

**TRANSACTIONS OF SOCIETY OF ACTUARIES  
1954 REPORTS**

**III. MORTALITY UNDER INDIVIDUAL  
IMMEDIATE ANNUITIES**

**T**HIS report deals with the findings of the latest in a series of inter-company studies of the mortality under individual immediate annuities. This series began with a report on individual immediate annuity issues of 1931-35 traced to anniversaries in 1936; it was presented in *TASA XXXVIII*, 221-62. Subsequent reports covering the experience on individual immediate annuity issues of 1931 and later years traced to successive policy anniversaries appeared in the *Transactions* for each of the years 1938 to 1942 inclusive (*TASA XXXIX*, 111-35; *TASA XL*, 238-64; *TASA XLI*, 223-43; *TASA XLII*, 150-71; *TASA XLIII*, 135-47). The studies were suspended for the duration of the war. In 1948, the experience on individual immediate annuity issues of 1931 and later years was brought up to 1946 anniversaries and presented in *TASA XLIX*, 112-41. The experience between 1946 and 1948 anniversaries was published in *TSA I*, 606-16. The present study takes up the experience from 1948 to 1953 anniversaries on individual immediate nonrefund and refund annuity issues of 1931-52. Included with the refund annuities are contracts providing for either cash or instalment refund payments and annuities with a period certain.

As in previous studies, the following types of annuities have been excluded: (a) annuities issued in conjunction with single premium insurance without evidence of insurability, or which provide at all times for the payment of virtually the entire consideration as a death benefit, (b) supplementary contracts, (c) underaverage risks with special rate concessions, (d) temporary annuities, (e) joint and survivor annuities (or annuities to single survivors of contracts originally issued on a joint basis), (f) deferred annuities both before and after the end of the deferred period, and (g) annuities under group annuity contracts.

The age at issue was taken as the age nearest birthday on the issue date of the contract (or some reasonable approximation thereto).

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 experience on nonrefund and refund annuities are given in Table A of the Appendix.

The findings of the present study are based on an experience of 1,032,-

830 contract years and \$304,412,536 income years of exposure; 46,819 contracts involving \$15,044,820 annual income were terminated by death. An analysis of the exposures and deaths by sex, type of annuity and duration is given in Table B of the Appendix. It should be noted that refund annuities accounted for 63 percent of the total exposure by amounts of annual income. Females accounted for 68 percent of the refund annuity exposure and 67 percent of the nonrefund annuity exposure, both by amounts of annual income.

As in previous reports, the experience has been tabulated both by number of contracts and by amounts of annual income, analyzed by 10-year attained age groups and for contract years 1-2, 3-5, and 6 and over, separately for each type of annuity and each sex.

It was not possible to analyze the experience by cause of death because most companies were unable to provide this type of information.

EXPERIENCE IN RELATION TO THE 1937  
STANDARD ANNUITY TABLE

Tables 1 and 2 present the mortality ratios on the 1937 Standard Annuity Table for nonrefund and refund annuities respectively. The main features of the experience in relation to this mortality table may be summarized as follows:

1. For the aggregate experience the mortality ratios were as follows:

	NONREFUND ANNUITIES		REFUND ANNUITIES	
	By Number of Contracts	By Amounts of Annual Income	By Number of Contracts	By Amounts of Annual Income
Males . . . . .	93%	100%	105%	111%
Females . . . . .	99	101	106	108

On nonrefund annuities the mortality ratios for all durations combined for males were appreciably below 90% of the 1937 Standard Annuity Table at attained ages under 70 by number of contracts and at attained ages under 60 by amounts of annual income; in no age range were the mortality ratios for males appreciably above 100% of the 1937 Standard Annuity Table. The mortality ratios for all durations combined for females were significantly below 75% of the 1937 Standard Annuity Table at attained ages under 70 both by number of contracts and by amounts of annual income; they were significantly above 100% only at attained ages 80 and over.

On refund annuities the mortality ratios for all durations combined for males were significantly above 100% of the 1937 Standard Annuity Table at all ages by amounts of annual income but not generally so by number of contracts. The mortality ratios for all durations combined for females were significantly below 90% of the 1937 Standard Annuity Table in the age range 50-69 both by number of contracts and by amounts of annual income; they were significantly above 100% only at attained ages 80 and over.

