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MORTALITY UNDER SETTLEMENT OPTIONS AND DEFERRED ANNUITIES BETWEEN 1945 AND 1950 ANNIVERSARIES

THIS report deals with the findings of the latest in a series of several intercompany studies of the mortality under settlement options and deferred annuities. The first of the more comprehensive studies covered primarily the experience between 1934 and 1940 anniversaries and was limited to settlement options; the report on this study was presented in *TASA XLII* (pp. 172-180). The next study covered the experience between 1940 and 1945 anniversaries and dealt with both settlement options and deferred annuities; the report on this study appeared in *TASA XLVIII* (pp. 133-165). The present study takes up the experience from 1945 to 1950 anniversaries under the following three major categories of contracts:

1. Life income settlements—with a guaranteed period or a refund provision—arising out of death claims, subdivided into
 - a) Payee elections
 - b) Nonpayee elections
2. Life income settlements—with a guaranteed period or a refund provision—arising out of the maturity of endowment or retirement income policies or the cash surrender of insurance or annuity contracts
3. Maturities of deferred annuity contracts (including maturities at optional retirement dates) with a death benefit prior to maturity and a cash value at maturity substantially equal to the reserve, subdivided into
 - a) Annuities with a guaranteed period or a refund provision
 - b) Annuities without a guaranteed period or a refund provision

Only single life settlement options and individual deferred annuities entered into the investigation. Life income settlements and deferred annuity maturities arising out of pension trust business were included; the number of deaths under such settlements and maturities was too small, however, to warrant a separate study of the experience under these settlements and maturities. Life income settlement options without a guaranteed period or a refund provision were excluded from the study. Companies were also asked to exclude, where possible, those life or refund annuities which were purchased with the proceeds of death claims, maturities, or policy surrenders on a rate basis applicable to new annuity issues (whether with or without an allowance for savings in expenses). For the purpose of classifying various types of continuous income policies and settlements where a life income option follows an interest option, the

same rules were followed as in the previous study (*TASA XLVIII*, 134-135).

The experience was traced from the 1945 to the 1950 anniversaries of the initial due dates of income payments. Life income settlements and deferred annuity maturities arising in 1944 or prior years were included in the investigation as of the 1945 anniversaries of the initial due dates of income payments. The experience was compiled separately for each sex, both by number of contracts and by amounts of annual income. For the first five years of duration, data were obtained for individual issue ages and individual durations. Data for the sixth and subsequent durations were obtained for individual attained ages but for all durations combined. The age at issue was taken as the age nearest birthday on the initial due date of income payments. The attained age was taken as the age nearest birthday on the anniversary (of the initial due date of income payments) at the beginning of the year of exposure.

Expected deaths were calculated on the 1937 Standard Annuity Table (using a five-year age setback of the male table as the female table) and also on the Annuity Table for 1949 Ultimate.

The names of the eighteen contributing companies and their proportionate contributions to the three major categories of contracts in this study are given in Table A of the Appendix. All of the companies were able to make the distinction between payee and nonpayee elections on most of their life income settlements arising from death claims. In fact only four companies reported some of their data as unknown elections, but these were not included in the study when it was found that they represented heterogeneous material.

EXPERIENCE UNDER LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS

The experience under life income settlements arising from death claims here presented is based on 324,411 contract years of exposure involving \$170,664,248 of annual income; 5,331 contracts involving \$2,931,804 annual income were terminated by death. An analysis of the exposures and of the deaths by sex, type of election, and duration is given in Table B of the Appendix. It should be noted that females accounted for 96% of the total exposure by amounts of annual income. Among females 53% of the exposure (by amount of annual income) was on payee elections and 47% on nonpayee elections. Among males the corresponding figures were 37% and 63%. Attention is also called to the experience being predominantly in the "certain" period; this is because 47% of the total exposure (by amounts of annual income) was in the first five durations, and

because a substantial proportion of the exposure in the sixth and subsequent durations would also be in the "certain" period which generally runs for ten or twenty years.

The mortality ratios on the 1937 Standard Annuity Table are presented

TABLE 1
LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
Payee Elections								
Under 50	*	*	*	*	*	*	*	*
50-59	*	*	215%	111%	*	*	260%	95%
60-69	*	113%	87	91	*	94%	140	120
70-79	*	*	80	69	*	*	89	82
80 and over	*	*	61	63	*	*	42	52
All	*	78%	88%	81%	*	90%	102%	93%
Nonpayee Elections								
Under 50	*	*	188%	188%	*	*	177%	134%
50-59	*	*	183	150	*	*	139	109
60-69	152%	91%	161	136	106%	205%	173	169
70-79	*	*	83	103	*	*	115	155
80 and over	*	*	82	113	*	*	103	148
All	168%	124%	130%	134%	133%	186%	137%	149%
Payee and Nonpayee Elections Combined								
Under 50	*	*	210%	184%	*	*	182%	139%
50-59	*	*	193	133	*	*	170	104
60-69	103%	103%	118	110	106%	158%	155	146
70-79	*	64	81	80	*	142	100	111
80 and over	*	148	68	83	*	172	67	97
All	104%	98%	106%	104%	100%	140%	119%	121%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 2

LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and Over	All	1-2	3-5	6 and Over	All
Payee Elections								
Under 50.....	<i>109%</i>	<i>105%</i>	<i>84%</i>	<i>98%</i>	<i>181%</i>	<i>119%</i>	<i>99%</i>	<i>132%</i>
50-59.....	47	67	77	67	32	58	75	59
60-69.....	56	73	73	70	56	80	76	74
70-79.....	52	81	94	88	45	89	93	87
80 and over.....	*	89	128	121	*	128	118	116
All.....	56%	76%	89%	81%	53%	81%	89%	81%
Nonpayee Elections								
Under 50.....	<i>82%</i>	<i>49%</i>	<i>68%</i>	<i>66%</i>	<i>103%</i>	<i>42%</i>	<i>70%</i>	<i>71%</i>
50-59.....	53	65	71	65	58	67	83	72
60-69.....	65	72	80	76	79	67	79	76
70-79.....	108	90	113	109	84	98	112	106
80 and over.....	96	124	141	136	75	152	137	134
All.....	77%	79%	102%	94%	77%	83%	102%	94%
Payee and Nonpayee Elections Combined								
Under 50.....	<i>95%</i>	<i>75%</i>	<i>74%</i>	<i>80%</i>	<i>139%</i>	<i>74%</i>	<i>79%</i>	<i>95%</i>
50-59.....	50	67	74	66	44	62	79	65
60-69.....	60	73	75	72	66	75	77	75
70-79.....	77	85	102	96	64	93	102	95
80 and over.....	84	108	134	129	68	142	128	126
All.....	65%	77%	94%	86%	64%	82%	95%	87%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

in Tables 1 and 2 for males and females respectively. In these tables the mortality ratios are given separately for payee and nonpayee elections by decennial attained age groups and for durations 1-2, 3-5, 6 and over, and all durations combined. Corresponding mortality ratios on the Annuity Table for 1949 Ultimate (*a*-1949 Ultimate Table) are shown in Tables 3 and 4 for males and females, respectively. The details of the experience by decennial attained age groups for each of the first five durations and for durations 6 and over are set forth in Table E of the Appendix.

The main features of the experience as brought out in Tables 1, 2, 3, and 4 may be summarized as follows:

1. *Mortality Ratios on 1937 Standard Annuity Table*

On the 1937 Standard Annuity Table, the mortality ratios by sex for the aggregate experience under payee and nonpayee elections combined were:

	By Number of Contracts	By Amounts of Annual Income
Male.....	104%	121%
Female.....	86%	87%

The aggregate mortality ratios for female payee elections were significantly below 85% of the 1937 Standard Annuity Table, both by number of contracts and by amounts of annual income. The aggregate mortality ratios for female nonpayee elections and for male payee elections were significantly below 100% of the 1937 Standard Annuity Table. Furthermore, in the case of females, both the payee and nonpayee elections showed mortality ratios significantly below 85% of the 1937 Standard Annuity Table in the important age range from 50 to 69. In the case of males, only the experience at ages 70 and over under payee elections showed mortality ratios below 85% of the 1937 Standard Annuity Table.

2. *Mortality Ratios on Annuity Table for 1949*

On the Annuity Table for 1949 Ultimate, the mortality ratios by sex for the aggregate experience under payee and nonpayee elections combined were:

	By Number of Contracts	By Amounts of Annual Income
Male.....	121%	143%
Female.....	117%	117%

Only for male payee elections by number of contracts was the aggregate mortality ratio below 100% of the Annuity Table for 1949. The ratios were especially low at the advanced ages, apparently reflecting a high degree of class selection by males who elect life income settlements at the older ages. Except in the first and second durations, no subdivision of the

TABLE 3
LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
Payee Elections								
Under 50	*	*	*	*	*	*	*	*
50-59	*	*	276%	143%	*	*	339%	124%
60-69	*	139%	107	112	*	116%	173	148
70-79	*	*	90	77	*	*	100	92
80 and over	*	*	57	60	*	*	39	48
All	*	92%	97%	92%	*	108%	113%	107%
Nonpayee Elections								
Under 50	*	*	341%	334%	*	*	325%	247%
50-59	*	*	238	194	*	*	179	142
60-69	188%	110%	201	168	132%	252%	215	209
70-79	*	*	93	116	*	*	129	173
80 and over	*	*	77	105	*	*	97	138
All	213%	148%	154%	160%	167%	228%	162%	180%
Payee and Nonpayee Elections Combined								
Under 50	*	*	380%	327%	*	*	333%	255%
50-59	*	*	250	171	*	*	221	135
60-69	128%	126%	146	136	131%	195%	192	180
70-79	*	72	91	89	*	160	112	124
80 and over	*	136	64	78	*	159	63	91
All	130%	117%	120%	121%	126%	170%	136%	143%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 4
LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
Payee Elections								
Under 50.....	<i>229%</i>	<i>220%</i>	<i>178%</i>	<i>207%</i>	<i>386%</i>	<i>253%</i>	<i>211%</i>	<i>283%</i>
50-59.....	92	131	149	130	63	112	146	114
60-69.....	90	116	114	111	90	128	120	117
70-79.....	64	99	113	106	55	107	111	104
80 and over.....	*	81	112	107	*	117	103	102
All.....	86%	112%	116%	111%	80%	120%	115%	111%
Nonpayee Elections								
Under 50.....	<i>176%</i>	<i>104%</i>	<i>147%</i>	<i>142%</i>	<i>223%</i>	<i>91%</i>	<i>151%</i>	<i>152%</i>
50-59.....	102	127	138	127	113	130	160	139
60-69.....	105	116	127	121	126	108	124	121
70-79.....	130	108	134	129	102	119	133	126
80 and over.....	85	110	120	117	66	135	117	115
All.....	114%	114%	129%	124%	113%	118%	129%	124%
Payee and Nonpayee Elections Combined								
Under 50.....	<i>201%</i>	<i>158%</i>	<i>159%</i>	<i>170%</i>	<i>298%</i>	<i>160%</i>	<i>170%</i>	<i>204%</i>
50-59.....	96	129	144	128	85	120	153	125
60-69.....	96	116	119	114	106	120	122	119
70-79.....	93	102	122	115	78	113	121	114
80 and over.....	74	97	116	112	60	128	110	109
All.....	98%	113%	122%	117%	96%	119%	122%	117%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

female experience showed a mortality ratio below 100% of the Annuity Table for 1949.

3. *Male vs. Female Mortality*

On the 1937 Standard Annuity Table, the mortality ratios for females were lower than for males in most classifications. On the Annuity Table for 1949, the mortality ratios were generally higher for females than for males on payee elections but lower on nonpayee elections.

4. *Payee vs. Nonpayee Elections Mortality*

The experience under payee elections was materially lower than under nonpayee elections. As in the previous study, this difference in mortality was much more marked in the case of males than in the case of females. Specifically, the over-all male nonpayee experience was from 60% to 75% higher than the payee experience. In the case of females the corresponding mortality differential was only about 15%. By way of explanation of the rather high mortality under male nonpayee elections, it has been suggested that the male lives for whom a life income settlement had been elected comprise a special class of persons many of whom would probably be dependent by reason of disability or serious impairment (*TASA XLVIII*, 146)

5. *Select Mortality*

The experience under both payee and nonpayee elections on male lives was too small to bring out the extent of temporary selection. On female nonpayee elections the mortality in the first five durations (all ages combined) was about 15% lower than in the subsequent durations. On female payee elections the mortality in the first and second durations (all ages combined) was from 30% to 35% lower than in subsequent durations. This indicates an appreciable degree of temporary selection on female payee elections, even when allowance is made for the possibility that part of the lower mortality in the first duration could be due to the automatic exclusion of those deaths among payees which occurred between the date of death of the insured and the date on which the life income settlement was to have become effective (*TASA XLVIII*, 150).

