IV. MORTALITY UNDER AUTOMATIC EXTENDED TERM INSURANCE

This is an intercompany study of the mortality experienced between 1957 and 1962 anniversaries under Standard Ordinary life insurance policies when placed automatically on extended term at the time of lapse. The study is divided into two parts. Part A is an aggregate study. Part B, to which only some companies were able to contribute, is a double duration study, with the data subdivided both by duration between issue and lapse and by duration after lapse.

PRELIMINARY COMMENTS

Previous Studies

The most recent published study of extended term mortality is described in *TSA*, *1958 Reports*, pages 133–37, representing the experience, individually, of four companies. *TSA*, Volume IX (1957), carries on page 58 a report of the experience of the Travelers Insurance Company under extended term insurance for standard issues of 1931 to 1954. *TASA*, Volume XLVII, carries Mr. November's description of the extended term experience of the Equitable during calendar years 1937 to 1944.

Reasons for Making This Study

At the time of the introduction of the 1958 CSO Table, the question of an appropriate mortality basis for calculating extended term periods arose. The same question had come up earlier at the introduction of the 1941 CSO Table. *TSA*, Volume XI (1959), carries, starting on page 175, a record of some of the discussions. In the absence of intercompany studies of extended term mortality, and because the above-mentioned study by four companies showed considerable differences from one company to another, the Committee on Mortality under Ordinary Insurances and Annuities felt the need for an intercompany study. On May 10, 1961, a preliminary questionnaire was sent to each company which contributed to the construction of the 1958 CSO Table. On November 20, 1962, a further inquiry was directed to each company which indicated it could contribute. Instructions were mailed to the companies on April 1, 1963. The instructions are reproduced in Appendix II.

Scope of Study

This study includes Standard Ordinary issues, and term conversions from Standard Ordinary issues, while on automatic extended term. Sub-

standard and joint life policies were excluded, as were policies issued under various simplified underwriting methods. Reinsured policies were contributed by the issuing company rather than the reinsurer.

The experience was studied from 1957 to 1962 anniversaries. All years of issue were included.

Volume of Data

The volume of data for the two parts of the study is shown in Table 1.

By comparison, the four-company study in *TSA, 1958 Reports*, included 2,757 actual deaths for $6,486,203.

Subdivisions of the Analysis

Contributors were asked to subdivide their data by sex if possible. Also, data were requested both by number of policies and by amount of

TABLE 1

VOLUME OF DATA

Part	Number of Contributing Companies	Exposures		Actual Deaths	
		Number	Amount	Number	Amount
A.....	22	4,740,316	$12,031,686,265	13,709	$43,520,051
B.....	8	2,042,376	5,184,850,970	6,410	19,432,149

insurance. No distinction was made between medical and nonmedical issues.

In order to secure the largest possible quantity of data, the first portion (Part A) of the study is on an aggregate basis. To take advantage of the fact that several companies were able to divide their experience by duration, the second portion (Part B) is analyzed by duration from issue to lapse and by duration after lapse, subdivided for the first fifteen years after lapse by age at lapse and for the sixteenth and later years after lapse by attained age.

To study in still further detail the incidence of deaths immediately after lapse, each contributor to Part B was asked to subdivide extended term deaths occurring in the first year after lapse into monthly intervals; this analysis is labeled Part B—Supplement.

Methods of Collecting and Assembling Data

The instructions (Appendix II) indicated that exposures could be prepared either by individual card formulas or by valuation summary formulas and could be measured between policy anniversaries or between

lapse anniversaries. The policy-year method was preferred for Part A, and twenty of the twenty-two companies were able to use it. The lapse-year method was preferred for Part B, and six of the eight companies were able to comply.

Exposures and deaths occurring during the posting period were excluded. (The period after lapse before company records are adjusted to reflect the fact that a policy has gone on extended term is called the posting period.) Properly, both exposures and deaths should have been included. However, the common practice of not posting lapses immediately makes it impossible for companies to include all the exposure during this short period, even though the deaths can be identified. Consequently, to assure comparability, both exposures and deaths for the posting period were excluded, except for Part B—Supplement, which is concerned with deaths only.

In combining the contributions of the different companies, Part A and Part B were handled differently. Part A being an aggregate study, no distortion was introduced by merging the policy- and lapse-year data. Part B being a select study, a distortion would have been introduced if the policy- and lapse-year contributions had been merged without adjustment. Therefore, for the first fifteen years after lapse, the policy-year contributions to Part B were adjusted to a lapse-year basis. For the sixteenth and later years after lapse in Part B, contributions on the lapse- and policy-year bases were merged without adjustment.

Tabular Mortality

Ratios of actual to tabular mortality were calculated on three bases: 1955–60 Basic Ultimate, 1958 CSO, and 1958 CET.

The selection of appropriate tables of tabular deaths presented several problems which should be kept in mind in using this report. First, there is very little in the way of published material with regard to mortality under extended term; therefore, comparisons had to be made with tables commonly used for premium calculation, valuation, or other practical company use. Second, there is no basic table of nonlapsed intercompany experience which quite corresponds with the period of this study. Third, the 1958 CSO Table contains a mortality margin. Fourth, the 1958 CET Table contains a margin for expenses as well as a further mortality margin over the 1958 CSO Table. Fifth, the 1955–60 Basic Ultimate Table is a truncated table, omitting the first fifteen years after issue; while the extended term data exclude the period between issue and lapse, this period of exclusion does not, of course, coincide with that of the 1955–60 Basic Ultimate Table.

Consideration was given to calculating tabular deaths for Part B by

the 1955–60 Basic Select Table. However, in addition to the force of selection operating at issue, there is a quite different force of selection operating at entry on extended term. Therefore, it was felt that the use of a mortality table representing experience influenced by only one of these two forces could be misleading.

The 1958 CSO and 1958 CET Tables, which were based on the experience of male and female lives combined, were used for female lives without an age setback. In calculating tabular deaths on the 1955–60 Basic Ultimate Table for a combination of male, female, and not-separated data, the sum of the three tabular death components was used, rather than using only the table for combined lives.

RESULTS OF THE INVESTIGATION

Part A Results

Table 2 summarizes the main characteristics of the variation in mortality rates by attained age and by sex.

TABLE 2

PART A EXPERIENCE
BY ATTAINED AGE
NUMBER OF ACTUAL DEATHS AND FIVE-YEAR MORTALITY RATES, BY AMOUNT

Attained Ages	Males		Females		Not Separated		Combined	
	Actual Deaths	Mortality Rate per $1,000	Actual Deaths	Mortality Rate per $1,000	Actual Deaths	Mortality Rate per $1,000	Actual Deaths	Mortality Rate per $1,000
0–4	2	.....	2	.....	68	0.64	72	0.62
5–9	8	.....	4	.....	63	0.21	75	0.23
10–14	8	.....	3	.....	62	0.22	73	0.22
15–19	18	1.24*	5	.....	104	0.49	127	0.54
20–24	17	0.88*	4	.....	260	0.92	281	0.90
25–29	47	1.12*	10	0.39*	383	0.90	440	0.91
30–34	82	1.60	14	0.78*	623	1.28	719	1.31
35–39	123	1.81	27	1.30*	842	1.78	992	1.78
40–44	233	3.23	33	1.51*	1,118	2.92	1,384	2.94
45–49	395	6.90	48	3.28*	1,383	5.24	1,826	5.50
50–54	412	8.86	42	3.21*	1,434	9.05	1,888	8.86
55–59	423	16.90	38	7.52*	1,207	13.51	1,668	14.12
60–64	313	24.54	34	12.27*	1,005	23.57	1,352	23.55
65–69	190	37.37	23	17.52*	797	38.57	1,010	37.99
70–74	108	59.80	21	25.66*	702	68.05	831	65.81
75–79	73	111.99	18	47.48*	517	115.84	608	114.10
80–84	28	133.41*	8	.....	220	149.33	256	147.05
85–89	12	196.05*	1	.....	79	207.32	92	201.41
90–94	1	.....	0	.....	14	222.61*	15	210.41*
All ages	2,493	.....	335	.....	10,881	.....	13,709	.....

* Rates based on 10–49 deaths inclusive. No rates shown for fewer than ten deaths.

For both sexes combined, the lowest mortality rate occurs in attained age group 10–14, and there is a temporary halting of increasing rates of mortality in the attained age group 25–29. Female mortality is markedly lower than male mortality. These findings are consistent with the experience on nonlapsed policies.

For all ages combined, ratios of actual to tabular mortality are shown in Table 3 for the three bases.

