element									
\$ 50,000—\$ 99,999.....	\$ 68,329 (1,728)	\$ 67,808	101%	\$ 13,859 (381)	\$ 13,404	103%	\$ 82,188 (2,040)	\$ 81,212	101%
100,000— 199,999.....	109,468 (1,916)	116,455	94	21,031 (412)	20,984	100	130,499 (2,228)	137,439	95
200,000— 499,999.....	78,651 (850)	84,390	93	12,858 (170)	13,095	98	91,509 (955)	97,485	94
500,000— 999,999.....	22,414 (131)	23,747	94	2,670 (25)	3,511	76	25,084 (148)	27,258	92
1,000,000 and over.....	12,480 (40)	11,208	<i>111</i>	4,975 (5)	1,436	†	17,455 (43)	12,644	<i>138</i>
All.....	\$291,342 (4,180)	\$303,608	96%	\$55,393 (946)	\$52,430	106%	\$346,735 (4,804)	\$356,038	97%
C. Female Lives, with and without Term Element									
\$ 50,000 \$ 99,999.....	\$ 6,629 (147)	\$ 10,276	65%	\$ 340 (7)	\$ 480	†	\$ 6,969 (154)	\$ 10,756	65%
100,000— 199,999.....	6,836 (88)	9,765	70	215 (4)	445	†	7,051 (91)	10,210	69
200,000— 499,999.....	2,599 (28)	5,868	<i>44</i>	0 (0)	177	†	2,599 (28)	6,045	<i>43</i>
500,000— 999,999.....	1,301 (7)	1,645	†	0 (0)	77	†	1,301 (7)	1,722	†
1,000,000 and over.....	175 (1)	1,152	†	0 (0)	28	†	175 (1)	1,180	†
All.....	\$ 17,540 (256)	\$ 28,706	61%	\$ 555 (11)	\$ 1,207	<i>46%</i>	\$ 18,095 (266)	\$ 29,913	60%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10–49 lives terminated by death.

TABLE 3—Continued

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CLASSIFICATION AMOUNT	PERMANENT PLANS					
	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
	D. Male Lives without Term Element			E. Male Lives with Term Element		
\$ 50,000-\$ 99,999.....	\$ 46,536 (1,147)	\$ 45,830	102%	\$ 8,519 (250)	\$ 8,487	100%
100,000- 199,999.....	77,288 (1,336)	84,698	91	8,099 (195)	8,535	95
200,000- 499,999.....	58,424 (660)	66,751	88	3,155 (39)	2,685	118
500,000- 999,999.....	18,229 (107)	18,450	99	291 (4)	472	†
1,000,000 and over.....	7,231 (27)	9,110	79	575 (3)	234	†
All.....	\$207,708 (2,971)	\$224,839	92%	\$20,639 (480)	\$20,413	101%

*Experience by Sex*

1. Since policies issued to males comprised over 90 per cent of the total exposure, the experience on male lives closely paralleled that for both sexes combined.
2. In interpreting the mortality ratios for female lives, it should be kept in mind that the expected deaths are based on a mortality table for both sexes combined but very heavily weighted with male lives.

In the aggregate, female mortality was 62 per cent of that for males, but at issue ages 30–39 the corresponding ratio was 95 per cent, based on 52 female deaths. Except at issue ages 0–9 and 20–29, the ratios of female to male mortality on large-amount policies were higher than the corresponding ratios on Standard Ordinary medically examined issues for all amounts during the first fifteen policy years between 1958 and 1963 policy anniversaries.

*Experience on Male Lives by Term-Element Classification*

The mortality ratio for male lives on permanent plans with a supplementary term element was 101 per cent, while for permanent plans without a term element it was 92 per cent. The corresponding ratios for male lives on term plans and permanent plans (regardless of the inclusion of a supplementary term element) were 106 per cent and 96 per cent, respectively. The mortality differential between permanent policies with and without a supplementary term element was thus approximately the same as that between all policies on permanent plans and all policies on term plans.

Tables B, C, and D of the Appendix present details of the experience covered in the present study by (1) age at issue and policy year, (2) age at issue and classification amount, and (3) policy year and classification amount, respectively, each subdivided by plan of insurance but without regard to sex or the inclusion of a supplementary term element.

## COMPARISON WITH PREVIOUS EXPERIENCE

A comparison of the experience between 1958 and 1963 anniversaries with earlier studies is given in Table 4. The ratios shown for each period are relative to the corresponding mortality on Standard Ordinary medically examined issues for all amounts.

The experience for issue ages 0–9 for the 1958 to 1963 anniversary period, shown elsewhere in this report, is not included in Table 4 because the experience at these ages was not covered by the earlier studies.

The mortality ratios shown here for term plans during the period from

TABLE 4

COMPARISON OF MORTALITY RATIOS ON LARGE-AMOUNT ISSUES OF 1934 TO 1962  
EXPERIENCE BETWEEN 1934-63 ANNIVERSARIES BY AGE AT ISSUE, DURATION, CLASSIFICATION AMOUNT, AND PLAN OF INSURANCE  
EXPECTED DEATHS BASED ON CORRESPONDING STANDARD ORDINARY ISSUES EXPERIENCE