6. *Mortality by Number and Amounts*

In the case of males the mortality ratios by number of contracts were generally lower than by amounts of annual income. In the case of females there was little difference between the mortality ratios by number of contracts and amounts of annual income.

EXPERIENCE UNDER LIFE INCOME SETTLEMENT OPTIONS
ARISING FROM MATURITIES AND SURRENDERS

The experience under life income settlements arising from maturities and surrenders here presented is based on 162,955 contract years of exposure involving \$73,903,096 of annual income; 3,512 contracts involving \$1,712,451 annual income were terminated by death. An analysis of the exposures and of the deaths by sex and duration is given in Table C of the Appendix. In sharp contrast to the very small proportion (4%) of male lives under life income settlements arising from death claims, the proportion of male lives under life income settlements arising from maturities and surrenders was 58% (of the total exposure by amounts of annual in-

TABLE 5
LIFE INCOME SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
Males								
Under 50.....	*	*	*	112%	*	*	*	182%
50-59.....	43%	84%	51%	60	26%	83%	27%	49
60-69.....	77	87	84	82	79	101	79	88
70-79.....	74	80	103	94	51	87	107	95
80 and over.....	112	101	102	103	124	77	96	97
All.....	75%	86%	98%	87%	70%	96%	97%	89%
Females								
Under 50.....	*	*	*	56%	*	*	*	87%
50-59.....	43%	61%	52%	52	37%	63%	50%	50
60-69.....	45	73	60	60	42	73	58	59
70-79.....	89	81	85	84	85	66	83	81
80 and over.....	*	*	116	119	*	*	84	101
All.....	50%	72%	77%	70%	51%	70%	75%	68%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

come). The experience under life income settlements arising from maturities and surrenders was even more heavily concentrated in the "certain" period than that under the life income settlements arising from death claims. In the case of life income settlements arising from maturities and surrenders, some 69% of the total exposure (by amounts of annual income) was in the first five durations alone, as compared with 47% in the case of life income settlements arising from death claims.

The mortality ratios on the 1937 Standard Annuity Table and on the Annuity Table for 1949 Ultimate are presented in Tables 5 and 6, respectively, separately for males and females by decennial attained age groups and for durations 1-2, 3-5, 6 and over, and all durations combined. The details of the experience by decennial attained age groups for each of the

TABLE 6
LIFE INCOME SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
Males								
Under 50	*	*	*	186%	*	*	*	305%
50-59	55%	107%	64%	77	33%	106%	35%	63
60-69	96	107	104	102	99	124	98	109
70-79	84	90	116	106	59	98	120	107
80 and over	108	99	98	99	121	75	92	93
All	91%	103%	109%	102%	86%	116%	110%	105%
Females								
Under 50	*	*	*	115%	*	*	*	186%
50-59	83%	117%	101%	100	72%	122%	97%	96
60-69	73	114	93	95	69	114	91	93
70-79	111	100	103	103	105	81	102	99
80 and over	*	*	103	106	*	*	75	90
All	82%	111%	101%	100%	81%	106%	97%	96%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

first five durations and for durations 6 and over are set forth in Table F of the Appendix.

The main features of the experience as brought out in Tables 5 and 6 may be summarized as follows:

1. *Mortality Ratios on 1937 Standard Annuity Table*

On the 1937 Standard Annuity Table, the mortality ratios by sex for the aggregate experience were:

	By Number of Contracts	By Amounts of Annual Income
Male.....	87%	89%
Female.....	70%	68%

In the case of males the mortality ratios were below 65% of the 1937 Standard Annuity Table in the age range from 50 to 59 and significantly below 90% of the Standard Annuity Table at ages 60 to 69. In the case of females the mortality ratios were significantly below 65% in the important age range from 50 to 69 and below 90% at ages 70 to 79.

2. *Mortality Ratios on Annuity Table for 1949*

On the Annuity Table for 1949 Ultimate, the mortality ratios by sex for the aggregate experience were:

	By Number of Contracts	By Amounts of Annual Income
Male.....	102%	105%
Female.....	100%	96%

Only the male experience in the age range from 50 to 59 was below 85% of the Annuity Table for 1949. Except in the first and second durations, only a few subdivisions of the female experience showed mortality ratios significantly below 100% of the Annuity Table for 1949.

3. *Male vs. Female Mortality*

On the 1937 Standard Annuity Table, the mortality ratios for females were lower than for males in most classifications. On the Annuity Table for 1949, the mortality ratios for females were also usually lower than for males. Generally the differences between the mortality ratios for males and females were smaller on the Annuity Table for 1949.

4. *Select Mortality*

The mortality in the first and second durations under life income settlements arising from maturities and surrenders was from 15% to 30% lower than in the later durations.

5. *Mortality by Number and by Amounts*

Among males the mortality ratios by amounts of annual income were not materially different from those by number of contracts. Among fe-

males the mortality ratios by amounts of annual income were generally slightly lower than by number of contracts.

6. Settlements at Ages 60-65

To bring out the mortality under life income settlements which began at ages 60 to 65 inclusive, the experience under life income settlements arising from maturities and surrenders during the first five durations was

TABLE 7
EXPERIENCE UNDER LIFE INCOME SETTLEMENTS ARISING FROM
MATURITIES AND SURRENDERS ACCORDING TO AGE
AT WHICH LIFE INCOME BEGAN
Durations 1-5 Combined

AGE AT WHICH LIFE INCOME BEGAN	BY NUMBER OF CONTRACTS		BY AMOUNTS OF ANNUAL INCOME	
	Males	Females	Males	Females
Mortality Ratios on 1937 Standard Annuity Table Number of Deaths† in Parentheses				
Under 60	73% (126)	50% (99)	67%	50%
60-65	83 (713)	63 (326)	91	61
66 and over	79 (397)	73 (126)	75	70
All	80% (1,236)	62% (551)	83%	61%
Mortality Ratios on a-1949 Ultimate Table Number of Deaths† in Parentheses				
Under 60	95% (126)	96% (99)	87%	96%
60-65	102 (713)	101 (326)	113	98
66 and over	89 (397)	94 (126)	86	88
All	97% (1,236)	98% (551)	101%	95%

† Number of contracts terminated by death.

retabulated for age groups at issue under 60, 60-65, and 66 and over. The results are shown in Table 7.

The figures in Table 7 indicate that there is less selection against the companies under life income settlements arising from maturities at the usual retirement ages, particularly among males.

7. Settlements Arising from Maturities and Surrenders Compared with Payee Settlements Arising from Death Claims

A comparison of the experience under life income settlements arising from maturities and surrenders with that under payee life income settlements arising from death claims is given in Table 8. This table shows the mortality ratios on the Annuity Table for 1949 Ultimate only, by attained age groups for the first five durations, the sixth and subsequent durations, and for all durations combined.

The figures in Table 8 indicate that for males, by amounts of annual income, the mortality ratios for all ages combined were about the same for payee life income settlements arising from death claims as for life income settlements arising from maturities and surrenders, both in the first five durations and in the sixth and subsequent durations; the corresponding mortality ratios by number of contracts were somewhat lower for payee life income settlements arising from death claims than for life income settlements arising from maturities and surrenders. In the age range from 50 to 69 the mortality ratios for males under life income settlements arising from maturities and surrenders were appreciably lower than under payee life income settlements arising from death claims, both by number of contracts and by amounts of annual income. The converse, however, was the case at ages 70 and over. In the case of females the mortality ratios for life income settlements arising from maturities and surrenders were generally lower than for payee life income settlements arising from death claims, the differential being greater in the sixth and subsequent durations than in the first five durations.

COMPARISON WITH PREVIOUS EXPERIENCE UNDER LIFE INCOME SETTLEMENT OPTIONS

The previous investigations of mortality under life income settlement options (*TASA XLVIII*, 133-150 and *TASA XLII*, 172-180) did not differentiate between life income settlements arising from death claims and those arising from maturities and surrenders, but did distinguish between payee and nonpayee elections for part of the material. Accordingly, for the sake of greater comparability with previous experience, the data in the present study for life income settlements arising from maturities and surrenders have been combined with those for payee elections under life income settlements arising from death claims.

A comparison of the experience under life income settlement options between 1940 and 1945 anniversaries with the experience between 1945 and 1950 anniversaries here presented is given in Table 9. This table shows the mortality ratios on the 1937 Standard Annuity Table, by broad attained age groups for the first five durations, the sixth and subsequent durations, and all durations combined, separately for payee elections (includ-

TABLE 8
COMPARISON OF
(A) LIFE INCOME SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS
WITH
(B) PAYEE LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS
MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Males		Females		Males		Females	
	A	B	A	B	A	B	A	B
Durations 1-5								
Under 50	213%	*	*	224%	351%	*	*	321%
50-59	80	*	100%	114	67	*	96%	89
60-69	101	117%	96	106	111	122%	94	113
70-79	88	*	104	86	81	*	90	87
80 and over	103	*	125	74	96	*	140	97
All	97%	81%	98%	102%	101%	97%	95%	104%
Durations 6 and over								
Under 50	*	*	*	178%	*	*	*	211%
50-59	64%	276%	101%	149	35%	339%	97%	146
60-69	104	107	93	114	98	173	91	120
70-79	116	90	103	113	120	100	102	111
80 and over	98	57	103	112	92	39	75	103
All	109%	97%	101%	116%	110%	113%	97%	115%
All Durations								
Under 50	186%	*	115%	207%	305%	*	186%	283%
50-59	77	143%	100	130	63	124%	96	114
60-69	102	112	95	111	109	148	93	117
70-79	106	77	103	106	107	92	99	104
80 and over	99	60	106	107	93	48	90	102
All	102%	92%	100%	111%	105%	107%	96%	111%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 9

COMPARISON OF EXPERIENCES UNDER LIFE INCOME SETTLEMENT OPTIONS
 1940-45 EXPERIENCE WITH 1945-50 EXPERIENCE
 MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

	ATTAINED AGES	DURATIONS 1-5		DURATIONS 6 AND OVER		ALL DURATIONS	
		1940-45	1945-50	1940-45	1945-50	1940-45	1945-50
Male Payee Elections Arising from Maturities, Surrenders and Death Claims							
By Number of Contracts	Under 60	83%	66%	*	89%	86%	71%
	60-69	87	82	88%	85	87	83
	70 and over	93	79	101	100	97	94
	All	89%	80%	98%	97%	92%	87%
By Amounts of Annual Income	Under 60	84%	60%	*	67%	80%	61%
	60-69	74	90	79%	84	74	89
	70 and over	84	74	107	103	97	94
	All	78%	83%	101%	98%	85%	89%
Male Nonpayee Elections Arising from Death Claims							
By Number of Contracts	Under 60	166%	141%	169%	185%	168%	169%
	60-69	143	112	180	161	157	136
	70 and over	171	183	77	83	110	107
	All	159%	141%	131%	130%	144%	134%
By Amounts of Annual Income	Under 60	274%	77%	234%	157%	252%	122%
	60-69	136	167	168	173	144	169
	70 and over	172	261	248	111	220	152
	All	175%	165%	229%	137%	202%	149%
Female Payee Elections Arising from Maturities, Surrenders and Death Claims							
By Number of Contracts	Under 60	72%	61%	77%	74%	73%	66%
	60-69	63	63	72	69	66	66
	70 and over	84	76	98	98	92	93
	All	70%	66%	86%	86%	76%	77%
By Amounts of Annual Income	Under 60	67%	57%	77%	77%	69%	64%
	60-69	65	65	74	73	67	69
	70 and over	85	77	92	95	89	91
	All	70%	67%	84%	86%	75%	78%
Female Nonpayee Elections Arising from Death Claims							
By Number of Contracts	Under 60	82%	61%	86%	71%	84%	65%
	60-69	79	69	77	80	78	76
	70 and over	115	101	112	122	113	117
	All	92%	78%	97%	102%	95%	94%
By Amounts of Annual Income	Under 60	78%	64%	95%	80%	86%	71%
	60-69	89	72	73	79	80	76
	70 and over	121	99	107	120	111	114
	All	96%	80%	95%	102%	95%	94%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

ing life income settlements arising from maturities and surrenders) and nonpayee elections.

The main features of the comparison as brought out in Table 9 may be summarized as follows:

1. From the period 1940-45 to the period 1945-50, there was a marked decrease in the aggregate mortality ratio under male nonpayee elections by amounts of annual income. This reflected chiefly the appreciably lower mortality ratio in the sixth and subsequent durations in the more recent study. There was also a smaller decrease in the aggregate mortality ratio under male nonpayee elections by number of contracts. Under female nonpayee elections, there was little change in the aggregate mortality ratios, whether by number of contracts or by amounts of annual income.

2. Under male payee elections there was some decrease in the aggregate mortality ratio by number of contracts but a small increase by amounts of annual income. This reflected corresponding changes in the mortality ratios in the first five durations. Under female payee elections the aggregate mortality ratios increased slightly, mainly because in the more recent study there was a higher proportion of the exposure in the sixth and subsequent durations (and also at the older ages) where the mortality ratios on the 1937 Standard Annuity Table are higher.