TABLE 3

PART A EXPERIENCE
RATIOS OF ACTUAL TO TABULAR MORTALITY—ALL ATTAINED AGES

Tabular Basis	Male	Female	Not Separated	Combined
	By Number			
1955–60 Basic Ultimate	113.9%	103.0%	98.7%	101.3%
1958 CSO	87.7	43.1	66.6	68.7
1958 CET	66.8	32.4	50.0	51.7
	By Amount			
1955–60 Basic Ultimate	119.1%	94.0%	113.9%	114.6%
1958 CSO	91.7	39.8	78.5	79.7
1958 CET	70.0	30.0	59.4	60.4

In comparing the mortality ratios between different standards of tabular mortality, the characteristics of each table as previously described under "Tabular Mortality" should be kept in mind.

The antiselection by amount, which occurs in the male and not-separated data, is common to some extent to almost all the contributors. It should be noted that two companies were able to contribute data by amount only, thus somewhat affecting the comparability of ratios by number with ratios by amount; however, these two companies accounted for less than 3 per cent of the exposure, so the potential distortion is very small.

Female ratios are lower than male ratios even on the 1955–60 Basic Ultimate Table, which reflects a sex difference. In comparing mortality ratios between male, female, and not-separated data, it should be remembered that different sets of contributors are involved, so that the differences in ratios revealed by the tables are a combination of differences due to sex and among companies.

The main characteristics of the variation in mortality ratios by attained age are shown in Table 4.

Except for the very youngest and very oldest attained ages, there is a clear pattern of increasing ratios with age, most marked on the 1958 CET Table and almost as marked on the 1958 CSO Table. On all three tables, there is a temporary reversal, with attained age group 25–29 showing

TABLE 4

PART A EXPERIENCE
BY ATTAINED AGE
NUMBER OF ACTUAL DEATHS AND MORTALITY RATIOS BY AMOUNT
SUM OF MALE, FEMALE, AND NOT SEPARATED

ATTAINED AGES	ACTUAL DEATHS	RATIOS OF ACTUAL TO TABULAR MORTALITY		
		1955–60 Basic Ultimate	1958 CSO	1958 CET
0–4	72	102.3%	40.2%	27.1%
5–9	75	66.9	18.3	11.5
10–14	73	72.5	17.1	10.8
15–19	127	72.4	33.6	23.0
20–24	281	92.2	48.2	34.4
25–29	440	87.1	45.3	32.9
30–34	719	115.1	57.8	43.4
35–39	992	114.4	62.8	48.3
40–44	1,384	112.6	70.7	54.4
45–49	1,826	116.5	86.9	66.8
50–54	1,888	112.0	89.9	69.2
55–59	1,668	111.4	92.1	70.8
60–64	1,352	114.8	98.2	75.5
65–69	1,010	119.0	101.7	78.2
70–74	831	136.3	114.6	88.1
75–79	608	160.1	137.7	105.9
80–84	256	134.2	117.5	90.4
85–89	92	118.4	112.5	86.5
90–94	15	83.8*	81.8*	62.9*
All ages	13,709	114.6%	79.7%	60.4%

* Ratio based on 10–49 deaths inclusive.

lower mortality ratios than attained age group 20–24. This temporary reversal is followed by an abrupt increase for attained age group 30–34. On the 1955-60 Basic Ultimate Table the ratios then stay remarkably level until age 70, while increasing on the other two tables. On all three tables there appears to be a definite peak in the ratios at attained ages 75–79.

Table 5 shows the variation in mortality among companies. For this

purpose, mortality ratios on the basis of only the 1955-60 Basic Ultimate Table have been used.

The company with the lowest mortality ratio had too few deaths to make its substantial departure from the over-all average significant. However, the next-to-lowest ratio by number, 84.9 per cent, is for a substantial contributor and confirms the existence of a considerable spread in the extended term mortality experience of different companies. This contributor did not make the automatic premium loan provision generally available during the period of this study. The company with the highest mortality ratio by number contributed relatively few deaths, but the company with the highest ratio by amounts, 158.3 per cent, contributed a substantial number, again confirming a true variation among companies.

TABLE 5

PART A EXPERIENCE
VARIATION AMONG COMPANIES
SUM OF MALE, FEMALE, AND NOT SEPARATED
ALL ATTAINED AGES
MORTALITY RATIOS TO 1955-60
BASIC ULTIMATE TABLE

Company	By Number	By Amount
A	147.1%*	150.4%*
B	118.2	124.2
C	123.2	124.6
D	33.7*	45.3*
E	119.7	79.5
F	122.7	115.9
G	101.1	117.6
H	99.1	113.4
I	N/A	114.6†
J	84.9	87.1
K	98.4*	70.2*
L	91.9	108.3
M	N/A	146.5
N	113.6*	133.6*
O	132.1	141.8
P	115.0	125.7
Q	127.7	158.3
R	122.0	141.9
S	99.3	111.7
T	101.2	111.9
U	112.0	123.6
V	97.9	105.0
All companies	101.3%	114.6%

* Ratios based on 10-49 deaths inclusive.

† Number of deaths not known; ratio based on $46,708 of claims.

The company with the second highest ratio by number, 132.1 per cent, while contributing a substantial quantity of data, found it impossible to exclude issues prior to 1939, a period when its automatic nonforfeiture option was paid-up insurance. The inclusion of some elected rather than automatic extended term may have contributed to its relatively high mortality ratios. Its experience by amount was also high, 141.8 per cent.

Part B Results

Only eight contributors were able to make the separations necessary for Part B. Because of differences among contributors, the mortality ratios of Part B differ somewhat from those of Part A, as shown by Table 6.

TABLE 6

COMPARISON OF PART A AND PART B EXPERIENCES
ALL DURATIONS AND AGES COMBINED—SUM OF MALE, FEMALE, AND NOT SEPARATED

TABULAR BASIS	PART A RATIOS		PART B RATIOS	
	By Number	By Amount	By Number	By Amount
1955–60 Basic Ultimate....	101.3%	114.6%	96.3%	105.9%
1958 CSO.....	68.7	79.7	67.7	75.9
1958 CET.....	51.7	60.4	51.1	57.7

Because there are only 6,410 deaths in Part B, it was impossible to take full advantage of the detailed breakdowns supplied by each contributor and still retain enough data to produce statistically significant results. Consequently, combinations of the various duration, sex, and age cells had to be made. However, the combination of cells results in mortality rates which reflect the mix as well as the death rate itself. Since the use of a table of tabular deaths, even if not completely appropriate, helps compensate for the distortion introduced by combining cells, Part B results are not shown as mortality rates but only as ratios of actual to tabular deaths.

Table 7 summarizes the variation in mortality ratios by duration at and after lapse.

Since an ultimate table has been used as the basis of tabular claims for Table 7, the ratios that are the most indicative of the relative mortality under extended term insurance and under nonlapsed insurance are those for cells where the sum of duration at lapse and duration after lapse exceeds fifteen years. The ratios for cells where this sum is less than fifteen

TABLE 7

PART B EXPERIENCE
BY DURATION AT LAPSE AND BY DURATION AFTER LAPSE
NUMBER OF ACTUAL DEATHS AND MORTALITY RATIOS ON 1955-60 BASIC ULTIMATE TABLE
BY AMOUNT, ALL AGES—SUM OF MALE, FEMALE, AND NOT SEPARATED

DURATIONS AT LAPSE	DURATIONS AFTER LAPSE											
	1-2		3-5		6-10		11-15		16 and Up		All	
	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T
1-2.....	196	75.0%	43	54.7%*	20	103.6%*	5	.....	1	.....	265	73.1%
3-5.....	398	95.9	271	79.3	181	91.1	46	67.2%*	6	.....	902	88.4
6-10.....	328	108.2	289	94.0	340	83.7	131	95.4	24	93.4%*	1,112	95.7
11-15.....	397	127.9	450	133.6	368	107.9	125	99.1	48	93.5*	1,388	120.9
16-20.....	417	129.6	384	127.4	243	99.8	79	76.1	60	125.9	1,183	117.2
21 and up...	589	136.8	516	175.5	307	123.6	119	130.5	29	79.1*	1,560	142.2
All.....	2,325	107.1%	1,953	111.8%	1,459	99.2%	505	98.1%	168	96.2%	6,410	105.9%

* Ratios based on 10-49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE 8

PART B EXPERIENCE
BY DURATION AT LAPSE, AND BY AGE AT LAPSE FOR FIRST FIFTEEN YEARS AFTER LAPSE
NUMBER OF ACTUAL DEATHS AND MORTALITY RATIOS ON 1955–60 BASIC ULTIMATE TABLE
BY AMOUNT—SUM OF MALE, FEMALE, AND NOT SEPARATED