- On nonrefund annuities the mortality ratios for all durations combined generally increased with advancing age for both sexes, except that in

TABLE 1  
INDIVIDUAL IMMEDIATE NONREFUND ANNUITIES  
ISSUES OF 1931 TO 1952  
EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES  
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Contract Years			All Contract Years	Contract Years			All Contract Years
	1-2	3-5	6 and Over		1-2	3-5	6 and Over	
MALE								
Under 50.....	*	*	*	*	*	*	*	*
50-59.....	*	85%	79%	76%	*	126%	73%	82%
60-69.....	71%	78	72	73	91%	105	82	88
70-79.....	68	85	102	98	46	91	116	107
80 and over.....	68	67	99	95	75	81	99	97
All Ages.....	68%	78%	97%	93%	62%	90%	104%	100%
FEMALE								
Under 50.....	*	*	*	*	*	*	*	*
50-59.....	*	53%	61%	57%	*	34%	61%	56%
60-69.....	41%	59	71	66	57%	61	70	67
70-79.....	55	67	94	90	50	69	96	90
80 and over.....	44	78	119	116	47	82	121	117
All Ages.....	48%	67%	103%	99%	52%	70%	107%	101%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

the case of males they were lower at attained ages 80 and over than at attained ages 70-79. On refund annuities the same pattern was broadly apparent for both sexes by number of contracts; by amounts of annual income, however, the mortality ratios showed a generally decreasing trend in the case of males, with mortality ratios at about 125% of the 1937 Standard Annuity Table at attained ages under 60; in the case of females the mortality ratios by amounts of income were only about 80% of the 1937 Standard Annuity Table at attained ages under 70 but rose to over 125% at attained ages 80 and over.

3. The effects of temporary selection were most marked in the experience on female nonrefund annuities, where the mortality ratios for all ages

TABLE 2  
INDIVIDUAL IMMEDIATE REFUND ANNUITIES  
ISSUES OF 1931 TO 1952  
EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES  
MORTALITY RATIOS ON 1937 STANDARD ANNUITY TABLE

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Contract Years			All Contract Years	Contract Years			All Contract Years
	1-2	3-5	6 and Over		1-2	3-5	6 and Over	
MALE								
Under 50 . . . . .	*	124%	68%	82%	*	75%	130%	124%
50-59 . . . . .	95%	99	100	100	186%	162	112	128
60-69 . . . . .	90	102	103	102	104	119	112	113
70-79 . . . . .	90	102	110	108	89	102	116	112
80 and over . . . . .	97	100	104	104	116	114	108	109
All Ages . . . . .	92%	102%	106%	105%	104%	112%	112%	111%
FEMALE								
Under 50 . . . . .	*	*	112%	101%	*	*	89%	82%
50-59 . . . . .	30%	52%	85	75	36%	49%	96	81
60-69 . . . . .	72	83	80	80	77	90	77	79
70-79 . . . . .	74	82	98	96	74	81	103	100
80 and over . . . . .	99	113	128	127	103	117	129	128
All Ages . . . . .	75%	88%	109%	106%	78%	90%	111%	108%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

combined for the first two contract years were less than half those for contract years 6 and over. Temporary selection was least evident on male refund annuities, where it did not appear to extend beyond the first two durations. On male nonrefund annuities and female refund annuities the mortality ratios for all ages combined for the first two contract years were approximately two-thirds of those for contract years 6 and over. The effects of temporary selection were generally most pronounced at the older ages, notably in the case of female nonrefund annuities.

4. The mortality ratios by number of contracts were generally lower than by amounts of annual income in the case of males. In the case of females there were, in general, no marked differences between the mortality ratios by number of contracts and by amounts of annual income.
5. The mortality ratios in all but two subdivisions of the nonrefund annuity experience were lower than in the corresponding refund annuity experience. The differential was substantial both in the first five contract years and at the younger ages. It amounted to about 20 percentage points or more (*a*) in the first five contract years for all ages combined, and (*b*) at ages under 70 for males and under 60 for females for all durations combined. At the other ages in the sixth and subsequent contract years the differential was uniformly less than 10 percentage points.

The details of the experience on the 1937 Standard Annuity Table by 10-year attained age groups for each of the first five contract years and for contract years 6 and over are set forth in Table C of the Appendix.