3. Broadly speaking, the mortality ratios in the first five durations showed significant decreases, while the mortality ratios in the sixth and subsequent durations showed relatively little change.

4. By age the most consistent decreases in mortality ratios were registered at ages under 60.

Some few data are available as to the trend of mortality under life income settlements over a longer period of years. Table 10 shows the over-all mortality ratios on the 1937 Standard Annuity Table developed in the two previous studies in comparison with the corresponding over-all mortality ratios in the present study.

The figures in Table 10 indicate clearly that mortality under life income settlements has been decreasing over the years. It should be noted that the use of the 1937 Standard Annuity Table as a basis for calculating expected deaths tends to produce an understatement in the long range decrease in mortality because the more recent studies include larger proportions of the exposure in the sixth and subsequent durations and at the older ages where the mortality ratios on the 1937 Standard Annuity Table are higher.

EXPERIENCE UNDER MATURITIES OF DEFERRED ANNUITY CONTRACTS

The experience under maturities of deferred annuity contracts here presented is based on 323,480 contract years of exposure involving \$107,-

226,636 of annual income; 7,970 contracts involving \$2,849,022 annual income were terminated by death. An analysis of the exposures and of the deaths by sex, type of annuity (refund or nonrefund) and duration is given in Table D of the Appendix. It should be noted that males accounted for 43% of the total exposure by amounts of annual income. Among males 88% of the exposure (by amounts of annual income) arose from contracts with a guaranteed period or a refund provision. Among females the cor-

TABLE 10

TREND OF MORTALITY UNDER LIFE INCOME SETTLEMENTS
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

SEX	EXPERIENCE BETWEEN ANNIVERSARIES			
	1924 and 1934*	1934 and 1940*	1940 and 1945†	1945 and 1950
	By Number of Contracts			
Males.....		98%	95%	89%
Females.....		88%	87%	82%
Both Sexes.....	102%	90%	89%	84%
	By Amounts of Annual Income			
Males.....		95%	97%	92%
Females.....		96%	87%	84%
Both Sexes.....	105%	96%	90%	86%

* TASA XLII, 173-177.

† TASA XLVIII, 141.

responding figure was 75%. About 64% of the total exposure (by amounts of annual income) was concentrated in the first five durations.

The mortality ratios on the 1937 Standard Annuity Table are presented in Tables 11 and 12 for males and females respectively. In these tables the mortality ratios are given separately for contracts with and without a guaranteed period or a refund provision by decennial attained age groups and for durations 1-2, 3-5, 6 and over, and all durations combined. Corresponding mortality ratios on the Annuity Table for 1949 Ultimate are shown in Tables 13 and 14 for males and females respectively. The details of the experience by decennial attained age groups for each of the first five durations and for durations 6 and over are set forth in Table G of the Appendix.

TABLE 11
MATURED DEFERRED ANNUITIES—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
Contracts <i>with</i> a Guaranteed Period or Refund Provision								
Under 50	*	*	*	*	*	*	*	*
50-59	125%	120%	168%	130%	122%	149%	134%	135%
60-69	104	109	136	112	106	110	111	108
70-79	95	112	100	102	83	90	102	95
80 and over	*	*	87	91	*	*	113	112
All	103%	111%	107%	107%	99%	104%	105%	103%
Contracts <i>without</i> a Guaranteed Period or Refund Provision								
Under 50	*	*	*	*	*	*	*	*
50-59	*	*	*	*	*	*	*	*
60-69	65%	77%	180%	93%	51%	81%	173%	89%
70-79	78	110	95	97	57	79	100	92
80 and over	*	*	89	92	*	*	53	54
All	68%	87%	109%	94%	52%	80%	107%	87%
All Contracts								
Under 50	*	*	*	*	*	*	*	*
50-59	118%	116%	148%	122%	116%	141%	114%	126%
60-69	98	104	143	109	99	106	120	106
70-79	94	112	100	102	82	89	102	95
80 and over	*	*	88	91	*	*	98	98
All	98%	108%	107%	105%	95%	101%	105%	101%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 12
MATURED DEFERRED ANNUITIES—FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
<i>Contracts with a Guaranteed Period or Refund Provision</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	115%	86%	109%	102%	76%	77%	93%	80%
60-69	78	70	75	74	69	71	78	72
70-79	88	83	92	90	99	87	89	90
80 and over	*	*	131	130	*	*	127	123
All	82%	74%	89%	84%	76%	76%	88%	82%
<i>Contracts without a Guaranteed Period or Refund Provision</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	64%	97%	*	78%	48%	75%	*	62%
60-69	44	63	65%	58	38	59	66%	55
70-79	66	71	85	82	56	58	81	76
80 and over	*	*	133	136	*	*	124	126
All	48%	66%	81%	72%	41%	59%	79%	66%
<i>All Contracts</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	104%	88%	101%	97%	70%	77%	89%	76%
60-69	68	68	72	69	61	68	75	68
70-79	84	80	90	88	91	81	87	86
80 and over	*	*	131	131	*	*	127	124
All	73%	72%	87%	81%	67%	72%	86%	78%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 13
 MATURED DEFERRED ANNUITIES—MALE LIVES
 EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
 MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
<i>Contracts with a Guaranteed Period or Refund Provision</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	162%	153%	213%	167%	158%	190%	170%	173%
60-69	129	134	168	138	131	135	137	134
70-79	112	127	113	116	98	102	115	109
80 and over	*	*	86	90	*	*	113	111
All	126%	132%	121%	126%	121%	124%	119%	121%
<i>Contracts without a Guaranteed Period or Refund Provision</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	*	*	*	*	*	*	*	*
60-69	81%	95%	222%	115%	64%	99%	213%	110%
70-79	91	125	107	109	66	91	113	105
80 and over	*	*	87	90	*	*	52	53
All	83%	104%	123%	109%	64%	97%	120%	102%
<i>All Contracts</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	152%	147%	189%	156%	150%	180%	144%	162%
60-69	122	128	177	134	123	130	148	131
70-79	110	127	112	115	96	101	115	108
80 and over	*	*	87	90	*	*	97	98
All	121%	128%	122%	124%	115%	121%	120%	119%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 14
 MATURED DEFERRED ANNUITIES—FEMALE LIVES
 EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
 MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Durations				Durations			
	1-2	3-5	6 and over	All	1-2	3-5	6 and over	All
<i>Contracts with a Guaranteed Period or Refund Provision</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	224%	164%	207%	196%	149%	148%	177%	153%
60-69	128	110	115	116	114	110	119	114
70-79	116	104	112	111	130	107	108	110
80 and over	*	*	121	120	*	*	118	114
All	132%	110%	114%	116%	120%	111%	112%	113%
<i>Contracts without a Guaranteed Period or Refund Provision</i>								
Under 50	*	*	*	*	*	*	*	*
50-59	123%	186%	*	151%	93%	143%	*	119%
60-69	73	98	98%	92	62	92	101%	86
70-79	88	90	103	100	74	74	98	93
80 and over	*	*	125	127	*	*	116	118
All	79%	99%	103%	99%	67%	89%	100%	92%
All Contracts								
Under 50	*	*	*	*	*	*	*	*
50-59	201%	169%	194%	186%	137%	147%	170%	147%
60-69	113	106	110	109	100	106	114	107
70-79	110	100	109	108	120	100	105	105
80 and over	*	*	122	122	*	*	117	115
All	118%	107%	111%	111%	107%	105%	109%	108%

* Less than 10 contracts terminated by death

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

The main features of the experience as brought out in Tables 11, 12, 13, and 14 may be summarized as follows:

1. *Mortality Ratios on 1937 Standard Annuity Table*

On the 1937 Standard Annuity Table, the mortality ratios by sex for the aggregate experience under deferred annuities with and without a guaranteed period or refund provision were:

	By Number of Contracts	By Amounts of Annual Income
Male.....	105%	101%
Female.....	81%	78%

The aggregate mortality ratios for females under deferred nonrefund annuities were below 75% of the 1937 Standard Annuity Table, both by number of contracts and by amounts of annual income. For females under deferred refund annuities, the aggregate mortality ratios were below 85% of the 1937 Standard Annuity Table; at ages 60-69 the mortality ratios fell below 75% of the 1937 Standard Annuity Table. For males under deferred nonrefund annuities, the mortality ratios were below 100% of the 1937 Standard Annuity Table in each of the decennial attained age groups.

2. *Mortality Ratios on Annuity Table for 1949*

On the Annuity Table for 1949, the mortality ratios by sex for the aggregate experience under deferred annuities with and without a guaranteed period or refund provision were:

	By Number of Contracts	By Amounts of Annual Income
Male.....	124%	119%
Female.....	111%	108%

The mortality ratios on the Annuity Table for 1949 were significantly below 100% only in the first two durations under deferred nonrefund annuities.

3. *Male vs. Female Mortality*

The mortality ratios for females were generally lower than for males on both the 1937 Standard Annuity Table and the Annuity Table for 1949, the differences being usually smaller on the latter table.

4. *Refund vs. Nonrefund Annuities*

The over-all mortality ratios on refund annuities were about 15% higher by number of contracts and about 20% higher by amounts of annual income than on nonrefund annuities. In the case of males, however, the mortality ratios in the sixth and subsequent durations were about the same for refund and nonrefund annuities. In the case of females, the mor-

tality ratios in the sixth and subsequent durations were about 10% higher on refund annuities than on nonrefund annuities. In the first and second durations, the differential in mortality between refund and nonrefund annuities ranged from about 35% to 50%, by number of contracts and by amounts of annual income, for both males and females. By age this differential was largest in the range from 50 to 69 and diminished irregularly with advancing age.

5. *Select Mortality*

In the case of deferred refund annuities, the mortality ratios in the first and second durations were not significantly different from those in the subsequent durations. This shows that temporary selection was apparently absent. In the case of deferred nonrefund annuities, the mortality ratios in the first and second durations were substantially below those in the later durations—from 30% to 45% lower for males and from 25% to 40% lower for females.

6. *Mortality by Number and Amounts*

The mortality ratios by amounts of annual income were generally lower than by number of contracts, pointing to some antiselection by amounts.

7. *Maturities at Ages 60–65*

To bring out the mortality under deferred annuities commencing at ages 60 to 65 inclusive, the experience under deferred annuities during the first five durations was retabulated by age groups at issue under 60, 60–65, and 66 and over. The results are shown in Table 15.

Contrary to the corresponding findings under life income settlements arising from maturities, the figures in Table 15 do not indicate that there is less selection against the companies under maturities of deferred annuities commencing at the usual retirement ages.

8. *Deferred Annuities Compared with Settlements Arising from Maturities*

A comparison of the experience under deferred refund annuities with that under life income settlements arising from maturities and surrenders is given in Table 16. This table shows the mortality ratios on the Annuity Table for 1949 Ultimate only, by attained ages for the first five durations, the sixth and subsequent durations, and all durations combined.

The figures in Table 16 indicate that the mortality ratios under deferred refund annuities were about 15% higher than under life income settlements arising from maturities and surrenders. This mortality differential was largest at ages under 60 and diminished irregularly with advanc-

ing age. The figures suggest that the selection exercised under life income settlements arising from maturities and surrenders is more pronounced than under deferred refund annuities and that among the early retirements under deferred refund annuity contracts there may be included a significant proportion of impaired lives.

COMPARISON WITH PREVIOUS EXPERIENCE UNDER MATURITIES
OF DEFERRED ANNUITY CONTRACTS

A comparison of the experience under maturities of deferred annuities between 1940 and 1945 anniversaries (*TASA XLVIII*, 151) with the ex-

TABLE 15
EXPERIENCE UNDER MATURED DEFERRED ANNUITIES
ACCORDING TO AGE AT WHICH LIFE INCOME BEGAN
Durations 1-5 Combined

AGE AT WHICH LIFE INCOME BEGAN	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME							
	With Guaranteed Period or Refund Provision		Without Guaranteed Period or Refund Provision		With Guaranteed Period or Refund Provision		Without Guaranteed Period or Refund Provision					
	Males	Females	Males	Females	Males	Females	Males	Females				
	Mortality Ratios on 1937 Standard Annuity Table Number of Deaths† in Parentheses											
Under 60	123%	(133)	94%	(146)	63%	(9)	73%	(35)	131%	76%	54%	62%
60-65 . . .	104	(839)	74	(899)	77	(106)	55	(265)	103	72	71	51
66 and over . . .	108	(674)	81	(448)	86	(70)	67	(125)	96	82	67	53
All . . .	107%	(1,646)	78%	(1,493)	79%	(185)	59%	(425)	102%	76%	69%	52%
	Mortality Ratios on α -1949 Ultimate Table Number of Deaths† in Parentheses											
Under 60	158%	(133)	179%	(146)	79%	(9)	135%	(35)	168%	145%	69%	116%
60-65 . . .	129	(839)	119	(899)	95	(106)	89	(265)	127	116	88	82
66 and over . . .	126	(674)	105	(448)	100	(70)	89	(125)	111	106	79	71
All . . .	130%	(1,646)	118%	(1,493)	96%	(185)	91%	(425)	123%	114%	83%	80%

† Number of contracts terminated by death.