	Durations at Lapse												All Durations at Lapse	
	1–2		3–5		6–10		11–15		16–20		21 and Up			
	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T
First 15 years after lapse:														
Ages at Lapse														
0–14	14	24.7%*	47	38.5%*	30	69.9%*	7	.....	0	.....	0	.....	98	40.2%
15–24	31	56.5*	97	67.7	47	61.4*	26	123.5%*	7	.....	0	.....	208	65.6
25–34	84	89.6	209	99.7	166	101.2	151	118.0	58	107.3%	14	157.8%*	682	99.9
35–44	76	83.5	266	101.7	318	107.4	364	115.0	273	139.2	129	168.5	1,426	108.4
45–54	46	70.1*	194	86.9	356	93.1	453	123.1	410	129.8	362	121.0	1,821	104.7
55–64	8	.....	71	74.7	137	92.6	247	121.7	253	97.9	429	131.4	1,145	107.8
65–74	4	.....	10	24.0*	26	58.6*	77	146.4	102	111.0	411	173.3	630	140.5
75–84	1	.....	2	.....	8	.....	15	135.3*	20	55.2*	170	162.2	216	140.9
85–99	0	.....	0	.....	0	.....	0	.....	0	.....	16	79.8*	16	73.6*
All Ages	264	73.2%	896	88.7%	1,088	95.8%	1,340	122.0%	1,123	116.6%	1,531	144.2%	6,242	106.1%
16th and later years after lapse:														
All Ages	1	.....	6	.....	24	93.4%*	48	93.5%*	60	125.9%	29	79.1%*	168	96.2%
Total	265	73.1%	902	88.4%	1,112	95.7%	1,388	120.9%	1,183	117.2%	1,560	142.2%	6,410	105.9%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE 9

PART B EXPERIENCE

FIRST FIFTEEN YEARS AFTER LAPSE—BY AGE AT LAPSE AND BY DURATION AFTER LAPSE

NUMBER OF ACTUAL DEATHS AND MORTALITY RATIOS ON 1955-60 BASIC ULTIMATE TABLE

BY AMOUNT, ALL DURATIONS AT LAPSE COMBINED—SUM OF MALE, FEMALE, AND NOT SEPARATED

AGES AT LAPSE	DURATIONS AFTER LAPSE									
	1–2		3–5		6–10		11–15		1–15	
	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T	Actual Deaths	Ratio A/T
0–14	34	26.7%*	27	49.4%*	31	70.3%*	6	.....	98	40.2%
15–24	92	72.0	65	65.2	44	50.9*	7	.....	208	65.6
25–34	252	104.6	187	96.4	163	92.5	80	99.4%	682	99.9
35–44	419	102.1	417	116.1	423	113.5	167	94.7	1,426	108.4
45–54	644	117.6	588	101.6	434	92.6	155	93.4	1,821	104.7
55–64	469	112.5	365	108.3	234	94.0	77	121.1	1,145	107.8
65–74	283	114.5	227	186.3	107	131.4	13	139.2*	630	140.5
75–84	127	147.1	66	149.4	23	95.3*	0	.....	216	140.9
85–99	5	.....	11	180.7*	0	.....	0	.....	16	73.6
All ages	2,325	107.1%	1,953	111.8%	1,459	99.2%	505	98.1%	6,242	106.1%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

years are not as significant from this point of view, since the tabular claims are not representative of mortality within the select period.

With this in mind, it is noteworthy that the ratios for the first five years after lapse, where lapse took place more than ten years after issue, are significantly in excess of 100 per cent. Also, the mortality under extended term insurance seems to get down to the level of the mortality under nonlapsed insurance about ten years after the date of lapse.

Table 8 summarizes the variation in mortality ratios by duration at lapse and, for the first fifteen years after lapse, by age at lapse.

For each age at lapse cell, the ratios generally increase with increasing duration at lapse except for some leveling or reversal when lapse occurs between sixteen and twenty years after issue. For all durations at lapse combined, the mortality ratios increase with increasing age at lapse except for a plateau in the age at lapse range from 35–64. In interpreting these ratios, the fact that the 1955–60 Basic Ultimate Table is a truncated table must be kept in mind, as previously mentioned.

Table 9 summarizes the variation in mortality ratios for the first fifteen years after lapse, by duration after lapse and age at lapse.

In each duration-after-lapse grouping, the mortality ratios in Table 9 at first increase with age at lapse, then flatten out or decrease slightly at the central ages, and finally resume their increase at the highest ages.

Table 10 shows the variation in ratios by attained ages for the sixteenth and later years after lapse.

In each age grouping, the ratio by amount is higher than the ratio by number.

Table 11 summarizes the extent of the difference between the experience by number and amount, and the difference in experience between sexes.

There is a definite, but not large, antiselection by amount among males and a reverse effect among females. The markedly favorable mortality among females as compared with males shows up in almost every subdivision of this experience. The difference by sex is more marked than among nonlapsed policies, measured by the 1955–60 Basic Ultimate Table for tabular deaths.

Mortality ratios for Part B computed on the 1958 CSO and 1958 CET Tables are shown in Appendix I, in Tables F, G, and H, for some of the above analyses and for individual durations after lapse. Attention is again drawn to the previously mentioned characteristics of these two tables which affect ratios of actual to tabular computed thereon.

Table 12 shows the variation, by duration and age, among companies for Part B.

Part of the mortality variation among companies is due to differences in the distribution of their business. For example, Table 13 exhibits the difference in distribution of exposure between Company J and Company P for various durations at lapse. Company J has a preponderance of data at the early durations where ratios are low, and Company P has a preponderance at the longer durations where ratios are high.

This difference in distribution of exposure causes the aggregate mortality ratios to vary more than the ratios for individual cells. However,

TABLE 10

PART B EXPERIENCE
VARIATION BY ATTAINED AGE—SIXTEENTH AND LATER YEARS AFTER LAPSE
NUMBER OF ACTUAL DEATHS AND MORTALITY RATIOS ON 1955–60–BASIC ULTIMATE TABLE
SUM OF MALE, FEMALE, AND NOT SEPARATED—ALL DURATIONS AT LAPSE

ATTAINED AGES	ACTUAL DEATHS	MORTALITY RATIOS	
		By Number	By Amount
0–39	0	.....	.....
40–49	18	79.8%*	94.6%*
50–59	47	71.5*	96.9*
60–69	65	71.6	100.7
70–79	38	89.7*	100.6*
80 and up	0	.....	.....
All attained ages.	168	73.1%	96.2%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

definite variations between companies persist even when the data are subdivided into cells.

Part B—Supplement Results

In this part of the study, unlike the earlier parts, extended term deaths occurring during the posting period were included. Table 14 shows how the deaths were distributed.

If all deaths during the grace period had been counted as extended term deaths, the total deaths during the first month would have been substantially increased.

The distribution of extended term exposures during the first twelve months after lapse could not be studied in a similar way and would depend on company practice. While exposures would presumably be concentrated

TABLE 11

PART B EXPERIENCE

VARIATION BY SEX—BY NUMBER AND BY AMOUNT

MORTALITY RATIOS ON 1955–60 BASIC ULTIMATE TABLE

	MALE			FEMALE			NOT SEPARATED		
	Actual Deaths	By Number	By Amount	Actual Deaths	By Number	By Amount	Actual Deaths	By Number	By Amount
By Duration at Lapse:									
1–2	61	58.6%	79.2%	18	60.0%	90.8%*	186	51.1%	69.1%
3–5	446	92.7	97.4	71	75.7	71.3	385	62.8	77.9
6–10	594	96.4	108.4	68	69.5	56.4	450	72.0	80.3
11–15	690	119.2	138.8	80	96.1	92.4	618	96.0	101.1
16–20	561	119.8	121.9	85	124.2	142.7	537	101.9	109.3
21 and up	433	130.5	147.7	62	132.9	89.1	1,065	120.5	142.2
All durations	2,785	107.9%	114.3%	384	91.4%	84.1%	3,241	88.6%	99.2%
By Duration after Lapse:									
1–2	956	117.6%	119.3%	129	104.3%	88.7%	1,240	96.6%	96.4%
3–5	868	111.0	119.8	125	97.5	88.6	960	92.9	104.6
6–10	694	98.0	100.8	98	83.7	90.8	667	79.2	98.2
11–15	230	100.0	99.5	26	59.4*	51.7*	249	77.2	100.8
16 and up	37	78.7*	124.0*	6	.....	.....	125	71.2	93.1
All durations	2,785	107.9%	114.3%	384	91.4%	84.1%	3,241	88.6%	99.2%
By Age at Lapse:†									
0–14	37	85.9%*	82.7%*	21	94.1%*	112.0%*	40	18.3%*	22.0%*
15–24	81	77.3	74.6	23	63.4*	53.4*	104	54.5	61.0
25–34	284	105.3	121.9	56	69.8	78.4	342	78.6	84.2
35–44	691	111.6	116.4	92	93.7	95.5	643	94.6	99.4
45–54	921	112.0	111.7	82	96.6	87.8	818	96.4	96.4
55–64	513	109.4	114.6	55	127.5	95.7	577	92.6	101.4
65–74	181	107.3	129.1	31	108.1*	93.1*	418	124.3	150.5
75–84	37	114.0*	123.9*	17	114.9*	62.6*	162	123.9	154.3
85 and up	3	.....	.....	1	.....	.....	12	64.3*	76.4*
All ages	2,748	108.5%	114.2%	378	91.6%	86.2%	3,116	89.5%	99.4%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

† First fifteen years after lapse only.