	PERMANENT PLANS					TERM PLANS					ALL PLANS				
	1934-41	1941-48	1948-53	1953-58	1958-63	1934-41	1941-48	1948-53	1953-58	1958-63	1934-41	1941-48	1948-53	1953-58	1958-63
Ages at issue:															
10-39.....	<i>80%</i>	<i>100%</i>	<i>110%</i>	<i>97%</i>	<i>110%</i>	<i>168%</i>	<i>168%</i>	<i>107%</i>	<i>136%</i>	<i>123%</i>	<i>93%</i>	<i>108%</i>	<i>109%</i>	<i>103%</i>	<i>112%</i>
40-49.....	73	89	90	91	95	<i>114</i>	107	94	117	102	81	92	90	96	96
50 and over.....	95	78	78	83	83	<i>107</i>	91	72	102	92	96	79	77	85	84
All.....	85%	86%	88%	89%	93%	119%	112%	90%	116%	104%	90%	89%	88%	93%	95%
Policy years:															
1-2.....	*	90%	98%	75%	93%	*	<i>81%</i>	<i>83%</i>	126%	83%	*	89%	95%	85%	92%
3-5.....	*	95	98	89	96	*	139	103	112	126	*	101	99	94	101
6-10.....	*	84	90	97	96	*	109	82	119	105	*	87	89	101	97
11 and over.....	*	78	82	88	90	*	<i>105</i>	91	113	98	*	80	83	91	91
All.....	*	86%	88%	89%	93%	*	112%	90%	116%	104%	*	89%	88%	93%	94%
Classification amount:															
\$ 50,000-\$ 99,999....	*	91%	89%	92%	96%	*	118%	104%	119%	102%	84%	95%	91%	96%	97%
100,000- 199,999....	*	90	85	94	93	*	100	86	113	100	104	91	85	97	94
200,000- 499,999....	*	89	94	85	89	*	128	<i>80</i>	119	96	88	93	92	90	90
500,000 and over....	*	61	80	75	94	*	<i>94</i>	†	<i>120</i>	<i>151</i>	72	64	81	80	101
All.....	*	86%	88%	89%	93%	*	112%	90%	116%	104%	90%	89%	88%	93%	94%

\* Not available.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

1953 to 1958 anniversaries do not agree with those published in *TSA, 1959 Reports*. After the publication of the 1953-58 study, one company found an error in the term plans' portion of its contribution. Correction of this error decreased the aggregate mortality ratio for term plans from 122 per cent, given in *TSA, 1959 Reports*, to the 116 per cent shown in Table 4 of this report. Correction of this error had little effect on the mortality ratios for all plans and the general conclusions stated in *TSA, 1959 Reports* are not affected thereby. The main features of the comparison may be summarized as follows:

1. The aggregate mortality ratio on permanent plans has increased gradually from 85 per cent in the 1934-41 experience to 93 per cent in the 1958-63 experience.
2. The increase in the aggregate mortality ratio for permanent plans from 89 per cent in the 1953-58 experience to 93 per cent in the 1958-63 experience is due mainly to higher mortality in the first five policy years. The 1953-58 period was the only one when mortality ratios on permanent plans were lower in the first five policy years than in all policy years combined.
3. The excess mortality on term plans at issue ages under 40, which has been characteristic of past experience, was evident again in the 1958-63 experience. Mortality on term plans has been considerably higher than on permanent plans in every period except 1948-53.
4. In general, the mortality ratios have decreased with advancing age at issue for both permanent and term plans, with the notable exception of the permanent plans' experience during 1934-41.
5. The mortality for classification amounts of \$500,000 and over on permanent plans, which had been consistently lower than that for smaller classification amounts in past studies, was not lower in the current study.

#### EXPERIENCE BY CAUSE OF DEATH

An analysis of the experience by cause of death is presented in Table 5. The expected deaths by cause during the first fifteen policy years were calculated on the basis of the corresponding distribution of actual deaths on Standard Ordinary medically examined issues for all amounts during the period between 1958 and 1963 anniversaries. For policy years beyond 15, the expected deaths were derived from the corresponding ultimate experience on medical and nonmedical issues combined (policy years 16 and over).

As in earlier studies, "accidents and homicide" and "suicide" were the principal causes of death groups to show distinctly higher mortality on policies for large amounts than on Standard Ordinary issues for all amounts. This excess mortality was manifest on both permanent and term plans and at all issue ages 20 and over. The excess mortality from accidents and homicide tended to increase with duration.

TABLE 5  
LARGE-AMOUNT ISSUES OF 1934 TO 1962  
EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES  
BY CAUSE OF DEATH

Expected Deaths Based on Corresponding Standard Ordinary Issues Experience\*  
(Amounts Shown in \$1,000 Units)

Cause of Death	Committee 1961 Code	Number of Lives Who Died	Proportion of All Deaths	Actual Claims	Expected Claims	Ratio of Actual to Ex- pected
Permanent Plans						
Tuberculosis (all forms) . . .	01-02	0	0%	\$ 0	\$ 393	†
Malignant neoplasms . . . . .	18-33	1,003	22	73,934	76,861	96%
Diabetes mellitus . . . . .	37	23	0	1,342	1,951	69
Vascular lesions of central nervous system . . . . .	42	269	6	16,824	19,210	88
Diseases of the heart and circulatory system . . . . .	49-55, 5A	1,919	42	134,567	156,997	86
Pneumonia and influenza . . .	56-59	48	1	3,269	4,554	72
Accidents and homicide . . .	88-96, 98	531	12	41,868	31,230	134
Suicide . . . . .	97	194	4	13,375	10,409	128
All other causes and un- known . . . . .	Residual	571	13	36,428	44,464	82
All causes . . . . .		4,558	100%	\$321,607	\$346,069	93%
Term Plans						
Tuberculosis (all forms) . . .	01-02	0	0%	\$ 0	\$ 63	†
Malignant neoplasms . . . . .	18-33	212	21	12,324	12,286	100%
Diabetes mellitus . . . . .	37	1	0	33	275	†
Vascular lesions of central nervous system . . . . .	42	51	5	2,242	2,783	81
Diseases of the heart and circulatory system . . . . .	49-55, 5A	430	43	22,816	25,067	91
Pneumonia and influenza . . .	56-59	8	1	498	673	†
Accidents and homicide . . .	88-96, 98	141	14	11,833	6,127	193
Suicide . . . . .	97	46	5	2,704	1,917	141
All other causes and un- known . . . . .	Residual	111	11	6,203	7,144	87
All causes . . . . .		1,000	100%	\$ 58,653	\$ 56,335	104%
All Plans						
Tuberculosis (all forms) . . .	01-02	0	0%	\$ 0	\$ 456	†
Malignant neoplasms . . . . .	18-33	1,148	22	86,258	89,147	97%
Diabetes mellitus . . . . .	37	23	0	1,375	2,226	62
Vascular lesions of central nervous system . . . . .	42	304	6	19,066	21,993	87
Diseases of the heart and circulatory system . . . . .	49-55, 5A	2,193	43	157,383	182,064	86
Pneumonia and influenza . . .	56-59	55	1	3,767	5,227	72
Accidents and homicide . . .	88-96, 98	626	12	53,701	37,357	144
Suicide . . . . .	97	222	4	16,079	12,326	130
All other causes and un- known . . . . .	Residual	646	12	42,631	51,608	83
All causes . . . . .		5,217	100%	\$380,260	\$402,404	94%

\* Distribution of expected deaths by cause based on 1958-63 experience.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.