TABLE 16
 COMPARISON OF
 (A) MATURED DEFERRED ANNUITIES *with* A GUARANTEED
 PERIOD OR REFUND PROVISION
 WITH
 (B) LIFE INCOME SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS
 MORTALITY RATIOS ON *a*-1949 ULTIMATE TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Males		Females		Males		Females	
	A	B	A	B	A	B	A	B
Durations 1-5								
Under 50.....	*	<i>213%</i>	*	*	*	<i>351%</i>	*	*
50-59.....	157%	80	193%	100%	174%	67	148%	96%
60-69.....	132	101	117	96	133	111	112	94
70-79.....	121	88	107	104	100	81	115	90
80 and over.....	*	<i>103</i>	*	<i>125</i>	*	<i>96</i>	*	<i>140</i>
All.....	130%	97%	118%	98%	123%	101%	114%	95%
Durations 6 and over								
Under 50.....	*	*	*	*	*	*	*	*
50-59.....	<i>213%</i>	<i>64%</i>	<i>207%</i>	<i>101%</i>	<i>170%</i>	<i>35%</i>	<i>177%</i>	<i>97%</i>
60-69.....	168	104	115	93	137	98	119	91
70-79.....	113	116	112	103	115	120	108	102
80 and over.....	86	98	121	103	113	92	118	75
All.....	121%	109%	114%	101%	119%	110%	112%	97%
All Durations								
Under 50.....	*	<i>186%</i>	*	<i>115%</i>	*	<i>305%</i>	*	<i>186%</i>
50-59.....	167%	77	196%	100	173%	63	153%	96
60-69.....	138	102	116	95	134	109	114	93
70-79.....	116	106	111	103	109	107	110	99
80 and over.....	90	99	120	106	111	93	114	90
All.....	126%	102%	116%	100%	121%	105%	113%	96%

* Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 17

COMPARISON OF EXPERIENCES UNDER MATURED DEFERRED ANNUITIES
1940-1945 EXPERIENCE AND 1945-1950 EXPERIENCE

MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

	ATTAINED AGES	DURATIONS 1-5		DURATIONS 6 AND OVER		ALL DURATIONS	
		1940-45	1945-50	1940-45	1945-50	1940-45	1945-50
Male Contracts with a Guaranteed Period or Refund Provision							
By Number of Contracts	Under 60	138%	122%	*	164%	134%	129%
	60-69	109	107	61%	136	105	112
	70 and over	91	106	118	99	101	102
	All	105%	107%	107%	107%	105%	107%
By Amounts of Annual Income	Under 60	143%	133%	*	130%	144%	133%
	60-69	113	108	59%	111	109	108
	70 and over	87	88	106	103	94	96
	All	107%	102%	97%	105%	105%	103%
Male Contracts without a Guaranteed Period or Refund Provision							
By Number of Contracts	Under 60	*	*	*	*	*	*
	60-69	84%	72%	164%	180%	92%	93%
	70 and over	88	101	91	94	89	96
	All	84%	79%	106%	109%	89%	94%
By Amounts of Annual Income	Under 60	*	*	*	*	*	*
	60-69	66%	67%	215%	173%	79%	89%
	70 and over	55	73	95	93	74	88
	All	65%	69%	118%	107%	77%	87%
Female Contracts with a Guaranteed Period or Refund Provision							
By Number of Contracts	Under 60	97%	100%	*	105%	97%	101%
	60-69	77	73	84%	75	78	74
	70 and over	85	85	100	95	93	93
	All	80%	78%	94%	89%	83%	84%
By Amounts of Annual Income	Under 60	78%	77%	*	90%	82%	79%
	60-69	86	70	72%	78	84	72
	70 and over	82	91	94	93	88	92
	All	84%	76%	87%	88%	85%	82%

*Less than 10 contracts terminated by death.

Note: Italics indicate less than 50 but not less than 10 contracts terminated by death.

TABLE 17—*Continued*

	ATTAINED AGES	DURATIONS 1-5		DURATIONS 6 AND OVER		ALL DURATIONS	
		1940-45	1945-50	1940-45	1945-50	1940-45	1945-50
		Female Contracts <i>without</i> a Guaranteed Period or Refund Provision					
By Number of Contracts	Under 60	*	79%	*	*	*	78%
	60-69	62%	55	109%	65%	68%	58
	70 and over	108	71	88	88	97	85
	All	70%	59%	94%	81%	77%	72%
By Amounts of Annual Income	Under 60	*	60%	*	*	*	62%
	60-69	59%	50	118%	66%	66%	55
	70 and over	79	58	83	84	81	79
	All	64%	52%	93%	79%	71%	66%

perience between 1945 and 1950 anniversaries here presented is given in Table 17. This table shows the mortality ratios on the 1937 Standard Annuity Table, by broad attained age groups for the first five durations, the sixth and subsequent durations and all durations combined, separately for refund and nonrefund annuities.

The main features of the comparison as brought out in Table 17 may be summarized as follows:

1. From the period 1940-45 to the period 1945-50, the mortality ratios for female nonrefund annuities decreased in the first five durations, in the sixth and subsequent durations, and for all durations combined. The mortality ratios for male nonrefund annuities did not show any clear-cut trend in the first five durations nor in the sixth and subsequent durations; for all durations combined the mortality ratios for male nonrefund annuities increased mainly because in the more recent study there was a higher proportion of the exposure in the sixth and subsequent durations and also at the older ages where the mortality ratios on the 1937 Standard Annuity Table are higher. The mortality ratios for refund annuities in the first five and in the sixth and subsequent durations did not show any clear-cut trends. The aggregate mortality ratios for refund annuities increased slightly by number of contracts but decreased about as much by amounts of annual income, for both sexes.

2. Broadly speaking, there were no clear-cut changes in mortality by duration.

3. The mortality ratios for females under both refund and nonrefund

TABLE 18

 VARIATION IN EXPERIENCE BY INDIVIDUAL COMPANIES
 MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

COMPANY	SETTLEMENTS ARISING FROM DEATH CLAIMS				SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS			
	Payee Elections Females		Nonpayee Elections Females		Males		Females	
	Mortality Ratio*	Number of Deaths†	Mortality Ratio*	Number of Deaths†	Mortality Ratio*	Number of Deaths†	Mortality Ratio*	Number of Deaths†
A.....	149%	60	109%	29	87%	116	61%	18
B.....	111	63	99	33	101	32	62	24
C.....	98	113	87	103	90	89	83	88
D.....	97	305	95	206	87	74	53	48
E.....	96	171	104	264	89	122	84	100
F.....	91	430	117	214	97	318	56	23
G.....	88	159	77	71	91	391	88	111
H.....	83	106	95	99	91	64	81	29
I.....	82	83	109	115	84	172	65	80
J.....	80	63	87	40	90	76	59	30
K.....	79	183	68	46	66	120	59	68
L.....	76	243	85	170	76	30	38	17
M.....	76	70	124	63	77	42	55	19
N.....	74	159	101	94	89	128	59	58
O.....	68	236	55	149	88	20	63	8
P.....	68	102	81	90	78	154	61	105
Q.....	62	231	111	337	96	241	80	359
R.....	60	53	105	82	80	116	46	22
All...	81%	2,830	94%	2,205	87%	2,305	70%	1,207
MATURED DEFERRED ANNUITIES								
	With a Guaranteed Period or Refund Provision				Without a Guaranteed Period or Refund Provision			
	Males		Females		Males		Females	
	Mortality Ratio*	Number of Deaths†	Mortality Ratio*	Number of Deaths†	Mortality Ratio*	Number of Deaths†	Mortality Ratio*	Number of Deaths†
A.....	91%	56	109%	42	404%	37	156%	23
B.....	88	117	72	78	83	17	63	30
C.....	90	131	78	410	19	6	145	29
D.....	101	47	78	32	81	7	49	4
E.....	99	116	94	163	76	8	126	25
F.....	72	31						
G.....	125	96	80	62	116	14	57	20
H.....	119	84	70	57	112	16	75	18
I.....	124	84	96	37	83	16	74	19
J.....	113	77	78	55	39	1	62	4
K.....								
L.....	93	115	82	101	43	3	17	2
M.....	97	159	91	129	77	11	56	27
N.....					213	2	55	1
O.....	117	1,400	88	1,849	94	192	71	753
P.....	111	21	103	20	91	2	57	7
Q.....	98	259	78	429	98	95	69	198
R.....	91	59	62	65			106	2
All...	107%	2,852	84%	3,529	94%	427	72%	1,162

* By Number of Contracts.

† Number of contracts terminated by death.

annuities decreased significantly at ages 60–69. No clear-cut changes were apparent in the male mortality by age.

VARIATIONS IN EXPERIENCE BY INDIVIDUAL COMPANIES

In each of the categories studied there was considerable variation in the experience by individual companies. Table 18 presents the individual company mortality ratios on the 1937 Standard Annuity Table by number of contracts (and also the corresponding numbers of contracts terminated by death) for each category to which individual companies contributed a sizable volume of data.

The main features of the figures presented in Table 18 may be summarized as follows:

1. In the case of female life income settlements arising from death claims, 11 of the 18 contributing companies showed lower mortality ratios for payee elections than for nonpayee elections. In only two companies was the mortality ratio under nonpayee elections significantly lower than under payee elections.
2. In the experience under female payee life income settlements arising from death claims, there was a very wide range of variation by individual companies.
3. In the experience under life income settlements arising from maturities or surrenders, there was somewhat less variation by individual companies than in the case of the other categories considered.
4. Under life income settlements arising from maturities or surrenders, there was an appreciable degree of correlation between the male and female experience of individual companies.
5. In the experience under deferred annuities, there was a wide range of variation by individual companies reflecting, in part, fluctuations due to relatively small numbers, particularly in the case of the nonrefund annuities.

In the previous study it had been suggested that there might be some correlation between the proportion of a company's settlements under payee elections and the level of the mortality experienced. An analysis of the individual company experiences in the present as well as in the previous study did not bear out this hypothesis.

APPENDIX

TABLE A
 CONTRIBUTING COMPANIES
 PROPORTION OF TOTAL EXPOSURES* CONTRIBUTED BY EACH

COMPANY	LIFE INCOME SETTLEMENTS ARISING FROM		DEFERRED ANNUITIES
	Death Claims	Maturities and Sur- renders	
New York Life.....	11.8%	14.7%	14.7%
Northwestern Mutual.....	10.5	7.2	.7
Equitable (N.Y.).....	10.1	1.0	38.1
Prudential.....	9.9	4.7	2.0
Mutual Life.....	8.5	2.4	3.8
Penn Mutual.....	6.4	5.4	5.3
Metropolitan.....	6.0	6.3
Travelers.....	5.4	13.3	3.1
Aetna.....	5.2	10.1	.5
Mutual Benefit.....	4.6	5.9	0
Massachusetts Mutual.....	3.9	4.9	9.6
Union Central.....	3.6	1.9	2.4
New England Mutual.....	3.0	7.8	1.9
Provident Mutual.....	2.8	3.5	2.6
John Hancock.....	2.4	1.7	4.9
Connecticut Mutual.....	2.1	3.0	2.5
Sun Life.....	1.9	1.8	6.1
Connecticut General.....	1.9	4.4	1.8
Total.....	100.0%	100.0%	100.0%

* By Amounts of Annual Income.