#### EXPERIENCE IN RELATION TO THE ANNUITY TABLE FOR 1949

Tables 3 and 4 present the mortality ratios on the Annuity Table for 1949 for nonrefund and refund annuities respectively. The main features of the experience in relation to this mortality table may be summarized as follows:

1. For the aggregate experience the mortality ratios were as follows:

TABLE, 1954 REPORTS, PAGE 40—*Corrected*

	NONREFUND ANNUITIES		REFUND ANNUITIES	
	By Number of Contracts	By Amounts of Annual Income	By Number of Contracts	By Amounts of Annual Income
Males .....	97%	102%	111%	117%
Females .....	101	101	111	112

On nonrefund annuities the mortality ratios for all durations combined on the Annuity Table for 1949 were significantly and appreciably below 100% only for males at attained ages 80 and over, both by number of contracts and by amounts of annual income. They were significantly above 100% only for males at attained ages 70-79. On refund annuities the mortality ratios for all durations combined were significantly above 100% at all attained ages except for males aged 80 and over, being generally above 120% at attained ages under 70. They were below 100% only in the case of males at attained ages 80 and over by number of contracts.

TABLE 3, 1954 REPORTS, PAGE 41—Corrected  
 INDIVIDUAL IMMEDIATE NONREFUND ANNUITIES  
 ISSUES OF 1931 TO 1952  
 EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES  
 MORTALITY RATIOS ON ANNUITY TABLE FOR 1949

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Contract Years			All Contract Years	Contract Years			All Contract Years
	1-2	3-5	6 and Over		1-2	3-5	6 and Over	
MALE								
Under 50.....	*	*	*	*	*	*	*	*
50-59.....	*	<i>110%</i>	<i>101%</i>	<i>98%</i>	*	<i>161%</i>	<i>94%</i>	<i>105%</i>
60-69.....	<i>87%</i>	96	89	90	<i>112%</i>	130	101	108
70-79.....	76	94	113	109	51	101	128	118
80 and over.....	<i>64</i>	63	93	90	72	77	93	91
All Ages.....	<i>74%</i>	<i>83%</i>	<i>101%</i>	<i>97%</i>	<i>68%</i>	<i>96%</i>	<i>105%</i>	<i>102%</i>
FEMALE								
Under 50.....	*	*	*	*	*	*	*	*
50-59.....	*	<i>104%</i>	<i>117%</i>	<i>110%</i>	*	<i>66%</i>	<i>118%</i>	<i>108%</i>
60-69.....	<i>64%</i>	92	109	102	<i>90%</i>	95	109	104
70-79.....	65	79	109	105	59	81	112	106
80 and over.....	<i>39</i>	68	101	99	41	70	101	98
All Ages.....	<i>59%</i>	<i>78%</i>	<i>104%</i>	<i>101%</i>	<i>61%</i>	<i>79%</i>	<i>105%</i>	<i>101%</i>

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

2. There was no clear-cut trend in the mortality ratios by attained age on nonrefund annuities. In the case of refund annuities the mortality ratios generally decreased with advancing age for both sexes.
3. The effects of temporary selection were most marked on female nonrefund annuities, where the mortality ratios for all ages combined for the first two contract years were about 60 percent of those for contract years 6 and over. On male nonrefund annuities the mortality ratios for all ages combined for the first two contract years were about 70 percent of those for contract years 6 and over. On male refund annuities temporary selection appeared to be relatively small, being confined to the

TABLE 4  
INDIVIDUAL IMMEDIATE REFUND ANNUITIES  
ISSUES OF 1931 TO 1952  
EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES  
MORTALITY RATIOS ON ANNUITY TABLE FOR 1949

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Contract Years			All Contract Years	Contract Years			All Contract Years
	1-2	3-5	6 and Over		1-2	3-5	6 and Over	
MALE								
Under 50.....	*	<i>239%</i>	<i>119%</i>	<i>146%</i>	*	<i>130%</i>	<i>227%</i>	<i>216%</i>
50-59.....	<i>122%</i>	128	129	128	<i>238%</i>	208	144	165
60-69.....	111	126	128	126	129	146	138	139
70-79.....	101	114	122	120	100	114	128	124
80 and over.....	93	95	97	97	111	108	100	101
All Ages.....	104%	113%	111%	111%	117%	124%	116%	117%
FEMALE								
Under 50.....	*	*	<i>243%</i>	<i>223%</i>	*	*	<i>192%</i>	<i>177%</i>
50-59.....	<i>58%</i>	<i>101%</i>	164	144	<i>70%</i>	<i>94%</i>	185	157
60-69.....	113	130	125	125	121	141	119	122
70-79.....	88	97	114	111	88	96	120	116
80 and over.....	87	98	107	106	90	102	106	106
All Ages.....	92%	105%	112%	111%	95%	107%	113%	112%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

first two contract years. On female refund annuities the mortality ratios for all ages combined for the first two contract years were 15 to 20 percent lower than for the sixth and subsequent contract years.