Motor vehicle and aviation accidents continue to account for a majority of the fatal accidents. Table 6 shows the number of deaths from these causes, as well as the percentage that these deaths are of the total accidents and homicides in the current and two prior studies.

For males at ages 15-64 in the general population of the United States, fatalities due to motor vehicles accounted for 52 per cent, while those due to aviation accounted for only 3 per cent of all accidental deaths in 1961-62.

On large-amount, permanent-plan policies, the mortality ratio from diseases of the heart and circulatory system (86 per cent) was significantly

TABLE 6  
MOTOR VEHICLE AND AVIATION ACCIDENT DEATHS  
INCLUDED IN ACCIDENTS AND HOMICIDES

EXPERIENCE PERIOD	MOTOR VEHICLE ACCIDENT DEATHS		AVIATION ACCIDENT DEATHS		MOTOR VEHICLE AND AVIATION ACCIDENT DEATHS	
	Number	Per Cent of All Accidents and Homicides	Number	Per Cent of All Accidents and Homicides	Number	Per Cent of All Accidents and Homicides
1948-53.....	67	35%	45	23%	112	58%
1953-58.....	123	45	47	17	170	62
1958-63.....	242	39	165	26	407	65

below that on policies for all amounts. On large-amount term policies, the mortality ratio of 91 per cent from these causes was considerably lower than in the 1953-58 study.

The high mortality ratio (103 per cent) among females at issue ages 30-39 reflects significantly higher mortality from malignant neoplasms (20 deaths).

#### EXPERIENCE BY PURPOSE OF INSURANCE AND INCOME OF INSURED

The mortality experience on large-amount policies issued in 1959, 1960, 1961, and 1962, traced to policy anniversaries in 1963, analyzed according to the purpose of the insurance and plan of insurance is presented in Table 7. The "purpose of insurance" categories were defined in the instructions as follows:

*Personal insurance.*—Insurance where the beneficiary is (a) wife, child, or other close relative; (b) estate; or (c) business involving a sole proprietorship.

*Business insurance.*—Insurance intended for the repurchase of the insured's

business interest in an organization having not more than five principal owners (partnership or close corporation).

*Key-man or deferred-compensation insurance.*—Insurance intended primarily for key-man or deferred-compensation purposes.

*Creditor and other insurance.*—Insurance taken out to insure the repayment of a loan where either the creditor is designated beneficiary or the policy is assigned to the creditor. Also included here is any insurance the purpose of which does not fit the other categories.

The expected deaths have been computed on the basis of the mortality rates for the appropriate durations as shown in Table E of the Appendix.

TABLE 7  
LARGE-AMOUNT ISSUES OF 1959 TO 1962  
EXPERIENCE BETWEEN 1959 AND 1963 ANNIVERSARIES  
BY PURPOSE OF INSURANCE AND PLAN OF INSURANCE  
Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
(Amounts Shown in \$1,000 Units)

PURPOSE	PERMANENT PLANS		TERM PLANS		ALL PLANS	
	Actual Claims*	A/E	Actual Claims*	A/E	Actual Claims*	A/E
Personal insurance .....	\$21,444 (349)	93%	\$3,855 (85)	85%	\$25,299 (416)	92%
Business insurance .....	7,447 (91)	81	3,190 (38)	147	10,637 (127)	94
Key-man or deferred-compensation insurance .....	6,463 (62)	116	1,054 (14)	90	7,517 (76)	112
Creditor and other insurance .....	379 (8)	†	777 (14)	252	1,156 (21)	137
All .....	\$35,733 (496)	93%	\$8,876 (144)	108%	\$44,609 (613)	96%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10–49 lives terminated by death.

On permanent plans where the purpose of the insurance was designated as personal, the mortality ratio was 93 per cent; for term plans with a corresponding purpose designation, it was 85 per cent. Business insurance showed favorable mortality on permanent plans, but the mortality ratio on term plans of 147 per cent, based on \$3,190,000 of claims involving 38 lives, was significantly in excess of 100 per cent. Key-man or deferred-compensation insurance on permanent plans produced a mortality ratio of 116 per cent, based on \$6,463,000 of claims involving 62 lives. The experience in the other classifications was not large enough to permit similar conclusions.

The mortality experience on large-amount policies issued in 1959, 1960, 1961, and 1962, traced to policy anniversaries in 1963, analyzed according to (1) the estimated annual income of the insured at time of issue and by plan of insurance and (2) the estimated annual income at

issue and the classification amount of insurance, is presented in Tables 8 and 9, respectively.

The income group under \$20,000 showed increasingly higher mortality ratios with rise in the classification amount of insurance, but the volume of the experience for classification amounts \$200,000 and over was quite small. The experience on term plans in this income group produced a mortality ratio of 123 per cent.

It is difficult to interpret the small experience on those whose incomes could not be accurately determined, but it would appear that there was some antiselection in this group.

TABLE 8  
LARGE-AMOUNT ISSUES OF 1959 TO 1962  
EXPERIENCE BETWEEN 1959 AND 1963 ANNIVERSARIES  
BY ESTIMATED ANNUAL INCOME AT ISSUE AND PLAN OF INSURANCE  
Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
(Amounts Shown in \$1,000 Units)

ESTIMATED ANNUAL INCOME AT ISSUE	PERMANENT PLANS		TERM PLANS		ALL PLANS	
	Actual Claims*	A/E	Actual Claims*	A/E	Actual Claims*	A/E
Under \$20,000.....	\$ 9,609 (181)	101%	\$3,269 (65)	123%	\$12,878 (236)	106%
\$20,000-\$49,999.....	14,286 (212)	87	3,105 (60)	88	17,391 (260)	87
\$50,000 and over.....	10,789 (87)	92	1,790 (13)	98	12,579 (98)	92
Not accurately determined.....	1,049 (21)	<i>136</i>	712 (13)	<i>400</i>	1,761 (33)	<i>186</i>
All.....	\$35,733 (496)	93%	\$8,876 (144)	108%	\$44,609 (613)	96%

\* Number of lives involved shown in parentheses.