TABLE 12

PART B EXPERIENCE
VARIATION AMONG COMPANIES
MORTALITY RATIOS BY 1955-60 BASIC ULTIMATE TABLE
BY AMOUNT—SUM OF MALE, FEMALE, AND NOT SEPARATED

	Company E	Company G	Company J	Company L	Company N	Company P	Company T	Company U	All Companies
By Duration at Lapse:									
1–2	.....	75.6%	67.0%	83.3%*	.....	.....	112.2%*	.....	73.1%
3–5	.....	94.4	77.2	81.0*	.....	82.5%	105.0	149.2%*	88.4
6–10	.....	124.2	81.2	77.2*	.....	92.0	93.3	97.7	95.7
11–15	78.3%*	147.9	102.0	97.9	.....	134.4	133.8	123.8	120.9
16–20	245.7*	124.1	125.0	77.1	.....	117.8	73.1	160.0	117.2
21 and up	.....	.....	75.2	171.7	.....	153.8	106.9	100.0*	142.2
All durations	78.9%	108.7%	85.4%	107.1%	128.3%*	124.5%	104.2%	124.7%	105.9%
By Duration after Lapse:									
1–2	77.7%*	132.9%	93.5%	85.2%	275.7%*	110.7%	112.8%	127.3%	107.1%
3–5	129.7*	98.7	81.8	123.1	.....	164.3	92.0	118.0	111.8
6–10	.....	87.2	73.9	124.7	.....	116.2	102.6	132.7	99.2
11–15	.....	69.1*	65.4	107.5*	.....	109.7	112.4*	95.5*	98.1
16 and up	.....	.....	.....	88.5*	.....	99.5	77.1*	.....	96.2
All durations	78.9%	108.7%	85.4%	107.1%	128.3%*	124.5%	104.2%	124.7%	105.9%
By Age at Lapse:†									
0–14	.....	91.0%*	20.6%*	.....	.....	95.7%*	.....	.....	40.2%
15–24	.....	74.1	59.1	87.9%*	.....	68.0*	66.9%*	.....	65.6
25–34	.....	114.3	82.3	95.4*	.....	108.7	132.4*	159.5%*	99.9
35–44	.....	120.6	97.2	109.3	.....	115.3	85.7	130.2	108.4
45–54	74.5%*	99.0	98.4	73.0	.....	118.1	116.5	135.8	104.7
55–64	92.5*	111.9	73.9	124.5	.....	128.7	90.8	103.0	107.8
65–74	118.2*	161.4*	96.8	131.3	.....	178.0	136.3*	84.3*	140.5
75–84	.....	.....	95.8*	196.5*	.....	150.6	114.3*	.....	140.9
85 and up	.....	.....	.....	.....	.....	85.9*	.....	.....	73.6*
All ages	77.8%	108.7%	85.5%	107.7%	129.5%*	126.2%	105.2%	124.1%	106.1%

* Ratios based on 10–49 deaths. No ratios shown for fewer than ten deaths.

† First fifteen years after lapse only.

in the early months after lapse, no precise information is available on this point and therefore no conclusions can be drawn about the progression of mortality rates during the early months after lapse.

SUPPLEMENTARY COMMENTS

Effect of Different Accounting Practices

The accounting treatment of lapsed policies differs among companies. Exposures directly after lapse are understated because of company posting periods; differences among company posting periods create differences in the understatements. The posting period is the period after lapse before

TABLE 13

PART B EXPERIENCE
VARIATION IN AMOUNT EXPOSED BY DURATION AT LAPSE
ALL AGES AT LAPSE—ALL DURATIONS AFTER LAPSE—SUM OF MALE, FEMALE, AND NOT SEPARATED

Durations at Lapse	Distribution of Exposure	
	Company J	Company P
1–2	31%	2%
3–5	34	38
6–10	18	22
11–15	11	15
16–20	4	12
21 and up	2	11
All durations	100%	100%

TABLE 14

PART B—SUPPLEMENT
NUMBER OF EXTENDED TERM DEATHS DURING FIRST YEAR AFTER LAPSE, INCLUDING POSTING PERIOD

Month after Lapse	Deaths	Month after Lapse	Deaths
1	80	7	174
2	443	8	158
3	359	9	124
4	268	10	142
5	221	11	140
6	181	12	126

company records are adjusted to reflect the fact that a policy has gone on extended term. This period exists because of the large number of payments received during the days of grace and shortly thereafter, which would cause a tremendous amount of bookkeeping effort if posted as lapses and then revived as reinstatements.

Also, in many cases of early lapse the period of extended term is so short that it expires before the necessary bookkeeping entry could be made. Posting periods reported by contributors varied from three to six months, while one contributor reported that electronic accounting had made it possible to eliminate the posting period for the most recent years of exposure.

Exposures are further affected by differences among companies in identifying as extended term those policies which lapse to automatic extended term but are quickly changed to an alternative nonforfeiture option.

Deaths occurring after the end of the grace period but before the end of the posting period would be identified as extended term deaths. There are differences among companies in the treatment of deaths occurring during the grace period.

Since a persistent understatement of exposures accompanied by a full reporting of deaths would produce misleadingly high mortality rates, each contributor was asked to ascertain its average posting period and then to exclude both deaths and exposures during this period. This removed a major potential distortion and some nonhomogeneity. To the extent that extended term mortality rates during the posting period may be different from rates after the posting period, exclusion of deaths and exposures may not completely remove the distortion. Further, differences between the posting periods of different companies introduce a nonhomogeneity.

Automatic Premium Loan

The availability of automatic premium loan reduces the use of the extended term option. Some contributors reported the introduction of automatic premium loan in different years ranging back to 1900. Among those who do make automatic premium loan available, there are wide differences in the extent to which it is encouraged and utilized.

Also, some contributors provide in their automatic premium loan provision that after a certain number of automatic premium loan payments, ranging from three months to two years, the policy automatically goes on extended term. Other contributors permit automatic premium loan to operate until the cash value is exhausted.

The differences in the nature of contributors' automatic premium loan

features, their availability, and their utilization undoubtedly contribute to differences in contributors' extended term experience. Only two contributors reported that they did not make automatic premium loan generally available during the period covered by this study. For one of those companies, with a substantial exposure, mortality ratios were markedly and significantly lower than those for all companies combined; for the other company with a smaller exposure, ratios were very little different from those for all companies combined.

The fact that the automatic premium loan provision is automatic upon nonpayment of premium in some companies eliminated several potential contributors to this study. However the limitation of the study to automatic extended term was felt to be necessary because presumably non-automatic extended term would show different mortality rates.

Effect of Different Exposure Intervals

As mentioned earlier no distortion was introduced into Part A by merging directly the policy- and lapse-year data since the only pertinent subdivision of the Part A data is by attained age.

Part B, however, analyzes experience by duration after lapse. For lapses which do not occur on policy anniversaries, yearly intervals after lapse will overlap rather than coincide with yearly intervals after issue. The premium distribution by mode of payment of one contributor indicated that, on the average, lapse can be considered as occurring one quarter of a year after the beginning of the policy year. Therefore, the policy-year contributions to this part were adjusted to a lapse-year basis by transferring one-quarter of the second year after lapse deaths and exposures to the first year after lapse; one-quarter of the third year after lapse deaths and exposures to the second year after lapse; and so on. Although the fourteenth-year deaths and exposures were increased by one-quarter of the fifteenth-year deaths and exposures, the fifteenth-year deaths and exposures were used unadjusted, since it was impossible to extract the corresponding quarter of the sixteenth-year data from the ultimate experience. These adjustments were made separately for each sex, age at lapse, and duration at lapse cell for both number and amount. Expected deaths were calculated after the exposures were adjusted. The lapse and adjusted policy-year contributions were then merged.