TABLE B
EXPOSURES AND DEATHS UNDER LIFE INCOME SETTLEMENTS
ARISING FROM DEATH CLAIMS

DURATIONS	TYPE OF ELECTION					
	Payee		Nonpayee		Payee and Nonpayee Combined	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
	Exposures					
<i>Males:</i>						
1-5.....	2,568	\$ 1,306,329	3,558	\$ 1,901,075	6,126	\$ 3,207,404
6 and over..	2,702	1,020,642	4,691	2,094,544	7,393	3,115,186
All.....	5,270	\$ 2,326,971	8,249	\$ 3,995,619	13,519	\$ 6,322,590
<i>Females:</i>						
1-5.....	81,695	\$41,336,618	58,578	\$35,609,057	140,273	\$ 76,945,675
6 and over..	97,070	44,614,978	73,549	42,781,005	170,619	87,395,983
All.....	178,765	\$85,951,596	132,127	\$78,390,062	310,892	\$164,341,658
	Deaths					
<i>Males:</i>						
1-5.....	36	\$ 19,943	63	\$ 46,754	99	\$ 66,697
6 and over..	95	40,085	102	51,723	197	91,808
All.....	131	\$ 60,028	165	\$ 98,477	296	\$ 158,505
<i>Females:</i>						
1-5.....	874	\$ 467,454	650	\$ 442,288	1,524	\$ 909,742
6 and over..	1,956	923,934	1,555	939,623	3,511	1,863,557
All.....	2,830	\$ 1,391,388	2,205	\$ 1,381,911	5,035	\$ 2,773,299

TABLE C
EXPOSURES AND DEATHS UNDER LIFE IN-
COME SETTLEMENTS ARISING FROM
MATURITIES AND SURRENDERS

Durations	Number of Contracts	Amounts of Annual Income
Exposures		
<i>Males:</i>		
1-5.....	52,418	\$30,724,447
6 and over....	23,599	12,073,966
All.....	76,017	\$42,798,413
<i>Females:</i>		
1-5.....	54,159	\$20,139,051
6 and over....	32,779	10,965,632
All.....	86,938	\$31,104,683
Deaths		
<i>Males:</i>		
1-5.....	1,236	\$ 740,859
6 and over....	1,069	538,403
All.....	2,305	\$ 1,279,262
<i>Females:</i>		
1-5.....	551	\$ 209,059
6 and over....	656	224,130
All.....	1,207	\$ 433,189

TABLE D
EXPOSURES AND DEATHS UNDER MATURED DEFERRED ANNUITIES

DURATIONS	WITH A GUARANTEED PERIOD OR REFUND PROVISION		WITHOUT A GUARANTEED PERIOD OR REFUND PROVISION	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
Exposures				
<i>Males:</i>				
1-5	47,659	\$27,922,094	7,285	\$ 3,517,349
6 and over	24,204	12,376,129	4,591	2,228,831
All	71,863	\$40,298,223	11,876	\$ 5,746,180
<i>Females:</i>				
1-5	98,387	\$27,618,918	36,947	\$ 9,191,736
6 and over	75,191	17,956,062	29,216	6,415,517
All	173,578	\$45,574,980	66,163	\$15,607,253
Deaths				
<i>Males:</i>				
1-5	1,646	\$ 923,714	185	\$ 75,826
6 and over	1,206	594,505	242	114,425
All	2,852	\$ 1,518,219	427	\$ 190,251
<i>Females:</i>				
1-5	1,493	\$ 413,429	425	\$ 93,198
6 and over	2,036	477,781	737	156,144
All	3,529	\$ 891,210	1,162	\$ 249,342

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TABLE E
LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
PAYEE ELECTIONS

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>a</i> -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50.....	242	143,686	0	0	1.12	647	0%	0%	.61	349	0%	0%
50-59.....	137	77,016	0	0	1.78	976	0	0	1.35	746	0	0
60-69.....	141	60,963	2	1,791	3.88	1,729	52	104	3.11	1,395	64	128
70-79.....	38	20,962	2	1,353	1.98	1,114	101	121	1.76	982	114	138
80 and over..	3	658	0	0	.33	81	0	0	.35	88	0	0
All Ages....	561	303,285	4	3,144	9.09	4,547	44%	69%	7.18	3,560	56%	88%
<i>Duration 2</i>												
Under 50.....	198	117,517	0	0	.85	528	0%	0%	.50	289	0%	0%
50-59.....	151	82,414	1	139	1.96	1,061	51	13	1.54	814	65	17
60-69.....	144	58,750	3	1,808	4.08	1,697	74	107	3.31	1,372	91	132
70-79.....	44	23,221	0	0	2.25	1,215	0	0	2.01	1,069	0	0
80 and over..	6	2,334	1	610	.71	306	141	199	.74	338	135	180
All Ages....	543	284,236	5	2,557	9.85	4,807	51%	53%	8.10	3,882	62%	66%
<i>Duration 3</i>												
Under 50.....	157	99,588	1	105	.68	446	147%	24%	.38	241	263%	44%
50-59.....	157	81,510	1	326	2.10	1,082	48	30	1.63	834	61	39
60-69.....	158	60,291	2	667	4.55	1,711	44	39	3.66	1,386	55	48
70-79.....	64	35,121	1	539	3.36	1,839	30	29	2.98	1,621	34	33
80 and over..	6	3,092	0	0	.71	387	0	0	.77	422	0	0
All Ages....	542	279,602	5	1,637	11.40	5,465	44%	30%	9.42	4,504	53%	36%

<i>Duration 4</i>												
Under 50....	128	88,356	1	1,960	.55	425	182%	461%	.32	229	313%	856%
50-59.....	117	53,075	0	0	1.60	716	0	0	1.27	551	0	0
60-69.....	156	63,934	6	1,463	4.54	1,859	132	79	3.72	1,505	161	97
70-79.....	68	34,973	1	1,938	3.68	1,858	27	104	3.29	1,644	30	118
80 and over..	8	3,473	1	927	.91	422	110	220	.98	457	102	203
All Ages...	477	243,811	9	6,288	11.28	5,280	80%	119%	9.58	4,386	94%	143%
<i>Duration 5</i>												
Under 50....	88	43,283	1	953	.37	240	270%	397%	.21	138	476%	691%
50-59.....	95	39,147	2	543	1.35	531	148	102	1.04	407	192	133
60-69.....	172	74,855	8	3,315	5.07	2,198	158	151	4.10	1,783	195	186
70-79.....	79	34,536	1	1,313	4.20	1,837	24	71	3.72	1,631	27	81
80 and over..	11	3,574	1	193	1.12	352	89	55	1.16	357	86	54
All Ages...	445	195,395	13	6,317	12.11	5,158	107%	122%	10.23	4,316	127%	146%
<i>Durations 6 and over</i>												
Under 50....	373	142,626	6	1,665	1.70	768	353%	217%	.95	433	632%	385%
50-59.....	404	144,902	12	4,960	5.58	1,905	215	260	4.35	1,462	276	339
60-69.....	820	335,014	21	13,950	24.25	9,950	87	140	19.63	8,057	107	173
70-79.....	861	318,541	39	15,670	48.55	17,608	80	89	43.48	15,699	90	100
80 and over..	244	79,559	17	3,840	27.79	9,241	61	42	29.57	9,860	57	39
All Ages...	2,702	1,020,642	95	40,085	107.87	39,472	88%	102%	97.98	35,511	97%	113%
<i>All Durations</i>												
Under 50....	1,186	635,056	9	4,683	5.27	3,054	171%	153%	2.97	1,679	303%	279%
50-59.....	1,061	478,064	16	5,968	14.37	6,271	111	95	11.18	4,814	143	124
60-69.....	1,591	653,807	42	22,994	46.37	19,144	91	120	37.53	15,498	112	148
70-79.....	1,154	467,354	44	20,813	64.02	25,471	69	82	57.24	22,646	77	92
80 and over..	278	92,690	20	5,570	31.57	10,789	63	52	33.57	11,522	60	48
All Ages...	5,270	2,326,971	131	60,028	161.60	64,729	81%	93%	142.49	56,159	92%	107%

TABLE E—Continue

LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
PAYEE ELECTIONS

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>a</i> -1949 TABLE				
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio		
					Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts
<i>Duration 1</i>													
Under 50....	2,989	1,427,139	10	7,134	12.05	5,965	83%	120%	5.74	2,794	174%	255%	
50-59.....	6,477	3,494,749	22	7,348	61.50	33,254	36	22	31.64	17,129	70	43	
60-69.....	5,836	3,267,837	45	20,938	107.94	60,658	42	35	67.16	37,809	67	55	
70-79.....	1,567	972,379	20	11,419	57.25	35,465	35	32	47.07	29,032	42	39	
80 and over..	64	36,752	2	541	4.81	2,652	42	20	5.44	2,970	37	18	
All Ages...	16,933	9,198,856	99	47,380	243.55	137,994	41%	34%	157.05	89,734	63%	53%	
<i>Duration 2</i>													
Under 50....	2,724	1,253,096	15	13,010	10.97	5,186	137%	251%	5.20	2,429	288%	536%	
50-59.....	6,385	3,301,920	36	13,511	60.66	31,464	59	43	31.24	16,205	115	83	
60-69.....	6,069	3,268,461	79	47,351	112.51	60,707	70	78	70.10	37,831	113	125	
70-79.....	1,741	1,023,952	43	21,279	63.45	37,502	68	57	52.03	30,764	83	69	
80 and over..	110	55,111	6	2,903	7.89	3,947	76	74	8.79	4,402	68	66	
All Ages...	17,029	8,902,540	179	98,054	255.48	138,806	70%	71%	167.36	91,631	107%	107%	
<i>Duration 3</i>													
Under 50....	2,331	1,026,974	8	6,727	9.30	4,209	86%	160%	4.45	1,973	180%	341%	
50-59.....	5,983	2,927,889	38	17,098	57.21	27,981	66	61	29.48	14,416	129	119	
60-69.....	6,088	3,153,358	87	45,933	113.82	58,813	76	78	71.13	36,717	122	125	
70-79.....	1,855	1,033,076	55	31,827	68.21	38,352	81	83	56.09	31,673	98	100	
80 and over..	121	57,647	11	9,767	8.77	4,202	125	232	9.79	4,716	112	207	
All Ages...	16,378	8,198,944	199	111,352	257.31	133,557	77%	83%	170.94	89,495	116%	124%	

<i>Duration 4</i>												
Under 50....	2,032	846,373	9	2,313	8.22	3,502	109%	66%	3.91	1,643	230%	141%
50-59.....	5,452	2,662,789	39	15,998	52.48	25,713	74	62	27.08	13,268	144	121
60-69.....	6,224	3,130,610	80	49,181	116.93	59,039	68	83	73.25	36,997	109	133
70-79.....	1,959	1,016,255	45	29,713	71.76	37,561	63	79	58.87	30,942	76	96
80 and over..	151	78,552	3	1,201	10.57	5,387	28	22	11.55	5,840	26	21
All Ages...	15,818	7,734,579	176	98,406	259.96	131,202	68%	75%	174.66	88,690	101%	111%
<i>Duration 5</i>												
Under 50....	1,781	709,560	9	3,641	7.19	2,978	125%	122%	3.46	1,395	260%	261%
50-59.....	5,047	2,381,628	30	11,369	48.92	23,223	61	49	25.29	12,001	119	95
60-69.....	6,346	3,034,180	88	45,387	119.99	57,426	73	79	75.31	36,040	117	126
70-79.....	2,156	1,067,488	78	40,952	79.37	39,625	98	103	65.28	32,749	119	125
80 and over..	207	108,843	16	10,913	14.50	7,525	110	145	15.87	8,194	101	133
All Ages...	15,537	7,301,699	221	112,262	269.97	130,777	82%	86%	185.21	90,379	119%	124%
<i>Durations 6 and over</i>												
Under 50....	6,728	2,705,307	24	11,573	28.64	11,681	84%	99%	13.46	5,480	178%	211%
50-59.....	23,145	10,734,016	174	79,401	226.22	105,217	77	75	117.04	54,444	149	146
60-69.....	40,467	18,240,883	574	271,641	791.24	355,749	73	76	502.38	225,722	114	120
70-79.....	22,969	11,099,562	820	398,445	869.89	426,788	94	93	725.19	358,188	113	111
80 and over..	3,761	1,835,210	364	162,874	284.36	138,588	128	118	325.52	158,619	112	103
All Ages...	97,070	44,614,978	1,956	923,934	2,200.35	1,038,023	89%	89%	1,683.59	802,453	116%	115%
<i>All Durations</i>												
Under 50....	18,585	7,968,449	75	44,398	76.37	33,521	98%	132%	36.22	15,714	207%	283%
50-59.....	52,489	25,502,991	339	144,725	506.99	246,852	67	59	261.77	127,463	130	114
60-69.....	71,030	34,095,329	953	480,431	1,362.43	652,392	70	74	859.33	411,116	111	117
70-79.....	32,247	16,212,712	1,061	533,635	1,209.93	615,293	88	87	1,004.53	513,348	106	104
80 and over..	4,414	2,172,115	402	188,199	330.90	162,301	121	116	376.96	184,741	107	102
All Ages...	178,765	85,951,596	2,830	1,391,388	3,486.62	1,710,359	81%	81%	2,538.81	1,252,382	111%	111%

TABLE E—Continued
LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
NONPAYEE ELECTIONS