† Includes juveniles, students, interns and other professionals in apprenticeship, noncareer members of armed forces, and married women without a substantial income in their own right.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE 9  
 LARGE-AMOUNT ISSUES OF 1959 TO 1962  
 EXPERIENCE BETWEEN 1959 AND 1963 ANNIVERSARIES  
 BY ESTIMATED ANNUAL INCOME AT ISSUE AND CLASSIFICATION AMOUNT OF INSURANCE  
 ALL PLANS OF INSURANCE  
 CLASSIFICATION AMOUNT OF INSURANCE  
 Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
 (Amounts Shown in \$1,000 Units)

ESTIMATED ANNUAL INCOME AT ISSUE	\$50,000-\$99,999		\$100,000-\$199,999		\$200,000 AND OVER		ALL	
	Actual Claims*	A/E	Actual Claims*	A/E	Actual Claims*	A/E	Actual Claims*	A/E
Under \$20,000†	\$5,584 (130)	92%	\$ 5,462 (94)	111%	\$ 1,832 (15)	151%	\$12,878 (236)	106%
\$20,000-\$49,999	2,830 (69)	88	9,128 (143)	94	5,433 (55)	78	17,391 (260)	87
\$50,000 and over	608 (13)	180	2,287 (35)	101	9,684 (53)	88	12,579 (98)	92
Not accurately determined	363 (9)	†	803 (17)	235	595 (7)	†	1,761 (33)	186
All	\$9,385(219)	96%	\$17,680 (282)	103%	\$17,544 (125)	89%	\$44,609 (613)	96%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

‡ Includes juveniles, students, interns and other professionals in apprenticeship, noncareer members of armed forces, and married women without a substantial income in their own right.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

## APPENDIX

### TABLE A

#### CONTRIBUTING COMPANIES

Company	Proportion of Permanent Insurance Exposures	Proportion of Term Insurance Exposures	Proportion of Total Exposures
New York Life.....	11.5%	8.6%	11.2%
Massachusetts Mutual...	10.6	5.8	10.0
Northwestern Mutual...	9.6	3.8	9.4
Prudential.....	7.5	10.7	8.0
Equitable, N.Y.....	8.5	5.6	8.0
Mutual Benefit.....	8.2	0.9	7.0
New England Life.....	6.5	5.9	6.4
Connecticut Mutual.....	5.5	7.2	5.8
John Hancock.....	4.5	2.7	4.2
Connecticut General....	3.4	6.8	4.0
Metropolitan.....	3.0	8.9	4.0
Aetna.....	2.8	7.6	3.6
Travelers.....	2.4	9.2	3.5
Mutual Life, N.Y.....	3.4	3.1	3.3
Penn Mutual.....	3.3	2.5	3.1
Phoenix Mutual.....	3.0	0.7	2.6
Provident Mutual.....	1.9	1.7	1.8
Union Central.....	1.8	1.5	1.7
Canada Life.....	1.5	1.1	1.4
Sun Life.....	1.1	0.7	1.0
Total.....	100.0%	100.0%	100.0%

TABLE B

LARGE-AMOUNT ISSUES OF 1934 TO 1962  
EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES  
BY ISSUE AGE, DURATION, AND PLAN OF INSURANCE  
Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
(Amounts Shown in \$1,000 Units)

ISSUE AGE	POLICY YEARS	PERMANENT PLANS			TERM PLANS			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims	Expected Claims*	A/E	Actual Claims*	Expected Claims	A/E
00-09.....	1-2	\$ 50 (1)	\$ 89	†	\$ 0 (0)	\$ 0	†	\$ 50 (1)	\$ 89	†
	3-5	0 (0)	58	†	0 (0)	0	†	0 (0)	58	†
	6-10	115 (2)	38	†	0 (0)	0	†	115 (2)	38	†
	11-15	0 (0)	25	†	0 (0)	0	†	0 (0)	25	†
	16-20	0 (0)	1	†	0 (0)	0	†	0 (0)	1	†
	21-25	0 (0)	0	†	0 (0)	0	†	0 (0)	0	†
	All	\$ 165 (3)	\$ 211	†	\$ 0 (0)	\$ 0	†	\$ 165 (3)	\$ 211	†
10-19.....	1-2	\$ 105 (2)	\$ 183	†	\$ 0 (0)	\$ 8	†	\$ 105 (2)	\$ 191	†
	3-5	487 (6)	344	†	0 (0)	7	†	487 (6)	351	†
	6-10	440 (6)	348	†	0 (0)	0	†	440 (6)	348	†
	11-15	230 (3)	158	†	0 (0)	0	†	230 (3)	158	†
	16-20	0 (0)	53	†	0 (0)	0	†	0 (0)	53	†
	21-25	0 (0)	55	†	0 (0)	0	†	0 (0)	55	†
	All	\$ 1,262 (16)	\$ 1,141	<i>111%</i>	\$ 0 (0)	\$ 15	†	\$ 1,262 (16)	\$ 1,156	<i>109%</i>