This procedure leaves in the data for the sixteenth and later years after lapse a small amount of policy-year data representing one-quarter of the sixteenth policy year after lapse; it was felt by the Committee that the work of extracting this, by estimate based on the fifteenth year and reassembly on an attained age basis, was not worthwhile. Therefore the

Part B contributions on the lapse- and policy-year bases for durations after lapse sixteen and greater were merged without adjustment.

Automatic Policyholder Notification

Some companies have a practice of sending policyholders notification when extended term coverage expires. Since such a practice might have the effect of alerting beneficiaries to benefits of which they would otherwise have been ignorant and thus increasing mortality rates, each contributor was asked whether it had such a practice.

Of the twenty-two contributors, five had such a practice: two had higher mortality than all companies combined, one had average, one had lower, and one had mortality ratios higher by number but lower by amount. Because of this divergence, it is impossible to state whether or not automatic policyholder notification is a significant factor in differences between company mortality ratios.

Contributors to This and Other Studies

All companies which contributed to the development of the basic table underlying the 1958 CSO Table or to the annual Report on Mortality under Standard Ordinary Issues were invited to contribute. However, some found that their extended term records were not in a form which would enable them to contribute to this study; some found themselves unable to make certain important exclusions, such as nonautomatic extended term; and some had automatic premium loan rather than extended term as their automatic option. Therefore, the list of contributors to this study does not coincide with that of other intercompany studies conducted by the Mortality Committee.

The Committee would like to thank not only the contributing companies but the many other companies which replied to the initial questionnaire. Some of these companies did considerable work for the Committee in preparing material which was finally excluded in order to maintain the homogeneity of the study.

APPENDIX I

TABLE A

CONTRIBUTING COMPANIES
PROPORTION OF TOTAL EXPOSURES CONTRIBUTED BY EACH

Company	Part A	Part B	Part B—Supplement*
Acacia Mutual	0.2%	.....	.....
Aetna	0.3	.....	.....
Bankers Life	1.5	.....	.....
Colonial Life	0.3	.....	.....
Connecticut General	0.3	0.7%	0.7%
Equitable of Iowa	0.6	.....	.....
Equitable, N.Y.	10.8	21.7	16.8
John Hancock	4.7	.....	.....
Life of Georgia	0.3	.....	.....
Metropolitan	19.9	42.5	34.9
Midland Mutual	0.1	.....	.....
Mutual Benefit	2.7	6.2	7.9
Mutual Life, N.Y.	2.6	.....	.....
National Guardian	0.2	0.4	0.5
New England Life	0.8	.....	.....
New York Life	8.0	18.6	32.3
Penn Mutual	1.4	.....	.....
Provident Mutual	0.9	.....	.....
Prudential	38.2	.....	.....
Sun Life, Canada	2.3	5.8	4.2
Travelers	1.8	4.1	2.7
Western and Southern	2.1	.....	.....
Total	100.0%	100.0%	100.0%

* Based on number of deaths rather than amount exposed.

TABLE B

PART A EXPERIENCE

MALE LIVES—BY ATTAINED AGE

ATTAINED AGES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATE/1,000		MORTALITY RATIOS					
							1955–60 Male Basic Ultimate		1958 CSO		1958 CET	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
0– 4	4,902	$ 7,434,027	2	$ 2,217	.....	.....	.....	.....	.....	.....	.....	.....
5– 9	19,328	29,179,817	8	13,638	.....	.....	.....	.....	.....	.....	.....	.....
10–14	20,573	28,941,718	8	7,381	.....	.....	.....	.....	.....	.....	.....	.....
15–19	15,902	26,504,907	18	32,817	1.13*	1.24*	112.9%*	121.4%*	70.6%*	76.9%*	48.0%*	52.4%*
20–24	23,389	82,311,225	17	72,068	0.73*	0.88*	51.0*	61.4*	38.9*	46.8*	27.8*	33.4*
25–29	42,437	155,145,819	47	174,012	1.11*	1.12*	93.3*	94.5*	55.2*	56.0*	40.2*	40.7*
30–34	62,342	233,460,272	82	356,602	1.32	1.60	103.9	126.1	58.1	70.5	43.6	53.0
35–39	70,868	245,941,113	123	443,929	1.74	1.81	106.3	110.8	61.0	63.6	46.9	48.9
40–44	71,897	229,940,127	233	743,761	3.24	3.23	119.2	119.4	77.3	77.3	59.4	59.4
45–49	63,801	191,745,996	395	1,323,816	6.19	6.90	122.2	136.3	97.3	108.5	74.8	83.4
50–54	45,169	135,654,130	412	1,202,043	9.12	8.86	110.0	106.8	92.3	89.5	71.0	68.9
55–59	26,182	80,402,523	423	1,359,049	16.16	16.90	123.7	129.0	105.6	110.2	81.3	84.8
60–64	13,478	44,464,930	313	1,091,269	23.22	24.54	109.6	115.6	96.9	102.2	74.5	78.6
65–69	5,293	16,902,983	190	631,665	35.90	37.37	111.2	115.8	96.7	100.8	74.4	77.5
70–74	2,058	6,042,153	108	361,350	52.48	59.80	107.5	122.9	92.0	105.1	70.8	80.8
75–79	658	1,619,822	73	181,408	110.94	111.99	152.8	153.4	133.5	134.1	102.7	103.2
80–84	221	507,304	28	67,679	126.70*	133.41*	114.1*	119.4*	101.1*	105.9*	77.7*	81.4*
85–89	63	111,826	12	21,923	190.48*	196.05*	108.8*	110.3*	105.6*	107.1*	81.1*	82.4*
90–94	10	14,292	1	1,040	.....	.....	.....	.....	.....	.....	.....	.....
All ages	488,571	$1,506,324,984	2,493	$8,087,667	5.10	5.37	113.9%	119.1%	87.7%	91.7%	66.8%	70.9%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE C

PART A EXPERIENCE
FEMALE LIVES—BY ATTAINED AGE

ATTAINED AGES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATE/1,000		MORTALITY RATIOS					
							1955–60 Female Basic Ultimate		1958 CSO		1958 CET	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
0– 4	4,062	$ 5,796,355	2	$ 2,506								
5– 9	15,934	22,573,079	4	6,746								
10–14	15,890	19,855,258	3	3,091								
15–19	11,911	15,324,798	5	8,237								
20–24	14,279	23,961,829	4	5,961								
25–29	21,634	37,266,875	10	14,661	0.46*	0.39*	66.4%*	56.7%*	23.1%*	19.7%*	16.8%*	14.3%*
30–34	23,226	37,758,980	14	29,631	0.60*	0.78*	64.2*	83.6*	26.7*	34.7*	20.0*	26.1*
35–39	24,881	37,774,719	27	49,192	1.09*	1.30*	85.4*	102.6*	38.2*	45.9*	29.4*	35.3*
40–44	21,767	32,300,182	33	48,620	1.52*	1.51*	86.9*	86.2*	36.4*	36.2*	28.0*	27.8*
45–49	16,000	24,821,259	48	81,294	3.00*	3.28*	105.2*	114.5*	47.4*	51.6*	36.4*	39.7*
50–54	9,956	16,232,178	42	52,159	4.22*	3.21*	95.3*	72.2*	42.9*	32.5*	33.0*	25.0*
55–59	5,069	8,530,683	38	64,151	7.50*	7.52*	113.9*	114.1*	49.0*	49.2*	37.8*	37.8*
60–64	2,369	4,079,168	34	50,063	14.35*	12.27*	145.3*	124.7*	59.8*	51.4*	46.0*	39.5*
65–69	1,018	1,574,459	23	27,586	22.59*	17.52*	135.5*	103.4*	60.2*	46.2*	46.3*	35.6*
70–74	460	1,163,705	21	29,863	45.65*	25.66*	142.5*	75.2*	79.6*	43.0*	61.3*	33.1*
75–79	229	346,849	18	16,468	78.60*	47.48*	160.4*	97.0*	93.7*	56.6*	72.0*	43.5*
80–84	73	77,202	8	7,372								
85–89	11	34,726	1	1,090								
90–94	2	992	0	0								
All ages	188,771	$289,473,296	335	$498,691	1.77	1.72	103.0%	94.0%	43.1%	39.8%	32.4%	30.0%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE D