4. The mortality ratios by number of contracts were generally lower than by amounts of annual income in the case of males. There was no consistent pattern in the mortality ratios by number of contracts and by amounts of annual income in the case of females.
5. The mortality ratios in all but one subdivision of the nonrefund annuity experience were lower than in the corresponding refund annuity experience. The differential was substantial both in the first five contract years and at the younger ages. It amounted to at least 25 percentage points (*a*) in the first five contract years for all ages combined, and (*b*) at ages under 70 for males and under 60 for females for all durations combined. At the other ages in the sixth and subsequent contract years the differential did not exceed 10 percentage points in more than two subdivisions.

A more detailed analysis of the experience at attained ages 80 and over is given in Table 5. It indicates that the mortality ratios at these ages on the Annuity Table for 1949 generally decreased with advancing age, except in the case of male nonrefund annuities, on which the mortality ratios by number of contracts showed no significant variation by age while those by amounts of annual income appeared to increase with advancing age. The following mortality ratios at ages 80 and over on the Annuity Table for 1949 were significantly below 100%:

1. Male nonrefund annuities
  - i) At all ages 80 and over by number of contracts.
  - ii) At ages 80-84 by amounts of annual income.
2. Female nonrefund annuities at ages 90 and over by amounts of annual income.
3. Male refund annuities at ages 90 and over by number of contracts and amounts of annual income.
4. Female refund annuities at ages 90 and over by amounts of annual income.

The details of the experience on the Annuity Table for 1949 by ten year attained age groups for each of the first five contract years and for contract years 6 and over are set forth in Table C of the Appendix.

#### COMPARISON WITH PREVIOUS STUDIES

A comparison of the experience under individual immediate annuities from 1948 to 1953 anniversaries with that between 1946 and 1948 anniversaries and that between 1941 and 1946 anniversaries is presented in



**TABLE 5**  
**INDIVIDUAL IMMEDIATE ANNUITIES AT ATTAINED AGES 80 AND OVER**  
**ISSUES OF 1931 TO 1952**  
**EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES**  
**MORTALITY RATIOS ON ANNUITY TABLE FOR 1949**

ATTAINED AGES	BY NUMBER OF CONTRACTS				BY AMOUNTS OF ANNUAL INCOME			
	Contract Years			All Contract Years	Contract Years			All Contract Years
	1-2	3-5	6 and Over		1-2	3-5	6 and Over	
<b>MALE NONREFUND</b>								
80-84 .....	<i>78%</i>	<i>69%</i>	<i>90%</i>	<i>88%</i>	<i>78%</i>	<i>70%</i>	<i>78%</i>	<i>77%</i>
85-89 .....	<i>50</i>	<i>63</i>	<i>95</i>	<i>90</i>	<i>64</i>	<i>93</i>	<i>101</i>	<i>99</i>
90 and over .....	*	*	93	89	*	*	111	108
80 and over .....	<i>64%</i>	<i>63%</i>	<i>92%</i>	<i>89%</i>	<i>72%</i>	<i>77%</i>	<i>92%</i>	<i>90%</i>
<b>FEMALE NONREFUND</b>								
80-84 .....	<i>41%</i>	<i>70%</i>	<i>102%</i>	<i>99%</i>	<i>45%</i>	<i>82%</i>	<i>104%</i>	<i>101%</i>
85-89 .....	*	<i>59</i>	<i>98</i>	<i>96</i>	*	<i>62</i>	<i>102</i>	<i>98</i>
90 and over .....	*	85	95	94	*	33	84	82
80 and over .....	<i>39%</i>	<i>68%</i>	<i>99%</i>	<i>97%</i>	<i>41%</i>	<i>70%</i>	<i>99%</i>	<i>96%</i>
<b>MALE REFUND</b>								
80-84 .....	<i>83%</i>	<i>109%</i>	<i>104%</i>	<i>104%</i>	<i>77%</i>	<i>123%</i>	<i>108%</i>	<i>108%</i>
85-89 .....	<i>125</i>	<i>83</i>	<i>96</i>	<i>95</i>	<i>187</i>	<i>91</i>	<i>102</i>	<i>103</i>
90 and over .....	*	47	80	78	*	62	76	76
80 and over .....	<i>93%</i>	<i>95%</i>	<i>97%</i>	<i>97%</i>	<i>111%</i>	<i>108%</i>	<i>100%</i>	<i>101%</i>
<b>FEMALE REFUND</b>								
80-84 .....	<i>89%</i>	<i>95%</i>	<i>110%</i>	<i>109%</i>	<i>94%</i>	<i>106%</i>	<i>116%</i>	<i>115%</i>
85-89 .....	<i>88</i>	<i>110</i>	<i>105</i>	<i>105</i>	<i>83</i>	<i>99</i>	<i>101</i>	<i>101</i>
90 and over .....	*	71	100	100	*	80	94	93
80 and over .....	<i>87%</i>	<i>98%</i>	<i>107%</i>	<i>106%</i>	<i>90%</i>	<i>102%</i>	<i>106%</i>	<i>106%</i>