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE B—Continued

ISSUE AGE	POLICY YEARS	PERMANENT PLANS			TERM PLAN			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims	Expected Claims*	A/E	Actual Claims*	Expected Claims	A/E
20-29.....	1-2	\$ 1,609 (31)	\$ 1,464	110%	\$ 525 (10)	\$ 330	159%	\$ 2,134 (38)	\$ 1,794	119%
	3-5	2,814 (44)	1,868	151	631 (11)	324	195	3,445 (53)	2,192	157
	6-10	2,229 (32)	1,576	141	280 (8)	211	†	2,509 (39)	1,787	140
	11-15	1,267 (24)	1,189	107	153 (6)	120	†	1,420 (26)	1,309	108
	16-20	1,412 (25)	727	194	250 (5)	39	†	1,662 (30)	766	217
	21-25	1,250 (26)	1,285	97	349 (9)	94	†	1,599 (31)	1,379	116
	All	\$ 10,581 (177)	\$ 8,109	130%	\$ 2,188 (48)	\$ 1,118	196%	\$ 12,769 (209)	\$ 9,227	138%
30-39.....	1-2	\$ 7,534 (117)	\$ 7,634	99%	\$ 2,320 (46)	\$ 2,195	106%	\$ 9,854 (154)	\$ 9,829	100%
	3-5	13,276 (207)	12,933	103	3,840 (65)	2,972	129	17,116 (258)	15,905	108
	6-10	16,549 (266)	14,308	116	2,643 (51)	2,721	97	19,192 (305)	17,029	113
	11-15	10,852 (207)	10,623	102	2,594 (49)	1,941	134	13,446 (241)	12,564	107
	16-20	8,246 (148)	7,559	109	1,175 (30)	1,076	109	9,421 (173)	8,635	109
	21-25	9,040 (153)	7,726	117	1,355 (30)	1,047	129	10,395 (176)	8,773	118
	All	\$ 65,497 (1,043)	\$ 60,783	108%	\$13,927 (261)	\$11,952	117%	\$ 79,424 (1,222)	72,735	109%
40-49.....	1-2	\$ 13,857 (188)	\$ 13,572	102%	\$ 2,570 (48)	\$ 3,496	74%	\$ 16,427 (230)	\$ 17,068	96%
	3-5	25,597 (364)	25,427	101	6,754 (96)	5,707	118	32,351 (440)	31,134	104
	6-10	26,853 (440)	30,615	88	7,398 (110)	6,300	117	34,251 (530)	36,915	93
	11-15	24,037 (406)	24,688	97	5,142 (103)	4,556	113	29,179 (487)	29,244	100
	16-20	19,637 (341)	21,288	92	2,294 (48)	3,010	76	21,931 (373)	24,298	90
	21-25	17,316 (300)	18,827	92	2,643 (66)	3,128	84	19,959 (350)	21,955	91
	All	\$127,297 (1,938)	\$134,417	95%	\$26,801 (457)	\$26,197	102%	\$154,098 (2,268)	\$160,614	96%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE B—Continued

ISSUE AGE	POLICY YEARS	PERMANENT PLANS			TERM PLANS			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims	Expected Claims*	A/E	Actual Claims*	Expected Claims	A/E
50-59.....	1-2	\$ 8,239 (124)	\$ 10,352	80%	\$ 1,369 (27)	\$ 2,005	68%	\$ 9,608 (147)	\$ 12,357	78%
	3-5	17,998 (237)	22,934	78	5,004 (70)	3,772	133	23,002 (299)	26,706	86
	6-10	27,873 (372)	29,208	95	3,739 (69)	4,089	91	31,612 (424)	33,297	95
	11-15	17,609 (294)	20,712	85	2,542 (49)	2,911	87	20,151 (336)	23,623	85
	16-20	12,081 (220)	18,239	66	1,435 (32)	1,812	79	13,516 (244)	20,051	67
	21-25	10,754 (196)	13,666	79	878 (22)	1,593	55	11,632 (215)	15,259	76
	All	\$ 94,554 (1,373)	\$115,111	82%	\$14,967 (260)	\$16,182	92%	\$109,521 (1,571)	\$131,293	83%
60-69.....	1-2	\$ 2,716 (33)	\$ 3,194	85%	\$ 50 (1)	\$ 151	†	\$ 2,766 (34)	\$ 3,345	83%
	3-5	7,458 (83)	6,917	108	200 (3)	244	†	7,658 (86)	7,161	107
	6-10	6,650 (95)	8,053	83	115 (3)	242	†	6,765 (97)	8,295	82
	11-15	2,140 (44)	3,503	61	305 (5)	115	†	2,445 (48)	3,618	68
	16-20	1,574 (32)	2,413	65	50 (1)	36	†	1,624 (33)	2,449	66
	21-25	1,234 (32)	1,585	78	50 (1)	83	†	1,284 (32)	1,668	77
	All	\$ 21,772 (311)	\$ 25,665	85%	\$ 770 (14)	\$ 871	88%	\$ 22,542 (322)	\$ 26,536	85%
70 and over.	1-2	\$ 121 (3)	\$ 172	†	0 (0)	0	†	\$ 121 (3)	\$ 172	†
	3-5	358 (3)	200	†	0 (0)	0	†	358 (3)	200	†
	6-10	0 (0)	243	†	0 (0)	0	†	0 (0)	243	†
	11-15	0 (0)	17	†	0 (0)	0	†	0 (0)	17	†
	16-20	0 (0)	0	†	0 (0)	0	†	0 (0)	0	†
	21-25	0 (0)	0	†	0 (0)	0	†	0 (0)	0	†
	All	\$ 479 (6)	\$ 632	†	0 (0)	0	†	\$ 479 (6)	\$ 632	†



TABLE C—LARGE-AMOUNT ISSUES OF 1934 TO 1962  
EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES  
BY AGE AT ISSUE, CLASSIFICATION AMOUNT, AND PLAN OF INSURANCE  
Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
(Amounts Shown in \$1,000 Units)