PART A EXPERIENCE
DATA NOT SEPARATED BY SEX—BY ATTAINED AGE

ATTAINED AGES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATE/1,000		MORTALITY RATIOS					
							1955–60 Male and Female Basic Ultimate		1958 CSO		1958 CET	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
0– 4	126,999	$ 199,499,336	68	$ 127,572	0.54	0.64	88.5%	104.2%	35.0%	41.2%	23.5%	27.8%
5– 9	288,991	371,801,779	63	78,261	0.22	0.21	63.0	60.1	17.2	16.6	10.8	10.4
10–14	328,773	397,600,594	62	87,335	0.19	0.22	62.6	72.9	14.7	17.1	9.3	10.8
15–19	232,884	369,653,015	104	182,479	0.45	0.49	61.3	66.1	28.0	30.5	19.0	20.8
20–24	353,568	1,074,817,100	260	986,046	0.74	0.92	77.2	96.3	39.4	49.1	28.1	35.1
25–29	521,451	1,543,415,732	383	1,383,062	0.73	0.90	71.1	86.8	36.7	44.8	26.7	32.6
30–34	595,723	1,704,901,664	623	2,181,845	1.05	1.28	93.2	114.0	46.3	56.7	34.8	42.5
35–39	543,718	1,563,604,773	842	2,788,900	1.55	1.78	100.1	115.3	54.8	63.1	42.1	48.5
40–44	413,465	1,171,203,550	1,118	3,425,249	2.70	2.92	103.3	111.7	65.1	70.4	50.1	54.1
45–49	290,058	810,632,950	1,383	4,244,915	4.77	5.24	101.5	111.5	75.4	82.9	58.0	63.7
50–54	117,088	484,870,606	1,434	4,388,843	8.10	9.05	102.2	114.3	82.2	92.0	63.2	70.8
55–59	96,969	273,201,694	1,207	3,690,808	12.45	13.51	97.9	106.0	81.4	88.1	62.6	67.8
60–64	47,951	139,003,162	1,005	3,276,114	20.96	23.57	101.9	114.4	87.5	98.3	67.3	75.6
65–69	24,857	73,432,282	797	2,831,942	32.06	38.57	99.5	119.9	85.5	103.1	65.8	79.3
70–74	12,445	36,974,352	702	2,516,179	56.41	68.05	115.9	139.9	98.1	118.4	75.5	91.1
75–79	5,437	15,213,105	517	1,762,268	95.09	115.84	131.3	161.8	113.7	139.9	87.5	107.6
80–84	2,056	4,782,110	220	714,100	107.00	149.33	97.1	135.9	85.4	119.4	65.6	91.9
85–89	478	1,100,099	79	228,078	165.27	207.32	97.9	121.3	93.3	115.9	71.8	89.2
90–94	65	178,325	14	39,697	215.38*	222.61*	87.0*	88.3*	85.2*	86.1*	65.5*	66.2*
95–99	1	1,157	0	0	.....	.....	.....	.....	.....	.....	.....	.....
All ages	4,062,974	$10,235,887,985	10,881	$34,933,693	26.8	3.41	98.7%	113.9%	66.6%	78.5%	50.0%	59.4%

* Ratios based on 10-49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE E

PART A EXPERIENCE
SUM OF MALES, FEMALES, AND NOT SEPARATED
BY ATTAINED AGE

ATTAINED AGES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATE/1,000		MORTALITY RATIOS					
							1955–60 Male and Female Basic Ultimate		1958 CSO		1958 CET	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
0– 4	135,960	$ 212,730,318	72	$ 132,295	0.53	0.62	88.3%	102.3%	34.7%	40.2%	23.3%	27.1%
5– 9	324,253	423,554,675	75	98,645	0.23	0.23	67.2	66.9	18.3	18.3	11.5	11.5
10–14	365,236	446,397,570	73	97,807	0.20	0.22	66.3	72.5	15.6	17.1	09.8	10.8
15–19	260,697	411,482,720	127	223,533	0.49	0.54	66.8	72.4	30.5	33.6	20.8	23.0
20–24	391,236	1,181,090,154	281	1,064,075	0.72	0.90	74.5	92.2	38.5	48.2	27.5	34.4
25–29	585,522	1,735,828,426	440	1,571,735	0.75	0.91	72.8	87.1	37.5	45.3	27.3	32.9
30–34	681,291	1,966,120,916	719	2,568,078	1.06	1.31	93.5	115.1	46.7	57.8	35.1	43.4
35–39	639,467	1,847,320,605	992	3,282,021	1.55	1.78	100.3	114.4	54.8	62.8	42.2	48.3
40–44	507,129	1,433,443,859	1,384	4,217,630	2.73	2.94	105.2	112.6	65.6	70.7	50.4	54.4
45–49	369,859	1,027,200,205	1,826	5,650,025	4.94	5.50	105.5	116.5	78.0	86.9	60.0	66.8
50–54	232,213	636,756,914	1,888	5,643,045	8.13	8.86	103.6	112.0	82.5	89.9	63.4	69.2
55–59	128,220	362,134,900	1,668	5,114,008	13.01	14.12	103.7	111.4	85.1	92.1	65.4	70.8
60–64	63,798	187,547,260	1,352	4,417,446	21.19	23.55	104.3	114.8	88.4	98.2	68.0	75.5
65–69	31,168	91,909,724	1,010	3,491,193	32.41	37.99	102.1	119.0	86.6	101.7	66.6	78.2
70–74	14,963	44,180,210	831	2,907,392	55.54	65.81	115.3	136.3	96.7	114.6	74.4	88.1
75–79	6,324	17,179,776	608	1,960,144	96.14	114.10	134.3	160.1	115.0	137.7	88.5	105.9
80–84	2,350	5,366,616	256	789,151	108.94	147.05	99.7	134.2	87.0	117.5	66.9	90.4
85–89	552	1,246,651	92	251,091	166.67	201.41	98.8	118.4	93.9	112.5	72.2	86.5
90–94	77	193,609	15	40,737	194.81*	210.41*	79.1*	83.8*	77.3*	81.8*	59.5*	62.9*
95–99	1	1,157	0	0	.....	.....	.....	.....	.....	.....	.....	.....
All ages	4,740,316	$12,031,686,265	13,709	$43,520,051	2.89	3.62	101.3%	114.6%	68.7%	79.7%	51.7%	60.4%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE F

PART B EXPERIENCE

VARIATION BY DURATION AT LAPSE AND, FOR FIRST FIFTEEN YEARS AFTER LAPSE, BY AGE AT LAPSE

MORTALITY RATIOS ON 1958 CSO AND 1958 CET TABLES

BY AMOUNT—SUM OF MALE, FEMALE, AND NOT SEPARATED DATA

	DURATIONS AT LAPSE											
	1-2			3-5			6-10			11-15		
	Actual Deaths	Mortality Ratios		Actual Deaths	Mortality Ratios		Actual Deaths	Mortality Ratios		Actual Deaths	Mortality Ratios	
		1958 CSO	1958 CET		1958 CSO	1958 CET		1958 CSO	1958 CET		1958 CSO	1958 CET
First 15 years after lapse:												
Ages at Lapse												
0-14	14	18.0%*	11.6%*	47	23.7%*	15.3%*	30	30.6%*	19.7%*	7	.....	.....
15-24	31	29.6*	21.1*	97	37.4	26.8	47	33.7*	24.4*	26	66.6%*	47.9%*
25-34	84	46.7	34.7	209	53.2	39.9	166	54.6	41.3	151	63.7	48.3
35-44	76	50.4	38.8	266	65.5	50.4	318	72.6	55.9	364	78.4	60.3
45-54	46	54.8*	42.1*	194	68.8	52.9	356	75.1	57.8	453	99.2	76.2
55-64	8	.....	.....	71	61.9	47.6	137	78.1	60.1	247	102.8	79.0
65-74	4	.....	.....	10	20.3*	15.6*	26	48.6*	37.4*	77	123.3	94.8
75-84	1	.....	.....	2	.....	.....	8	.....	.....	15	117.4*	90.3*
85-99	0	.....	.....	0	.....	.....	0	.....	.....	0	.....	.....
All Ages	264	44.4%	33.1%	896	57.8%	43.5%	1,088	68.6%	52.2%	1,340	92.1%	70.5%
16th and later years after lapse:												
All Ages	1	22.2%	17.0%	6	24.0%	18.4%	24	72.3%	55.6%	48	76.8%	59.1%
Total	265	44.4%	33.0%	902	57.6%	43.4%	1,112	68.6%	52.3%	1,388	91.5%	70.1%

* Ratios based on 10-49 deaths inclusive. No ratios shown for fewer than ten deaths.