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ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON a-1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50....	525	257,692	3	711	1.63	960	184%	74%	.91	524	330%	136%
50-59.....	103	56,027	1	169	1.25	679	80	25	.96	517	104	33
60-69.....	116	72,383	3	1,336	3.12	2,077	96	64	2.51	1,676	120	80
70-79.....	21	11,787	3	1,825	1.14	632	263	289	.99	559	303	326
80 and over..	6	6,263	3	3,711	.68	733	441	506	.73	778	411	477
All Ages...	771	404,152	13	7,752	7.82	5,081	166%	153%	6.10	4,054	213%	191%
<i>Duration 2</i>												
Under 50....	502	246,982	6	1,439	1.56	944	385%	152%	.87	507	690%	284%
50-59.....	111	58,939	0	0	1.38	750	0	0	1.09	571	0	0
60-69.....	122	92,301	7	3,903	3.47	2,845	202	137	2.81	2,308	249	169
70-79.....	26	12,927	2	1,596	1.42	712	141	224	1.26	633	159	252
80 and over..	8	5,587	0	0	.97	679	0	0	1.03	729	0	0
All Ages...	769	416,736	15	6,938	8.80	5,930	170%	117%	7.06	4,748	212%	146%
<i>Duration 3</i>												
Under 50....	457	219,932	1	595	1.44	863	69%	69%	.80	468	125%	127%
50-59.....	115	67,909	2	136	1.48	872	135	16	1.14	666	175	20
60-69.....	131	92,543	5	10,978	3.87	2,918	129	376	3.15	2,373	159	463
70-79.....	30	15,424	4	1,785	1.75	892	229	200	1.59	800	252	223
80 and over..	8	4,946	1	883	1.10	670	91	132	1.25	740	80	119
All Ages...	741	400,754	13	14,377	9.64	6,215	135%	231%	7.93	5,047	164%	285%

<i>Duration 4</i>												
Under 50....	413	198,104	2	692	1.23	777	163%	89%	.77	420	260%	165%
50-59.....	96	64,368	0	0	1.24	867	0	0	.97	671	0	0
60-69.....	135	84,475	4	3,844	4.17	2,771	96	139	3.44	2,265	116	170
70-79.....	22	12,585	1	1,376	1.26	692	79	199	1.12	618	89	223
80 and over..	11	4,635	2	1,386	1.44	596	139	233	1.61	654	124	212
All Ages...	677	364,167	9	7,298	9.34	5,703	96%	128%	7.91	4,628	114%	158%
<i>Duration 5</i>												
Under 50....	345	164,310	1	49	1.11	647	90%	8%	.66	349	152%	14%
50-59.....	88	57,592	3	2,506	1.17	830	256	302	.91	646	330	388
60-69.....	128	65,652	2	1,341	4.10	2,179	49	62	3.38	1,784	59	75
70-79.....	27	23,162	2	4,808	1.36	1,172	147	410	1.21	1,023	165	470
80 and over..	12	4,550	5	1,685	1.48	524	338	322	1.60	556	313	303
All Ages...	600	315,266	13	10,389	9.22	5,352	141%	194%	7.76	4,358	168%	238%
<i>Durations 6 and over</i>												
Under 50....	2,610	1,104,417	21	8,741	11.16	4,938	188%	177%	6.16	2,691	341%	325%
50-59.....	874	399,665	21	7,453	11.49	5,377	183	139	8.83	4,156	238	179
60-69.....	652	303,050	28	13,819	17.37	8,011	161	173	13.93	6,441	201	215
70-79.....	428	230,147	20	14,833	24.01	12,866	83	115	21.52	11,522	93	129
80 and over..	127	57,265	12	6,877	14.68	6,652	82	103	15.68	7,088	77	97
All Ages...	4,691	2,094,544	102	51,723	78.71	37,844	130%	137%	66.12	31,898	154%	162%
<i>All Durations</i>												
Under 50....	4,852	2,191,437	34	12,227	18.13	9,129	188%	134%	10.17	4,959	334%	247%
50-59.....	1,387	704,500	27	10,264	18.01	9,375	150	109	13.90	7,227	194	142
60-69.....	1,284	710,404	49	35,221	36.10	20,801	136	169	29.22	16,847	168	209
70-79.....	554	306,032	32	26,223	30.94	16,966	103	155	27.69	15,155	116	173
80 and over..	172	83,246	23	14,542	20.35	9,854	113	148	21.90	10,545	105	138
All Ages...	8,249	3,995,619	165	98,477	123.53	66,125	134%	149%	102.88	54,733	160%	180%

TABLE E - *Continued*

LIFE INCOME SETTLEMENTS ARISING FROM DEATH CLAIMS—FEMALE LIVES
 EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES
 NONPAYEE ELECTIONS

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON σ 1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50....	3,811	1,924,203	16	11,566	13.23	6,969	121%	166%	6.16	3,221	260%	359%
50-59.....	4,714	3,033,956	32	20,136	43.32	28,119	74	72	22.25	14,416	144	140
60-69.....	3,552	2,489,705	45	40,516	65.81	46,348	68	87	40.99	28,935	110	140
70-79.....	1,272	925,558	54	25,292	47.58	34,379	113	74	39.45	28,394	137	89
80 and over..	140	100,252	14	6,569	10.44	7,404	134	89	11.87	8,378	118	78
All Ages...	13,489	8,473,674	161	104,079	180.38	123,219	89%	84%	120.72	83,344	133%	125%
<i>Duration 2</i>												
Under 50....	3,552	1,732,624	5	2,088	12.35	6,263	40%	33%	5.78	2,897	87%	72%
50-59.....	4,357	2,757,718	12	11,089	40.42	25,795	30	43	20.70	13,239	58	84
60-69.....	3,454	2,354,328	40	30,823	64.35	44,297	62	70	40.24	27,754	99	111
70-79.....	1,256	911,137	49	32,860	47.80	34,541	103	95	39.89	28,804	123	114
80 and over..	157	107,948	7	4,926	11.48	7,940	61	62	12.96	8,979	54	55
All Ages...	12,776	7,863,755	113	81,786	176.40	118,836	64%	69%	119.57	81,673	95%	100%
<i>Duration 3</i>												
Under 50....	3,154	1,525,492	5	1,052	11.04	5,604	45%	19%	5.07	2,562	99%	41%
50-59.....	3,900	2,393,812	23	16,644	36.23	22,577	63	74	18.64	11,611	123	143
60-69.....	3,265	2,141,046	40	22,293	60.94	40,209	66	55	37.99	25,166	105	89
70-79.....	1,202	889,032	38	34,374	45.06	32,952	84	104	37.47	27,186	101	126
80 and over..	184	128,513	20	19,071	13.61	9,230	147	207	15.38	10,304	130	185
All Ages...	11,705	7,077,895	126	93,434	166.88	110,572	76%	85%	114.55	76,829	110%	122%

<i>Duration 4</i>												
Under 50....	2,774	1,318,994	3	1,138	9.36	4,741	32%	24%	4.40	2,199	68%	52%
50-59.....	3,495	2,090,380	24	12,482	32.67	19,825	73	63	16.77	10,200	143	122
60-69.....	3,084	2,029,073	40	17,746	57.78	38,086	69	47	36.19	23,831	111	74
70-79.....	1,226	853,834	44	28,525	46.50	32,138	95	89	38.77	26,699	113	107
80 and over..	165	112,829	19	14,677	12.28	8,280	155	177	13.85	9,291	137	158
All Ages....	10,744	6,405,110	130	74,568	158.59	103,070	82%	72%	109.98	72,220	118%	103%
<i>Duration 5</i>												
Under 50....	2,462	1,165,368	6	3,901	8.32	4,186	72%	93%	3.97	1,937	151%	201%
50-59.....	3,102	1,786,207	17	10,474	29.08	16,972	58	62	14.92	8,735	114	120
60-69.....	2,931	1,918,557	46	37,434	55.41	36,563	83	102	34.83	23,004	132	163
70-79.....	1,183	802,087	41	30,872	44.74	30,204	92	102	37.29	25,078	110	123
80 and over..	186	116,404	10	5,740	13.65	8,543	73	67	15.35	9,588	65	60
All Ages....	9,864	5,788,623	120	88,421	151.20	96,468	79%	92%	106.36	68,342	113%	129%
<i>Durations 6 and over</i>												
Under 50....	13,899	6,715,089	34	16,948	49.74	24,261	68%	70%	23.06	11,252	147%	151%
50-59.....	17,898	10,014,101	121	79,111	170.07	95,726	71	83	87.54	49,347	138	160
60-69.....	23,421	14,907,289	363	227,538	451.68	289,110	80	79	285.48	183,077	127	124
70-79.....	14,881	9,124,899	656	396,365	578.62	354,237	113	112	488.40	298,793	134	133
80 and over..	3,450	2,019,627	381	219,661	270.75	159,901	141	137	316.66	188,306	120	117
All Ages....	73,549	42,781,005	1,555	939,623	1,520.86	923,235	102%	102%	1,201.14	730,775	129%	129%
<i>All Durations</i>												
Under 50....	29,652	14,381,770	69	36,693	104.04	52,024	66%	71%	48.44	24,068	142%	152%
50-59.....	37,466	22,076,174	229	149,936	351.79	209,014	65	72	180.82	107,548	127	139
60-69.....	39,707	25,839,998	574	376,350	755.97	494,613	76	76	475.72	311,767	121	121
70-79.....	21,020	13,506,547	882	548,288	810.30	518,451	109	106	681.27	434,954	129	126
80 and over..	4,282	2,585,573	451	270,644	332.21	201,298	136	134	386.07	234,846	117	115
All Ages....	132,127	78,390,062	2,205	1,381,911	2,354.31	1,475,400	94%	94%	1,772.32	1,113,183	124%	124%

TABLE F

LIFE INCOME SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>a</i> -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50.....	518	213,569	3	1,069	2.91	1,185	103%	90%	1.82	707	165%	151%
50-59.....	2,739	1,766,432	16	4,884	37.31	24,202	43	20	29.00	18,776	55	26
60-69.....	10,308	6,148,320	211	125,898	278.12	163,620	76	77	223.20	131,243	95	96
70-79.....	1,399	759,575	55	18,830	71.81	38,729	77	49	62.99	33,953	87	55
80 and over....	77	47,420	6	3,854	7.98	4,883	75	79	8.27	5,033	73	77
All Ages.....	15,041	8,935,316	291	154,535	398.13	232,619	73%	66%	325.28	189,712	89%	81%
<i>Duration 2</i>												
Under 50.....	426	185,785	5	2,446	2.48	1,050	202%	233%	1.52	614	329%	398%
50-59.....	2,288	1,453,873	14	6,568	32.26	20,575	43	32	25.09	16,039	56	41
60-69.....	8,521	5,120,140	190	117,799	242.81	144,206	78	82	195.62	116,123	97	101
70-79.....	1,382	747,428	51	21,041	71.77	38,811	71	54	63.06	34,117	81	62
80 and over....	91	54,480	13	9,039	9.06	5,478	143	165	9.26	5,593	140	162
All Ages.....	12,708	7,561,706	273	156,893	358.38	210,120	76%	75%	294.55	172,486	93%	91%
<i>Duration 3</i>												
Under 50.....	327	139,853	3	1,707	1.97	831	152%	205%	1.17	493	256%	346%
50-59.....	1,822	1,116,764	21	11,021	26.43	16,443	79	67	20.68	12,863	102	86
60-69.....	6,761	4,014,422	150	102,511	203.74	119,423	74	86	164.94	96,610	91	106
70-79.....	1,256	671,365	56	26,659	67.16	35,840	83	74	59.43	31,688	94	84
80 and over....	87	50,868	8	2,174	8.78	5,127	91	42	8.99	5,234	89	42
All Ages.....	10,253	5,993,272	238	144,072	308.08	177,664	77%	81%	255.21	146,888	93%	98%

<i>Duration 4</i>												
Under 50.....	241	104,029	1	1,141	1.52	629	66%	181%	.89	374	112%	305%
50-59.....	1,341	789,102	18	9,196	20.12	12,046	89	76	15.81	9,448	114	97
60-69.....	5,240	3,113,282	143	95,869	166.16	97,825	86	98	135.27	79,587	106	120
70-79.....	1,153	593,719	44	20,501	62.65	32,087	70	64	55.58	28,447	79	72
80 and over...	82	40,515	6	2,396	8.42	4,115	71	58	8.69	4,211	69	57
All Ages....	8,057	4,640,647	212	129,103	258.87	146,702	82%	88%	216.24	122,067	98%	106%
<i>Duration 5</i>												
Under 50.....	185	79,851	1	2,343	1.19	486	84%	482%	.71	290	141%	808%
50-59.....	1,004	597,215	13	11,372	15.62	9,476	83	120	12.30	7,440	106	153
60-69.....	3,959	2,307,327	143	98,760	130.73	76,397	109	129	107.12	62,557	133	158
70-79.....	1,139	574,114	54	38,507	62.20	31,088	87	124	55.30	27,604	98	139
80 and over...	72	34,999	11	5,274	7.44	3,621	148	146	7.62	3,719	144	142
All Ages....	6,359	3,593,506	222	156,256	217.18	121,068	102%	129%	183.05	101,610	121%	154%
<i>Durations 6 and over</i>												
Under 50.....	505	162,344	2	792	3.27	1,050	61%	75%	1.95	641	103%	124%
50-59.....	1,904	842,018	14	3,313	27.72	12,271	51	27	21.72	9,569	64	35
60-69.....	7,202	3,980,889	179	93,506	212.06	118,225	84	79	171.68	95,728	104	98
70-79.....	12,281	6,347,443	686	363,702	668.15	340,677	103	107	593.74	301,905	116	120
80 and over...	1,707	741,272	188	77,090	184.50	79,992	102	96	192.61	83,472	98	92
All Ages....	23,599	12,073,966	1,069	538,403	1,095.70	552,215	98%	97%	981.70	491,315	109%	110%
<i>All Durations</i>												
Under 50.....	2,202	885,431	15	9,498	13.34	5,231	112%	182%	8.06	3,119	186%	305%
50-59.....	11,098	6,565,404	96	46,354	159.46	95,013	60	49	124.60	74,135	77	63
60-69.....	41,991	24,684,380	1,016	634,343	1,233.62	719,696	82	88	997.83	581,848	102	109
70-79.....	18,610	9,693,644	946	489,240	1,003.74	517,232	94	95	890.10	457,714	106	107
80 and over...	2,116	969,554	232	99,827	226.18	103,216	103	97	235.44	107,262	99	93
All Ages....	76,017	42,798,413	2,305	1,279,262	2,636.34	1,440,388	87%	89%	2,256.03	1,224,078	102%	105%