ISSUE AGE	CLASSIFICATION AMOUNT	PERMANENT PLANS			TERM PLANS			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
00-09.....	\$ 50,000-\$ 99,999	\$ 165 (3)	\$ 123	†	\$ 0 (0)	\$ 0	†	\$ 165 (3)	\$ 123	†
	100,000- 199,999	0 (0)	79	†	0 (0)	0	†	0 (0)	79	†
	200,000- 499,999	0 (0)	9	†	0 (0)	0	†	0 (0)	9	†
	500,000- 999,999	0 (0)	0	†	0 (0)	0	†	0 (0)	0	†
	1,000,000 and over	0 (0)	0	†	0 (0)	0	†	0 (0)	0	†
	All	\$ 165 (3)	\$ 211	†	\$ 0 (0)	\$ 0	†	\$ 165 (3)	\$ 211	†
10-19.....	\$ 50,000-\$ 99,999	\$ 367 (9)	\$ 556	†	\$ 0 (0)	\$ 5	†	\$ 367 (9)	\$ 561	†
	100,000- 199,999	505 (6)	447	†	0 (0)	4	†	505 (6)	451	†
	200,000- 499,999	390 (2)	107	†	0 (0)	5	†	390 (2)	112	†
	500,000- 999,999	0 (0)	13	†	0 (0)	0	†	0 (0)	13	†
	1,000,000 and over	0 (0)	18	†	0 (0)	1	†	0 (0)	19	†
	All	\$ 1,262 (16)	\$ 1,141	111%	\$ 0 (0)	\$ 15	†	\$ 1,262 (16)	\$ 1,156	109%
20-29.....	\$ 50,000-\$ 99,999	\$ 4,018 (102)	\$ 3,647	110%	\$ 1,302 (33)	\$ 643	202%	\$ 5,320 (126)	\$ 4,290	124%
	100,000- 199,999	4,134 (70)	2,922	141	646 (15)	369	175	4,780 (80)	3,291	145
	200,000- 499,999	1,919 (20)	1,161	165	240 (2)	81	†	2,159 (21)	1,242	174
	500,000- 999,999	510 (2)	253	†	0 (0)	12	†	510 (2)	265	†
	1,000,000 and over	0 (0)	126	†	0 (0)	13	†	0 (0)	139	†
	All	\$ 10,581 (177)	\$ 8,109	130%	\$ 2,188 (48)	\$ 1,118	196%	\$ 12,769 (209)	\$ 9,227	138%
30-39.....	\$ 50,000-\$ 99,999	\$ 19,732 (524)	\$ 19,877	99%	\$ 4,366 (121)	\$ 4,416	99%	\$ 24,098 (621)	\$ 24,293	99%
	100,000- 199,999	24,571 (432)	25,106	98	6,110 (112)	4,978	123	30,681 (515)	30,084	102
	200,000- 499,999	14,148 (141)	12,181	116	2,101 (28)	2,013	104	16,249 (162)	14,194	114
	500,000- 999,999	2,933 (12)	2,332	126	275 (3)	348	†	3,208 (15)	2,680	120
	1,000,000 and over	4,113 (13)	1,287	320	1,075 (3)	197	†	5,188 (15)	1,484	350
	All	\$ 65,497 (1,043)	\$ 60,783	108%	\$13,927 (261)	\$11,952	117%	\$ 79,424 (1,222)	\$ 72,735	109%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

Note --Mortality ratio in italics where 10-49 lives terminated by death.

TABLE C—Continued

ISSUE AGE	CLASSIFICATION AMOUNT	PERMANENT PLANS			TERM PLANS			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
40-49	\$ 50,000-\$ 99,999	\$ 29,645 (734)	\$ 30,345	98%	\$ 6,152 (164)	\$ 6,387	96%	\$ 35,797 (876)	\$ 36,732	97%
	100,000- 199,999	51,030 (892)	53,439	95	9,666 (198)	10,918	89	60,696 (1,048)	64,357	94
	200,000- 499,999	33,601 (385)	36,779	91	6,853 (97)	6,724	102	40,454 (445)	43,503	93
	500,000- 999,999	8,934 (57)	9,649	93	1,380 (11)	1,625	85	10,314 (65)	11,274	91
	1,000,000 and over	4,087 (15)	4,205	97	2,750 (1)	543	†	6,837 (16)	4,748	144
	All	\$127,297 (1,938)	\$134,417	95%	\$26,801 (457)	\$26,197	102%	\$154,098 (2,268)	\$160,614	96%
50-59	\$ 50,000-\$ 99,999	\$ 18,658 (456)	\$ 20,909	89%	\$ 2,960 (86)	\$ 3,001	99%	\$ 21,618 (528)	\$ 23,910	90%
	100,000- 199,999	35,700 (617)	40,909	87	5,863 (115)	6,167	95	41,563 (715)	47,076	88
	200,000- 499,999	27,960 (330)	35,869	78	3,884 (55)	4,727	82	31,844 (369)	40,596	78
	500,000- 999,999	9,030 (58)	11,708	77	1,010 (10)	1,618	62	10,040 (64)	13,326	75
	1,000,000 and over	3,206 (12)	5,716	56	1,250 (2)	669	†	4,456 (13)	6,385	70
	All	\$ 94,554 (1,373)	\$115,111	82%	\$14,967 (260)	\$16,182	92%	\$109,521 (1,571)	\$131,293	83%
60-69	\$ 50,000-\$ 99,999	\$ 4,983 (119)	\$ 5,220	95%	\$ 15 (1)	\$ 86	†	\$ 4,998 (120)	\$ 5,306	94%
	100,000- 199,999	6,449 (110)	8,092	80	300 (5)	220	†	6,749 (115)	8,312	81
	200,000- 499,999	5,822 (73)	8,167	71	300 (5)	346	†	6,122 (78)	8,513	72
	500,000- 999,999	3,073 (18)	2,808	109	155 (3)	156	†	3,228 (20)	2,964	109
	1,000,000 and over	1,445 (5)	1,378	†	0 (0)	63	†	1,445 (5)	1,441	†
	All	\$ 21,772 (311)	\$ 25,665	85%	\$ 770 (14)	\$ 871	88%	\$ 22,542 (322)	\$ 26,536	85%
70 and over	\$ 50,000-\$ 99,999	\$ 158 (2)	\$ 203	†	0 (0)	0	†	\$ 158 (2)	\$ 203	†
	100,000- 199,999	1 (1)	158	†	0 (0)	0	†	1 (1)	158	†
	200,000- 499,999	320 (3)	133	†	0 (0)	0	†	320 (3)	133	†
	500,000- 999,999	0 (0)	32	†	0 (0)	0	†	0 (0)	32	†
	1,000,000 and over	0 (0)	106	†	0 (0)	0	†	0 (0)	106	†
	All	\$ 479 (6)	\$ 632	†	0 (0)	0	†	\$ 479 (6)	\$ 632	†

TABLE D  
 LARGE-AMOUNT ISSUES OF 1934 TO 1962  
 EXPERIENCE BETWEEN 1958 AND 1963 ANNIVERSARIES  
 BY DURATION, CLASSIFICATION AMOUNT, AND PLAN OF INSURANCE  
 Expected Deaths Based on Corresponding Standard Ordinary Issues Experience  
 (Amounts Shown in \$1,000 Units)