TABLE F—*Continued*

	Durations at Lapse								
	16–20			21 and Up			All Durations		
	Actual Deaths	Mortality Ratios		Actual Deaths	Mortality Ratios		Actual Deaths	Mortality Ratios	
		1958 CSO	1958 CET		1958 CSO	1958 CET		1958 CSO	1958 CET
First 15 years after lapse:									
Ages at Lapse									
0–14	0	.....	.....	.....	.....	.....	98	23.7%	15.3%
15–24	7	.....	.....	.....	.....	.....	208	35.4	25.4
25–34	58	57.9%	43.9%	14	91.4%*	65.6%*	682	53.2	39.9
35–44	273	94.7	72.8	129	114.9	88.4	1,426	71.2	54.8
45–54	410	105.2	80.9	362	99.1	76.0	1,821	84.1	64.7
55–64	253	82.5	63.5	429	112.0	86.0	1,145	91.0	70.0
65–74	102	92.4	71.1	411	146.0	112.3	630	117.9	90.7
75–84	20	44.0*	33.9*	170	140.8	108.3	216	120.5	92.7
85–99	0	.....	.....	16	77.8*	59.9*	16	70.2*	54.0*
All Ages	1,123	91.4	70.2	1,531	120.2	92.3	6,242	75.9	57.6
16th and later years after lapse:									
All Ages	60	106.6	82.0	29	61.6	47.4	168	78.0	60.0
Total	1,183	92.3%	70.9%	1,560	118.3%	90.9%	6,410	75.9%	57.7%

TABLE G

PART B EXPERIENCE
VARIATION BY DURATION AFTER LAPSE
MORTALITY RATIOS ON 1958 CSO AND 1958 CET TABLES
ALL DURATIONS AT LAPSE COMBINED, ALL AGES AT LAPSE COMBINED
SUM OF MALE, FEMALE, AND NOT SEPARATED

DURATIONS AFTER LAPSE	ACTUAL DEATHS	1958 CSO		1958 CET		1955–60 BASIC ULTIMATE	
		By Number	By Amount	By Number	By Amount	By Number	By Amount
1	1,236	78.1%	76.7%	58.5%	57.9%	110.9%	110.7%
2	1,089	68.1	71.7	51.2	54.3	98.5	103.2
3	788	69.5	74.6	52.0	56.7	100.0	105.6
4	658	71.6	83.2	54.1	63.2	103.6	116.2
5	507	67.6	84.3	51.1	64.3	97.6	116.7
6	431	68.9	88.9	52.1	67.8	98.7	121.7
7	307	57.3	67.7	43.4	51.7	81.6	91.6
8	266	57.0	67.8	43.3	51.8	80.9	90.8
9	241	59.9	71.1	45.5	54.3	84.6	94.6
10	214	63.1	63.9	48.0	49.0	88.6	84.7
11	169	61.6	70.1	46.9	53.6	86.2	92.2
12	114	53.2	68.2	40.6	52.2	73.9	89.4
13	97	63.5	79.7	48.4	61.1	87.6	103.6
14	66	61.6	78.1	47.2	60.0	83.8	100.2
15	59	78.4	103.3	60.0	79.3	104.6	130.5
16 and up	168	59.1	78.0	45.5	60.0	73.1	96.2
All durations	6,410	67.7%	75.9%	51.1%	57.7%	96.3%	105.9%

TABLE H

PART B EXPERIENCE
VARIATION BY ATTAINED AGE—SIXTEENTH AND LATER YEARS AFTER LAPSE
MORTALITY RATIOS ON 1958 CSO AND 1958 CET TABLES
ALL DURATIONS AT LAPSE—SUM OF MALE, FEMALE, AND NOT SEPARATED

ATTAINED AGES	ACTUAL DEATHS	1958 CSO RATIOS		1958 CET RATIOS	
		By Number	By Amount	By Number	By Amount
0–39	0	.....	.....	.....	.....
40–49	18	54.5%*	65.8%*	41.9%*	50.7%*
50–59	47	56.4*	78.0*	43.5*	60.0*
60–69	65	61.0	86.3	46.9	66.4
70–79	38	76.5*	79.2*	58.9*	60.9*
80 and up	0	.....	.....	.....	.....
All attained ages	168	59.1%	78.0%	45.5%	60.0%

* Ratios based on 10–49 deaths inclusive. No ratios shown for fewer than ten deaths.

APPENDIX II

April 1, 1963

INSTRUCTIONS FOR CONTRIBUTION TO INVESTIGATION OF MORTALITY UNDER EXTENDED TERM

This study is to cover the mortality under individual life insurance policies while coverage continues under automatic extended term. The experience is to be studied from 1957 to 1962 anniversaries and is to include all years of issue.

I. GENERAL INSTRUCTIONS

A. The study is divided into two parts. Part A is an aggregate study. Part B is a double duration study, with the data subdivided both by duration between issue and lapse and by duration after lapse. Both Part A and Part B will be studied by sex.

B. The following classes of policies should be included when placed for any reason on extended term, where that is the automatic nonforfeiture option in the policy:
   1. Standard issues, whether originally issued on the basis of a medical examination or nonmedically and whether there is or is not pure endowment at the end of the extended term period;
   2. Term conversions from standard issues.

C. The following classes of policies should be excluded:
   1. Substandard policies;
   2. Joint life policies;
   3. Policies issued during a period when the automatic option was other than extended term, such as automatic premium loan;
   4. Policies issued as reinsurance where the ceding company is also contributing its direct experience to the investigation (see attached list of participating companies);
   5. Policies not subject to the company's usual underwriting standards, for example,
      a) Group conversions;
      b) Dependent conversions from family plan;
      c) Policies issued by exercise of guaranteed insurability riders;
      d) Policies issued on a "guaranteed issue" basis (such as certain pension-trust business);
      e) Policies subject to simplified underwriting or issued up to a mortality limit higher than is customarily used by the company for standard ordinary insurance.

D. The recommended practice for certain policies is indicated below. Please describe any variations from these practices in the letter of transmittal.

1. Suicides during the exclusion period; include in exposure for full amount and in claims for amount paid;
2. Compromised claims; include in exposure for full amount and in claims for amount paid;
3. Limited benefits under aviation exclusion clauses; include in exposure for full amount and in claims for amount paid;
4. If the amount of extended term insurance is different from the face amount of the policy, because of an outstanding loan at lapse, the amount of extended term insurance should be used in calculating the exposure. Similarly, if for any other reason the amount of extended term insurance is different from the amount of insurance while the policy was in a premium-paying status, the amount of extended term insurance should be used in calculating the exposure.

E. Delayed claims: Delayed claims should be included on the basis of the actual date of death rather than of the date on which the death was reported.

F. For date of lapse use date of first defaulted premium.

G. Special instructions for Part A.

1. Part A will analyze mortality over policy-year intervals on an attained-age basis. Age is defined as the age nearest birthday on the policy anniversary.
2. Exposures should be adjusted in three respects:
   a) For the fractional interval (d months) between last in-force policy anniversary and lapse;
   b) For the posting interval (p months) between lapse and posting of the change to extended term;
   c) For the fractional interval (e months) between termination of extended term and the end of that interval, unless termination is by death. If termination is by death, this particular adjustment should not be made.

   An average value of p should first be determined by each contributor, based on its own practice. Then, if a company is in a position to make a case-by-case analysis of each policy entering the investigation, the fractional exposure for the first interval will be measured in terms of d for each policy and the *average* p. If an average value of d is used, the two adjustments can be combined by multiplying the exposure for the first policy year by the fraction $(12 - d - p)/12$.

   In the event that $d + p$ exceeds 12, then the appropriate fraction is $(24 - d - p)/12$ for the second policy year. The adjustment e for non-death terminations should similarly be made on either an individual basis, or with an average e and the fraction $(12 - e)/12$ applied to the terminal year of exposure.
3. As an alternative to the method just described, valuation or valuation-type data may be used.
   a) The extended term insurance in force as of each December 31 valuation date should be classified according to attained age nearest birthday as of the policy anniversary preceding said valuation date.

b) To these in-force figures for each age should be added the corresponding "alpha" deaths (deaths occurring between the valuation date and the preceding policy anniversary). This sum may be taken as representative of the exposure for the policy year then current.

c) It is not necessary under these circumstances to make the exposure adjustments d, p, and e.

4. Companies unable to compile exposures over policy-year intervals should compile over intervals between lapse anniversaries. The adjustment d becomes zero, but the other adjustments should be made as outlined in G, 2, or the approach outlined in G, 3, followed.
5. Deaths should be allocated to intervals on the same basis as used for calculating exposures, whether that be policy intervals or lapse intervals. Also, regardless of which interval is used, deaths occurring during the posting interval p should be excluded by all contributors.