TABLE F--Continued

LIFE INCOME SETTLEMENTS ARISING FROM MATURITIES AND SURRENDERS--FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON a -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50.....	1,056	393,067	2	480	4.08	1,528	49%	31%	2.00	710	100%	68%
50-59.....	4,106	1,545,668	15	3,997	38.12	14,410	39	28	19.53	7,371	77	54
60-69.....	8,016	3,072,093	64	22,861	137.52	53,033	47	43	83.19	32,166	77	71
70-79.....	519	246,580	10	5,321	17.84	8,644	56	62	14.23	6,961	70	76
80 and over...	20	21,688	3	2,599	1.43	1,566	210	166	1.57	1,745	191	149
All Ages....	13,717	5,279,096	94	35,258	198.99	79,181	47%	45%	120.52	48,953	78%	72%
<i>Duration 2</i>												
Under 50.....	849	281,990	2	1,346	3.27	1,072	61%	126%	1.61	500	124%	269%
50-59.....	3,623	1,368,695	16	6,145	34.67	13,178	46	47	17.83	6,778	90	91
60-69.....	7,308	2,756,770	57	20,569	132.50	50,231	43	41	81.64	31,020	70	66
70-79.....	584	273,501	24	10,145	20.36	9,615	118	106	16.29	7,739	147	131
80 and over...	25	22,974	3	4,795	1.74	1,626	172	295	1.85	1,795	162	267
All Ages....	12,389	4,703,930	102	43,000	192.54	75,722	53%	57%	119.22	47,832	86%	90%
<i>Duration 3</i>												
Under 50.....	669	205,959	0	0	2.60	783	0%	0%	1.27	371	0%	0%
50-59.....	2,998	1,078,032	16	5,328	29.72	10,768	54	49	15.28	5,577	105	96
60-69.....	6,471	2,420,517	87	32,087	123.90	46,551	70	69	77.85	29,312	112	109
70-79.....	604	271,667	10	5,040	21.37	9,616	47	52	17.22	7,758	58	65
80 and over...	18	15,112	1	246	1.33	1,185	75	21	1.47	1,378	68	18
All Ages....	10,760	3,991,287	114	42,701	178.92	68,903	64%	62%	113.09	44,396	101%	96%

<i>Duration 4</i>												
Under 50.....	505	154,494	1	86	2.03	569	49%	15%	.96	263	104%	33%
50-59.....	2,476	837,170	20	8,149	25.02	8,597	80	95	13.01	4,482	154	182
60-69.....	5,656	2,080,362	80	25,990	113.70	42,148	70	62	72.83	27,089	110	96
70-79.....	648	265,992	24	9,708	23.31	9,683	103	100	18.95	7,905	127	123
80 and over...	21	14,960	2	364	1.55	1,103	129	33	1.73	1,235	116	29
All Ages....	9,306	3,352,978	127	44,297	165.61	62,100	77%	71%	107.48	40,974	118%	108%
<i>Duration 5</i>												
Under 50.....	411	121,420	0	0	1.67	463	0%	0%	.83	215	0%	0%
50-59.....	2,028	637,740	10	3,119	21.02	6,772	48	46	11.02	3,560	91	88
60-69.....	4,786	1,722,056	79	33,245	100.63	36,549	79	91	65.66	23,934	120	139
70-79.....	734	317,097	23	5,197	25.74	11,128	89	47	20.77	8,959	111	58
80 and over...	28	13,447	2	2,242	2.00	1,017	100	220	2.20	1,152	91	195
All Ages....	7,987	2,811,760	114	43,803	151.06	55,929	75%	78%	100.48	37,820	113%	116%
<i>Durations 6 and over</i>												
Under 50.....	1,027	332,805	5	2,972	4.22	1,228	118%	242%	2.04	568	245%	523%
50-59.....	4,653	1,182,035	24	5,958	46.10	11,853	52	50	23.87	6,147	101	97
60-69.....	13,593	4,446,603	163	52,991	273.62	90,661	60	58	175.38	58,358	93	91
70-79.....	12,661	4,695,366	392	143,319	463.51	172,038	85	83	380.18	141,168	103	102
80 and over...	845	308,823	72	18,890	61.84	22,456	116	84	69.63	25,126	103	75
All Ages....	32,779	10,965,632	656	224,130	849.29	298,236	77%	75%	651.10	231,367	101%	97%
<i>All Durations</i>												
Under 50.....	4,517	1,489,735	10	4,884	17.87	5,643	56%	87%	8.71	2,627	115%	186%
50-59.....	19,884	6,649,340	101	32,696	194.65	65,578	52	50	100.54	33,915	100	96
60-69.....	45,830	16,498,401	530	187,743	881.87	319,173	60	59	556.55	201,879	95	93
70-79.....	15,750	6,070,203	483	178,730	572.13	220,724	84	81	467.64	180,490	103	99
80 and over...	957	397,004	83	29,136	69.89	28,953	119	101	78.45	32,431	106	90
All Ages....	86,938	31,104,683	1,207	433,189	1,736.41	640,071	70%	68%	1,211.89	451,342	100%	96%

TABLE C
MATURED DEFERRED ANNUITIES WITH A GUARANTEED PERIOD OR REFUND PROVISION—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>a</i> -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50....	87	46,042	0	0	38	212	0%	0%	20	117	0%	0%
50-59.....	1,750	1,050,685	36	24,884	23 30	14,026	155	177	17 99	10,825	200	230
60-69.....	8,235	4,786,598	231	111,923	225 89	130,447	102	86	181 36	104,704	127	107
70-79.....	2,123	1,530,295	89	49,324	92 28	66,881	96	74	78 27	56,760	114	87
80 and over..	3	2,668	1	516	26	233	385	221	26	228	385	226
All Ages...	12,198	7,416,288	357	186,647	342 11	211,799	104%	88%	278.08	172,634	128%	108%
<i>Duration 2</i>												
Under 50....	70	40,890	0	0	36	211	0%	0%	19	120	0%	0%
50-59.....	1,492	875,737	19	7,126	20 61	12,136	92	59	16 03	9,425	119	76
60-69.....	7,115	4,136,955	219	152,108	207 08	119,583	106	127	166 99	96,432	131	158
70-79.....	2,096	1,422,115	93	63,280	98 67	67,999	94	93	84 90	58,693	110	108
80 and over..	2	1,924	0	0	18	170	0	0	18	167	0	0
All Ages...	10,775	6,477,621	331	222,514	326 90	200,099	101%	111%	268 29	164,837	123%	135%
<i>Duration 3</i>												
Under 50....	62	34,837	0	0	32	192	0%	0%	17	109	0%	0%
50-59.....	1,211	705,126	25	14,356	17 47	10,176	143	141	13 70	7,942	182	181
60-69.....	6,097	3,422,130	222	149,444	188 13	104,073	118	144	152 59	84,340	145	177
70-79.....	1,992	1,314,022	104	61,874	100 32	66,997	104	92	87 41	58,553	119	106
80 and over..	3	2,301			28	215	0	0	28	215	0	0
All Ages...	9,365	5,478,416	351	225,674	306 52	181,653	115%	124%	254 15	151,159	138%	149%

<i>Duration 4</i>												
Under 50....	60	28,720	0	0	.31	144	0%	0%	.16	84	0%	0%
50-59.....	997	559,509	15	14,453	15.16	8,551	99	169	11.90	6,710	126	215
60-69.....	5,188	2,825,341	180	70,798	169.77	91,016	106	78	138.55	74,201	130	95
70-79.....	1,912	1,143,944	106	45,027	101.63	60,876	104	74	89.53	53,640	118	84
80 and over..	15	19,292	2	2,844	1.32	1,705	152	167	1.30	1,679	154	169
All Ages...	8,172	4,576,806	303	133,122	288.19	162,292	105%	82%	241.44	136,314	125%	98%
<i>Duration 5</i>												
Under 50....	57	25,772	1	65	.28	134	357%	49%	.16	79	625%	82%
50-59.....	775	440,775	14	9,671	12.24	7,159	114	135	9.65	5,642	145	171
60-69.....	4,318	2,323,387	149	80,004	147.87	78,536	101	102	121.51	64,425	123	124
70-79.....	1,971	1,158,617	136	64,730	106.91	62,577	127	103	94.68	55,394	144	117
80 and over..	28	24,412	4	1,287	2.57	2,262	156	57	2.55	2,253	157	57
All Ages...	7,149	3,972,963	304	155,757	269.87	150,668	113%	103%	228.55	127,793	133%	122%
<i>Durations 6 and over</i>												
Under 50....	212	78,952	1	82	1.02	343	98%	24%	.61	192	164%	43%
50-59.....	1,125	525,586	29	11,107	17.31	8,279	168	134	13.60	6,523	213	170
60-69.....	6,795	3,820,917	275	124,991	202.17	112,729	136	111	163.76	91,247	168	137
70-79.....	15,248	7,566,139	832	416,784	828.09	409,024	100	102	735.54	362,814	113	115
80 and over..	824	384,535	69	41,541	79.08	36,672	87	113	79.79	36,895	86	113
All Ages...	24,204	12,376,129	1,206	594,505	1,127.67	567,047	107%	105%	993.30	497,671	121%	119%
<i>All Durations</i>												
Under 50....	548	255,213	2	147	2.67	1,236	75%	12%	1.49	701	134%	21%
50-59.....	7,350	4,157,418	138	81,597	106.09	60,327	130	135	82.87	47,067	167	173
60-69.....	37,748	21,315,328	1,276	689,268	1,140.91	636,384	112	108	924.76	515,349	138	134
70-79.....	25,342	14,135,132	1,360	701,019	1,327.90	734,354	102	95	1,170.33	645,854	116	109
80 and over..	875	435,132	76	46,188	83.69	41,257	91	112	84.36	41,437	90	111
All Ages...	71,863	40,298,223	2,852	1,518,219	2,661.26	1,473,558	107%	103%	2,263.81	1,250,408	126%	121%

TABLE G—Continued

MATURED DEFERRED ANNUITIES WITH A GUARANTEED PERIOD OR REFUND PROVISION—FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>a</i> -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50....	158	76,579	0	0	48	262	0%	0%	22	122	0%	0%
50-59.....	3,355	1,057,616	19	4,353	31.29	9,787	61	44	16.04	5,005	118	87
60-69.....	16,406	4,741,972	227	58,251	274.28	80,173	83	73	164.59	48,281	138	121
70-79.....	1,889	696,961	50	22,628	56.95	21,024	88	108	42.61	15,723	117	144
80 and over..	2	403	0	0	13	27	0	0	.14	28	0	0
All Ages...	21,810	6,573,531	296	85,232	363.13	111,273	82%	77%	223.60	69,159	132%	123%
<i>Duration 2</i>												
Under 50....	148	66,972	0	0	41	222	0%	0%	19	104	0%	0%
50-59.....	2,892	926,593	49	9,914	27.70	8,910	177	111	14.25	4,578	344	217
60-69.....	15,773	4,396,342	204	52,320	280.88	79,389	73	66	172.10	48,890	119	107
70-79.....	2,098	715,618	61	21,864	68.59	23,761	89	92	53.22	18,569	115	118
80 and over..	2	443	0	0	13	29	0	0	.14	30	0	0
All Ages...	20,913	6,105,968	314	84,098	377.71	112,311	83%	75%	239.90	72,171	131%	117%
<i>Duration 3</i>												
Under 50....	121	50,865	0	0	34	171	0%	0%	16	76	0%	0%
50-59.....	2,340	754,298	11	1,952	23.69	7,626	46	26	12.24	3,961	90	49
60-69.....	14,854	3,964,762	171	52,194	282.69	76,478	60	68	177.27	48,205	96	108
70-79.....	2,274	718,306	65	15,788	78.29	25,231	83	63	62.09	20,218	105	78
80 and over..	3	581	0	0	20	39	0	0	.21	42	0	0
All Ages...	19,592	5,488,812	247	69,934	385.21	109,545	64%	64%	251.97	72,502	98%	96%