POLICY YEARS	CLASSIFICATION AMOUNT	PERMANENT PLANS			TERM PLANS			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
1-2.....	\$ 50,000-\$ 99,999	\$ 8,156 (200)	\$ 8,466	96%	\$ 2,219 (56)	\$ 2,266	98%	\$10,375 (248)	\$10,732	97%
	100,000- 199,999	11,824 (206)	13,908	85	2,905 (53)	3,195	91	14,729 (253)	17,103	86
	200,000- 499,999	7,501 (84)	9,493	79	1,710 (25)	1,862	92	9,211 (104)	11,355	81
	500,000- 999,999	4,246 (14)	3,073	<i>138</i>	0 (0)	533	†	4,246 (14)	3,606	<i>118</i>
	1,000,000 and over	2,504 (5)	1,720	†	0 (0)	329	†	2,504 (5)	2,049	†
	All	\$34,231 (500)	\$36,660	93%	\$ 6,834 (132)	\$ 8,185	83%	\$41,065 (610)	\$44,845	92%
3-5.....	\$ 50,000-\$ 99,999	\$14,620 (348)	\$16,010	91%	\$ 4,317 (105)	\$ 3,551	122%	\$18,937 (440)	\$19,561	97%
	100,000- 199,999	27,370 (429)	26,939	102	5,744 (97)	5,011	115	33,114 (513)	31,950	104
	200,000- 499,999	16,563 (157)	18,269	91	3,358 (40)	3,016	<i>111</i>	19,921 (188)	21,285	94
	500,000- 999,999	5,582 (23)	6,152	<i>91</i>	360 (5)	1,008	†	5,942 (28)	7,160	<i>83</i>
	1,000,000 and over	3,853 (12)	3,311	<i>116</i>	2,650 (2)	440	†	6,503 (13)	3,751	<i>173</i>
	All	\$67,988 (939)	\$70,681	96%	\$16,429 (244)	\$13,026	126%	\$84,417 (1,137)	\$83,707	101%
6-10.....	\$ 50,000-\$ 99,999	\$19,903 (493)	\$20,625	96%	\$ 3,800 (101)	\$ 3,539	107%	\$23,703 (580)	\$24,164	98%
	100,000- 199,999	29,838 (505)	31,721	94	4,258 (87)	5,319	80	34,096 (576)	37,040	92
	200,000- 499,999	22,587 (232)	22,324	101	2,657 (38)	3,307	<i>80</i>	25,244 (259)	25,631	98
	500,000- 999,999	5,891 (31)	6,162	<i>96</i>	1,535 (12)	1,013	<i>152</i>	7,426 (38)	7,175	<i>103</i>
	1,000,000 and over	2,490 (7)	3,557	†	1,925 (2)	385	†	4,415 (9)	3,942	†
	All	\$80,709 (1,199)	\$84,389	96%	\$14,175 (236)	\$13,563	105%	\$94,884 (1,381)	\$97,952	97%

\* Number of lives involved shown in parentheses.

† Fewer than ten lives terminated by death.

NOTE.—Mortality ratio in italics where 10-49 lives terminated by death.

TABLE D—Continued

POLICY YEARS	CLASSIFICATION AMOUNT	PERMANENT PLANS			TERM PLANS			ALL PLANS		
		Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E	Actual Claims*	Expected Claims	A/E
11-15.....	\$ 50,000-\$ 99,999	\$16,998 (419)	\$15,741	108%	\$ 2,367 (73)	\$ 2,623	90%	\$19,365 (475)	\$18,364	105%
	100,000- 199,999	21,715 (386)	23,824	91	4,846 (95)	3,924	123	26,561 (465)	27,748	96
	200,000- 499,999	13,821 (184)	16,287	85	2,468 (39)	2,237	110	16,289 (213)	18,524	88
	500,000- 999,999	2,585 (24)	3,735	69	655 (6)	642	†	3,240 (29)	4,377	74
	1,000,000 and over	1,016 (7)	1,328	†	400 (2)	217	†	1,416 (9)	1,545	†
	All	\$56,135 (970)	\$60,915	92%	\$10,736 (211)	\$ 9,643	111%	\$66,871 (1,128)	\$70,558	95%
16-20.....	\$ 50,000-\$ 99,999	\$10,108 (274)	\$11,512	88%	\$ 1,064 (32)	\$ 1,343	79%	\$11,172 (301)	\$12,855	87%
	100,000- 199,999	17,641 (345)	19,349	91	2,322 (56)	2,556	91	19,963 (389)	21,905	91
	200,000- 499,999	11,979 (165)	14,427	83	1,798 (32)	1,675	107	13,777 (156)	16,102	86
	500,000- 999,999	2,402 (26)	3,858	62	20 (1)	345	†	2,422 (27)	4,203	58
	1,000,000 and over	820 (6)	1,134	†	0 (0)	54	†	820 (6)	1,188	†
	All	\$42,950 (757)	\$50,280	85%	\$ 5,204 (115)	\$ 5,973	87%	\$48,154 (842)	\$56,253	86%
21-25.....	\$ 50,000-\$ 99,999	\$ 7,941 (226)	\$ 8,526	93%	\$ 1,028 (37)	\$ 1,216	85%	\$ 8,969 (256)	\$ 9,742	92%
	100,000- 199,999	14,002 (292)	15,411	91	2,510 (63)	2,651	95	16,512 (341)	18,062	91
	200,000- 499,999	11,709 (176)	13,606	86	1,387 (24)	1,799	77	13,096 (195)	15,405	85
	500,000- 999,999	3,774 (35)	3,815	99	250 (3)	218	†	4,024 (37)	4,033	100
	1,000,000 and over	2,168 (13)	1,786	121	100 (1)	61	†	2,268 (13)	1,847	123
	All	\$39,594 (703)	\$43,144	92%	\$ 5,275 (126)	\$ 5,945	89%	\$44,869 (795)	\$49,089	91%