H. Special instructions for Part B.

1. Part B will analyze mortality between anniversaries of lapse, on a double-duration select basis.
2. Exposures will first be divided into duration groups between issue and lapse; each such group will then be further subdivided into individual durations measured over yearly intervals commencing with the date of lapse. The age at lapse is defined as the age nearest birthday at issue plus the difference between calendar year of issue and calendar year of lapse. Exposures during the first year after lapse should be adjusted for the posting interval by the fraction $(12 - p)/12$. Exposures should also be adjusted for any fractional interval e after the end of the extended term unless termination is by death.

   For term conversions, duration at lapse should be measured from the date of issue of the original term policy if possible; otherwise from conversion.
3. If it is impossible to analyze exposures precisely over lapse-year intervals, they should be adjusted from the records available to approximate the lapse-year basis. The adjustment will have to depend on the nature of the records available. For example, if the records available indicate the calendar year of issue, the age at issue, the calendar year of lapse, and the calendar year in which extended term expires, mean durations could be assumed in calculating the duration between issue and lapse and the duration between lapse and termination.
4. Deaths will first be divided into duration groups between issue and lapse and each such group further subdivided into individual durations, commencing with the date of lapse. Age at death should be calculated as age nearest birthday at issue *plus* difference between calendar year of issue and calendar year of lapse *plus* precise number of years from date of lapse to the lapse anniversary following which death occurs. A precise assignment of duration between lapse and death is requested of all contributors to Part B regardless of whether exposures are precisely calculated over

lapse-year intervals or approximated to that basis. Also, all contributors should exclude deaths occurring during the posting interval p.

5. To estimate the effect of different posting periods, the Committee asks that each contributor make a supplementary analysis of all extended term deaths occurring between 1957 and 1962 anniversaries, where death occurs during the first twelve months after lapse. The contribution should consist of a separate punched card for each of the twelve individual months after lapse, showing the number, but not the amount, of deaths. This particular material should not be subdivided by sex, or by duration between issue and lapse. However, it is most important in this particular supplementary study that deaths occurring during the posting interval *not* be excluded.

I. Revivals: Revivals occurring after the posting period p should be treated as terminations of extended term exposure.

In Part B, the duration from issue to lapse of any second or subsequent lapse after such a revival should be measured from the date of issue rather than from the date of revival and the duration after lapse during each such subsequent extended term exposure should be measured from its own particular lapse date.

J. The Committee will calculate expected deaths for all contributions.

K. Letter of transmittal.

1. If it is necessary to limit your contribution in any way or to vary from any of the above practices, please describe the variations and limitations in the letter of transmittal. It is recognized that some companies will be unable to contribute to Part B because of lack of available data. It is also realized that some companies will be unable to make some of the subdivisions of data which have been requested. Therefore codes have been provided for submitting combined data, if necessary. Companies are, of course, urged to subdivide data where feasible. If data can be subdivided in part, please do so, contributing the balance on a combined basis.
2. Each contributor is asked to state the exposure formula used. This will be useful in reducing potential ambiguities or misunderstandings on the part of the Committee.
3. Where approximations have had to be used the Committee would like to be informed of their nature and probable effect.
4. Each contributor is asked to state in the letter of transmittal whether it had during the period between 1957 and 1962 anniversaries a regular practice of sending expiry notices at the end of the extended term period.
5. In connection with Part A the letter should state whether the policy, lapse, or calendar interval has been used; what if any period p has been used to reflect the posting period; if the lapse interval is not used, what method has been used to calculate the period d between the last in-force policy anniversary and the lapse date; and what method has been used to calculate the period e between the end of extended term and the end of that interval.

6. In connection with Part B, the letter should state whether exposures have been calculated on a precise lapse-interval basis or adjusted to that basis; what posting period p has been used; and the method used to adjust for the fractional interval e after termination of extended term.

II. INSTRUCTIONS FOR COMPLETING SUMMARY CARDS

PART A: STUDY OF AGGREGATE MORTALITY UNDER EXTENDED TERM

Columns	Item	Instructions
1–3	Company code number	Your company code number is ———.
4	Identification code	Gangpunch 1.
5–6	Attained age	Punch individual attained age.
7–9		Leave blank.
10	Sex	Male 1. Female 2. If unable to split data by sex, code 9.
11–17	Exposed (policies)	Punch the number of policies exposed, if available. If not, punch X (numeric) in column 17 and leave rest of field blank.
18–29	Exposed (amounts)	Punch amount to the nearer $1. If your company summarizes in units greater than $1, fill in any zeros required to maintain the alignment of the decimal point.
30–34	Actual deaths (policies)	Punch the number of policies terminated by death, if available. If not, punch X (numeric) in column 34 and leave rest of field blank.
35–44	Actual deaths (amounts)	Punch amount to the nearer $1. If your company summarizes in units greater than $1, fill in any zeros required to maintain the alignment of the decimal point.
45–80		Leave blank.

NOTE.—Except in fields to be left blank, a zero should be punched in all columns which would otherwise remain unpunched, unless instructed to the contrary.

PART B: DOUBLE DURATION STUDY OF MORTALITY UNDER EXTENDED TERM

Columns	Item	Instructions
1–3	Company code number	Same as columns 1–3, Part A.
4	Identification code	Gangpunch 2.
5–6	Age	For the select portion of the double duration study (i.e., within 15 years after lapse) submit data by quinquennial age groups at lapse according to the following code:

Age Group	Code
0–4	00
5–9	05
.....	..
.....	..
.....	..
90–94	90
95 and over	95

For the ultimate portion of the double duration study, submit data by individual attained age. Punch the individual attained age in columns 5–6.

7	Duration from issue to lapse	Data should be subdivided by policy year during which lapse occurs according to the following code: Policy Year Group — Code 1–2 — 1 3–5 — 2 6–10 — 3 11–15 — 4 16–20 — 5 21 and over — 6 This subdivision is required for both the select and ultimate portions of Part B.
8–9	Duration after lapse	Data should be further subdivided by individual duration measured from the date of lapse. Code as 01 to 15. For the ultimate portion of the double duration study, punch XX (numeric).
10	Sex	Male 1. Female 2. If unable to split data by sex, code 9.
11–17	Exposed (policies)	Punch the number of policies exposed, if available. If not, punch X (numeric) in column 17 and leave rest of field blank.
18–29	Exposed (amounts)	Punch amount to the nearer $1. If your company summarizes in units greater than $1, fill in any zeros required to maintain the alignment of the decimal point.
30–34	Actual deaths (policies)	Punch the number of policies terminated by death, if available. If not, punch X (numeric) in column 34, and leave rest of field blank.
35–44	Actual deaths (amounts)	Punch amount to the nearer $1. If your company summarizes in units greater than $1, fill in any zeros required to maintain the alignment of the decimal point.
45–80		Leave blank.

NOTE.—Except in fields to be left blank, a zero should be punched in all columns which would otherwise remain unpunched, unless instructed to the contrary.

PART B—SUPPLEMENT: DEATHS DURING FIRST 12 MONTHS AFTER LAPSE

Columns	Item	Instructions
1–3	Company code number	Same as columns 1–3, Part A.
4	Identification code	Gangpunch 3.
5–7		Leave blank.
8–9	Monthly duration after lapse	Deaths should be subdivided by month after lapse during which death occurs. Code as 01 to 12.
10	Sex	Gangpunch 9.
11–29		Leave blank.
30–34	Actual deaths (policies)	Punch the number of policies terminated by death.
35–80		Leave blank.

NOTE.—Except in fields to be left blank, a zero should be punched in all columns which would otherwise remain unpunched, unless instructed to the contrary.

III. TRANSMISSION OF DATA

Contributions for each part should be clearly labeled and kept separate. Part A should be sorted by sex (column 10) and further sorted by attained age

(columns 5 and 6) with a control total for each sex. Part B should be sorted by sex (column 10) and further sorted by duration from issue to lapse (column 7) with a control total for each sex-duration cell. Control totals should include card count, and exposures and deaths by number of policies and by amount of insurance.

Part B—Supplement should be sorted by duration after lapse (columns 8 and 9) with a control total, including a card count and deaths by number of policies.

Although the Committee is not specifying any particular card stock, it would be appreciated if the contributions for Part A of the study could be submitted on left-corner-cut stock and the contributions for Part B and Part B—Supplement on right-corner-cut stock. Each company should review its contribution carefully before submitting it, making sure that all fields in the transmittal cards are properly punched.

Please address your contributions to Mr. George L. Hogeman, Vice President, Life Department, Aetna Life Insurance Company, Hartford, Connecticut. The Committee would like to have your contribution by October 1, 1963.