<i>Duration 4</i>												
Under 50....	103	39,407	1	600	.29	129	345%	465%	.12	60	833%	1,000%
50-59.....	1,987	590,118	19	7,660	21.23	6,296	89	122	11.11	3,298	171	232
60-69.....	14,077	3,602,218	219	50,894	285.71	73,780	77	69	183.40	47,566	119	107
70-79.....	2,478	725,283	74	25,497	89.34	26,814	83	95	72.35	21,966	102	116
80 and over..	29	14,340	2	432	1.83	900	109	48	1.90	933	105	46
All Ages...	18,674	4,971,366	315	85,083	398.40	107,919	79%	79%	268.88	73,823	117%	115%
<i>Duration 5</i>												
Under 50....	80	32,243	1	136	.23	108	435%	126%	.12	47	833%	289%
50-59.....	1,610	457,575	24	5,087	17.91	5,102	134	100	9.48	2,700	253	188
60-69.....	12,393	3,030,988	195	49,346	264.25	64,799	74	76	172.77	42,448	113	116
70-79.....	3,274	932,589	98	33,254	116.63	33,610	84	99	94.34	27,353	104	122
80 and over..	41	25,846	3	1,259	2.65	1,660	113	76	2.79	1,737	108	72
All Ages...	17,398	4,479,241	321	89,082	401.67	105,279	80%	85%	279.50	74,285	115%	120%
<i>Durations 6 and over</i>												
Under 50....	278	90,387	0	0	.82	293	0%	0%	.44	132	0%	0%
50-59.....	2,499	725,691	29	7,208	26.71	7,748	109	93	13.99	4,062	207	177
60-69.....	31,775	7,512,013	516	123,870	685.78	159,644	75	78	449.54	104,141	115	119
70-79.....	38,616	9,084,884	1,312	299,588	1,426.74	336,296	92	89	1,175.39	277,319	112	108
80 and over..	2,023	543,087	179	47,115	136.93	36,988	131	127	147.54	39,988	121	118
All Ages...	75,191	17,956,062	2,036	477,781	2,276.98	540,969	89%	88%	1,786.90	425,642	114%	112%
<i>All Durations</i>												
Under 50....	888	356,453	2	736	2.57	1,185	78%	62%	1.25	541	160%	136%
50-59.....	14,683	4,511,891	151	36,174	148.53	45,469	102	80	77.11	23,604	196	153
60-69.....	105,278	27,248,295	1,532	386,875	2,073.59	534,263	74	72	1,319.67	339,531	116	114
70-79.....	50,629	12,873,641	1,660	418,619	1,836.54	466,736	90	90	1,500.00	381,148	111	110
80 and over..	2,100	584,700	184	48,806	141.87	39,643	130	123	152.72	42,758	120	114
All Ages...	173,578	45,574,980	3,529	891,210	4,203.10	1,087,296	84%	82%	3,050.75	787,582	116%	113%

TABLE G—Continued

MATURED DEFERRED ANNUITIES WITHOUT A GUARANTEED PERIOD OR REFUND PROVISION—MALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>g</i> -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Con- tracts	Amounts of Annual Income	Number of Con- tracts	Amounts of Annual Income	Number of Con- tracts	Amounts of Annual Income	Number of Con- tracts	Amounts of Annual Income	Number of Con- tracts	Amounts of Annual Income	Number of Con- tracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50....	13	4,336	0	0	.09	27	0%	0%	.04	16	0%	0%
50-59.....	200	95,014	2	108	2.65	1,285	75	8	2.05	994	98	11
60-69.....	1,279	657,045	16	5,660	35.49	18,009	45	31	28.54	14,463	56	39
70-79.....	180	88,650	6	2,377	8.01	3,836	75	62	6.82	3,250	88	73
80 and over..	3	383	1	81	.28	34	357	238	.27	34	370	238
All Ages...	1,675	845,428	25	8,226	46.52	23,191	54%	35%	37.72	18,757	66%	44%
<i>Duration 2</i>												
Under 50....	9	3,033	0	0	.06	21	0%	0%	.04	13	0%	0%
50-59.....	190	89,796	1	1,224	2.62	1,271	38	96	2.04	992	49	123
60-69.....	1,205	598,327	30	12,436	35.35	17,299	85	72	28.52	13,950	105	89
70-79.....	237	111,930	9	2,701	11.25	5,146	80	52	9.75	4,404	92	61
80 and over..	1	70	0	0	.09	7	0	0	.09	7	0	0
All Ages...	1,642	803,156	40	16,361	49.37	23,744	81%	69%	40.44	19,366	99%	84%
<i>Duration 3</i>												
Under 50....	4	1,357	0	0	.02	9	0%	0%	.01	6	0%	0%
50-59.....	162	81,322	3	720	2.28	1,196	132	60	1.80	936	167	77
60-69.....	1,081	500,448	31	12,207	33.59	15,234	92	80	27.25	12,340	114	99
70-79.....	237	120,892	14	5,717	12.00	5,830	117	98	10.49	5,033	133	114
80 and over..	1	70	0	0	.10	7	0	0	.10	7	0	0
All Ages...	1,485	704,089	48	18,644	47.99	22,276	100%	84%	39.65	18,322	121%	102%

<i>Duration 4</i>												
Under 50....	3	1,242	0	0	.02	9	0%	0%	.01	7	0%	0%
50-59.....	112	59,952	1	1,548	1.65	949	61	163	1.34	748	75	207
60-69.....	949	425,307	20	7,103	31.26	13,827	64	51	25.53	11,285	78	63
70-79.....	233	111,986	11	5,564	12.37	5,721	89	97	10.94	4,995	101	111
80 and over..	4	550	0	0	.37	50	0	0	.37	49	0	0
All Ages...	1,301	599,037	32	14,215	45.67	20,556	70%	69%	38.19	17,084	84%	83%
<i>Duration 5</i>												
Under 50....												
50-59.....	91	52,092	0	0	1.36	814	0%	0%	1.09	640	0%	0%
60-69.....	788	366,993	20	14,298	27.06	12,405	74	115	22.24	10,175	90	141
70-79.....	298	145,266	19	3,902	15.60	7,559	122	52	13.77	6,641	138	59
80 and over..	5	1,288	1	180	.46	114	217	158	.45	112	222	161
All Ages...	1,182	565,639	40	18,380	44.48	20,892	90%	88%	37.55	17,568	107%	105%
<i>Durations 6 and over</i>												
Under 50....	25	4,435	0	0	.13	27	0%	0%	.07	17	0%	0%
50-59.....	185	106,374	1	264	2.90	1,723	34	15	2.30	1,361	43	19
60-69.....	1,307	649,105	72	34,587	39.97	20,029	180	173	32.39	16,265	222	213
70-79.....	2,806	1,342,820	145	72,864	151.96	72,826	95	100	134.92	64,676	107	113
80 and over..	268	126,097	24	6,710	26.90	12,604	89	53	27.47	12,851	87	52
All Ages...	4,591	2,228,831	242	114,425	221.86	107,209	109%	107%	197.15	95,170	123%	120%
<i>All Durations</i>												
Under 50....	54	14,403	0	0	.32	93	0%	0%	.17	59	0%	0%
50-59.....	940	484,550	8	3,864	13.46	7,238	59	53	10.62	5,671	75	68
60-69.....	6,609	3,197,225	189	86,291	202.72	96,803	93	89	164.47	78,478	115	110
70-79.....	3,991	1,921,544	204	93,125	211.19	100,918	97	92	186.69	88,999	109	105
80 and over..	282	128,458	26	6,971	28.20	12,816	92	54	28.75	13,060	90	53
All Ages...	11,876	5,746,180	427	190,251	455.89	217,868	94%	87%	390.70	186,267	109%	102%

TABLE G—Continued

MATURED DEFERRED ANNUITIES WITHOUT A GUARANTEED PERIOD OR REFUND PROVISION—FEMALE LIVES
EXPERIENCE BETWEEN 1945 AND 1950 ANNIVERSARIES

ATTAINED AGES	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>a</i> -1949 TABLE			
					Expected Deaths		Mortality Ratio		Expected Deaths		Mortality Ratio	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<i>Duration 1</i>												
Under 50.....	13	6,532	0	0	.05	20	0%	0%	.02	9	0%	0%
50-59.....	942	278,241	6	863	9.27	2,764	65	31	4.78	1,434	126	60
60-69.....	6,466	1,677,858	46	11,743	106.20	27,964	43	42	63.37	16,782	73	70
70-79.....	481	149,563	7	1,590	14.40	4,491	49	35	10.74	3,347	65	48
80 and over..	2	284	1	198	15	21	667	943	.17	23	588	861
All Ages...	7,904	2,112,478	60	14,394	130.07	35,260	46%	41%	79.08	21,595	76%	67%
<i>Duration 2</i>												
Under 50.....	8	3,508	0	0	.02	12	0%	0%	.01	5	0%	0%
50-59.....	793	222,834	5	1,557	8.01	2,251	62	69	4.14	1,168	121	133
60-69.....	6,403	1,619,647	50	9,556	111.81	28,489	45	34	68.05	17,391	73	55
70-79.....	635	173,577	16	4,035	20.19	5,531	79	73	15.43	4,235	104	95
80 and over..	2	345	0	0	15	23	0	0	.16	25	0	0
All Ages...	7,841	2,019,911	71	15,148	140.18	36,306	51%	42%	87.79	22,824	81%	66%
<i>Duration 3</i>												
Under 50.....	6	3,050	0	0	.03	10	0%	0%	.01	5	0%	0%
50-59.....	625	175,423	5	1,070	6.58	1,833	76	58	3.42	959	146	112
60-69.....	6,128	1,479,979	56	10,162	114.52	27,844	49	36	71.37	17,391	78	58
70-79.....	703	190,987	15	3,261	23.60	6,348	64	51	18.45	4,947	81	66
80 and over..												
All Ages...	7,462	1,849,439	76	14,493	144.73	36,035	53%	40%	93.25	23,302	82%	62%

<i>Duration 4</i>												
Under 50....	10	3,562	0	0	.05	11	0%	0%	.01	5	0%	0%
50-59.....	465	127,377	9	2,076	5.10	1,385	176	150	2.65	728	340	285
60-69.....	5,777	1,317,092	85	19,257	115.27	26,359	74	73	73.51	16,840	116	114
70-79.....	870	233,342	28	6,855	30.17	8,037	93	85	24.02	6,367	117	108
80 and over..	1	89	1	89	.06	5	1,667	1,780	.06	5	1,667	1,780
All Ages...	7,123	1,681,462	123	28,277	150.65	35,797	82%	79%	100.25	23,945	123%	118%
<i>Duration 5</i>												
Under 50....	13	2,583	0	0	.04	10	0%	0%	.02	5	0%	0%
50-59.....	339	99,560	1	108	3.78	1,109	26	10	2.00	587	50	18
60-69.....	5,095	1,139,528	70	16,659	107.48	24,098	65	69	70.01	15,709	100	106
70-79.....	1,169	286,463	24	4,119	40.56	9,976	59	41	32.30	7,961	74	52
80 and over..	1	312	0	0	.06	19	0	0	.06	19	0	0
All Ages...	6,617	1,528,446	95	20,886	151.92	35,212	63%	59%	104.39	24,281	91%	86%
<i>Durations 6 and over</i>												
Under 50....	53	11,356	0	0	.17	43	0%	0%	.08	20	0%	0%
50-59.....	613	145,395	5	1,143	6.79	1,596	74	72	3.58	845	140	135
60-69.....	12,070	2,581,361	172	37,172	265.46	56,188	65	66	175.00	36,924	98	101
70-79.....	15,753	3,537,364	495	106,302	584.84	131,338	85	81	482.57	108,381	103	98
80 and over..	727	140,041	65	11,527	48.69	9,321	133	124	52.10	9,942	125	116
All Ages...	29,216	6,415,517	737	156,144	905.95	198,486	81%	79%	713.33	156,112	103%	100%
<i>All Durations</i>												
Under 50....	103	30,591	0	0	.36	106	0%	0%	.15	49	0%	0%
50-59.....	3,777	1,048,830	31	6,817	39.53	10,938	78	62	20.57	5,721	151	119
60-69.....	41,939	9,815,465	479	104,549	820.74	190,942	58	55	521.31	121,037	92	86
70-79.....	19,611	4,571,296	585	126,162	713.76	165,721	82	76	583.51	135,238	100	93
80 and over..	733	141,071	67	11,814	49.11	9,389	136	126	52.55	10,014	127	118
All Ages...	66,163	15,607,253	1,162	249,342	1,623.50	377,096	72%	66%	1,178.09	272,059	99%	92%