TABLE E  
MORTALITY TABLE USED TO CALCULATE EXPECTED DEATHS  
GRADUATED MORTALITY RATES PER \$1,000

POLICY YEAR	ISSUE AGES																
	0	1	2-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 and Over
1	1.78	0.74	0.59	0.34	0.36	0.76	0.53	0.58	0.64	0.87	1.33	2.09	2.77	4.11	5.40	8.41	11.04
2	0.74	.65	.53	0.28	0.54	0.88	0.62	0.68	0.84	1.20	1.93	2.92	4.41	6.21	7.84	10.85	14.28
3	0.65	.59	.48	0.24	0.77	0.97	0.71	0.78	1.00	1.51	2.48	3.75	5.85	8.86	11.24	14.70	16.06
4	0.59	.53	.41	0.23	0.87	0.99	0.76	0.81	1.07	1.71	2.84	4.31	6.80	10.51	13.83	17.47	18.60
5	0.53	.48	.34	0.24	0.91	1.00	0.81	0.85	1.19	1.98	3.32	5.01	7.99	12.14	15.56	19.74	21.71
6	0.48	.41	.28	0.28	0.92	0.99	0.84	0.88	1.31	2.22	3.77	5.67	9.15	13.20	16.43	22.52	27.91
7	0.41	.34	.24	0.34	0.94	0.98	0.86	0.93	1.47	2.44	4.11	6.27	10.13	14.04	17.85	24.82	37.95
8	0.34	.28	.23	0.42	0.96	1.00	0.90	1.05	1.74	2.89	4.73	7.24	11.74	15.53	21.61	28.91	51.70
9	0.28	.24	.24	0.53	0.97	1.02	0.93	1.17	1.97	3.30	5.30	7.89	12.94	16.89	25.68	33.19	71.18
10	0.24	.23	.28	0.58	1.04	1.02	0.97	1.31	2.22	3.79	5.94	8.72	14.00	19.01	29.08	38.92	93.12
11	0.23	.24	.34	0.61	1.06	1.04	1.02	1.46	2.54	4.44	6.82	9.93	15.45	22.14	32.94	44.66	113.79
12	0.24	.28	.42	0.68	0.98	1.05	1.08	1.64	2.83	4.96	7.50	11.12	16.83	25.46	37.13	51.86	130.56
13	0.28	.34	.53	0.81	0.91	1.05	1.17	1.87	3.18	5.43	8.32	12.46	19.02	28.98	42.40	60.56	144.38
14	0.34	.42	.58	0.87	0.90	1.06	1.29	2.13	3.59	6.10	9.38	14.26	21.74	33.42	48.19	74.00	156.44
15	0.42	.53	.61	0.91	0.92	1.06	1.40	2.37	4.07	6.99	10.74	16.87	25.07	38.36	55.34	90.96	168.88
16	0.53	.58	.68	0.95	0.95	1.07	1.52	2.62	4.61	7.88	12.17	19.46	29.70	44.91	66.64	107.09	180.98
17	0.58	.61	.81	0.96	0.97	1.08	1.65	2.92	5.19	8.72	13.64	21.89	33.95	51.08	77.80	121.25	193.54
18	0.61	.68	.87	0.95	0.99	1.16	1.81	3.27	5.83	9.56	15.20	24.30	37.85	56.98	87.67	134.76	207.85
19	0.68	.81	.91	0.95	1.01	1.27	2.01	3.67	6.50	10.43	16.85	26.76	41.53	62.74	96.56	147.92	220.07
20	0.81	.87	.95	0.96	1.03	1.38	2.25	4.13	7.22	11.37	18.62	29.31	45.05	68.21	105.21	161.86	231.46
21	0.87	.91	.96	0.97	1.05	1.49	2.55	4.63	7.99	12.47	20.47	31.96	48.69	73.93	113.72	177.75	237.73
22	0.91	.95	.95	0.98	1.09	1.62	2.89	5.20	8.79	13.72	22.26	34.69	52.62	80.10	122.39	194.31	245.07
23	0.95	.96	.95	0.98	1.17	1.80	3.26	5.83	9.63	15.09	24.23	37.83	57.40	86.65	132.43	210.98	268.79
24	0.96	.95	.96	0.99	1.27	2.03	3.65	6.51	10.53	16.54	26.38	41.48	63.15	93.30	143.19	224.50	301.34
25	0.95	0.95	0.97	1.00	1.39	2.31	4.05	7.23	11.51	18.02	28.71	45.64	69.93	99.95	154.31	241.00	341.89

[Note to Table E on facing page.]

#### NOTE TO TABLE E

Table E was constructed as follows:

*Issue-age groups "0" through "5-9"*: For attained ages less than 22, the graduated mortality rates from the 1959-62 Juvenile Aggregate Basic Table, Male and Female Lives Combined (*TSA, 1963 Reports*, p. 40), were used without adjustment. To extend the rates through policy year 25, ultimate mortality rates for corresponding attained ages were calculated from the Committee's annual reports on male and female combined experience under Standard Ordinary issues for all amounts during the sixteenth and subsequent policy years between 1958 and 1963 anniversaries. The graduation of the resulting rates was performed by graphically graduating the ratios of (1) the crude mortality rates to (2) the corresponding rates from the 1955-60 Ultimate Basic Table, Male and Female Lives Combined (*TSA, 1962 Reports*, p. 55).

*Issue-age groups "10-14" through "65-69"*: Crude mortality rates were calculated from the above-mentioned Committee's annual reports on Standard Ordinary issues. Medically examined issues only were used for policy years 1-15, but both medical and nonmedical issues were the basis for policy years 16-25. Since data were not available for policy years 16-25 separately, the ultimate data shown in the Committee's reports were used to calculate crude rates for attained ages corresponding to the required issue-age and policy-year combinations. For each issue-age group separately, the resulting crude rates were then graduated by applying the Whittaker-Henderson second difference A formula, with  $\sigma = 1$  to the ratios of (1) the ungraduated mortality rates to (2) the corresponding rates used to calculate expected deaths in the 1953-58 large-amount study (*TSA, 1959 Reports*, p. 66). Since the 1953-58 large-amount study did not cover policy year 25, the rates for this policy year were extrapolated, using as a basis the graduated 1958-63 large-amount rates for policy years 20-24 and the ungraduated rates of mortality for corresponding attained ages from the ultimate data in the above-mentioned Committee's annual reports on Standard Ordinary issues.

*Issue-age groups "70 and over"*: This age group was calculated by the same method that was used for age groups "10-14" through "65-69," except that the tables used as a basis for the ratios were the 1955-60 Select and Ultimate Basic Tables, Male and Female Lives Combined.

The resulting graduated rates were adjusted slightly to (1) eliminate slight dips in policy year 6 of issue-age group "10-14," in policy years 13-15 of age group "15-19," and in policy year 15 of age group "70 and over," and (2) to produce greater consistency between issue-age groups "65-69" and "70 and over" during policy years 2-5.