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

Tables 6 and 7 for nonrefund and refund annuities respectively, in both cases in relation to the 1937 Standard Annuity Table. Because the distributions of the exposures by attained age and duration have changed markedly from the earlier to the later periods, and because the 1937 Standard Annuity Table does not uniformly reflect the incidence of mortality by attained age and duration, the mortality ratios based on this Table for all ages or all durations combined must be interpreted with caution. To allow for the changes in age distribution, "adjusted" mortality ratios were computed for all ages combined for the periods 1941-46 and 1946-48, and are shown in Tables 6 and 7. The adjusted ratio for all ages combined within a particular duration group is the weighted average of the ratios for component age groups, the weights being the corresponding expected deaths in the 1948-53 experience. These adjusted ratios in effect represent what the mortality ratios for all ages combined would have been if the distribution of exposures by attained ages in the two earlier periods had been the same as in the period 1948-53.

The main features of the comparison may be summarized as follows:

1. The general downward trend of mortality ratios from the period 1941-46 to that of 1946-48, noted in the previous report (*TSA I*, 616), was also evident from the period 1946-48 to that of 1948-53. Judging by the mortality ratios for the subdivisions of the experience shown in Tables 6 and 7, the downward trend from 1941-46 to 1948-53 was most consistent in the case of female nonrefund annuities, while the mortality ratios on male refund annuities showed the least consistent declines.
2. On male nonrefund annuities the mortality ratios decreased from 1941-46 to 1948-53 in all but three subdivisions of the experience shown in Table 6, while the adjusted mortality ratios for all ages combined decreased 12 percentage points by number of contracts and 9 percentage points by amounts of annual income. Judging by the number of changes in the mortality ratios for the subdivisions of the experience shown in Table 6, there were more decreases in mortality from 1946-48 to 1948-53 than from 1941-46 to 1946-48.
3. On female nonrefund annuities the mortality ratios decreased from 1941-46 to 1948-53 in every subdivision of the experience shown in Table 6, while the adjusted mortality ratios for all ages combined decreased 9 percentage points both by number of contracts and by amounts of annual income. Judging by the number of changes in the mortality ratios for the subdivisions of the experience shown in Table 6, there were more decreases in mortality from 1946-48 to 1948-53 than from 1941-46 to 1946-48.

TABLE 6 (1948-53 ANNIVERSARIES), 1954 REPORTS, PAGE 46—*Corrected*  
MORTALITY RATIOS ON INDIVIDUAL IMMEDIATE NONREFUND ANNUITIES  
EXPERIENCE BETWEEN 1948-53 ANNIVERSARIES  
Expected Deaths Based on 1937 Standard Annuity Table

ATTAINED AGES	BY NUMBER OF CONTRACTS			BY AMOUNTS OF ANNUAL INCOME		
	Contract Years 1-5	Contract Years 6 and Over	All Con- tract Years	Contract Years 1-5	Contract Years 6 and Over	All Con- tract Years
MALES						
Under 60.....	<i>66%</i>	<i>78%</i>	<i>74%</i>	<i>97%</i>	<i>73%</i>	<i>81%</i>
60-69.....	75	72	73	99	82	88
70-79.....	79	103	99	75	117	107
80 and over.....	67	100	97	80	101	98
All Ages.....	<i>74%</i>	<i>98%</i>	<i>94%</i>	<i>81%</i>	<i>105%</i>	<i>100%</i>
All Ages Adjusted.....	<i>74%</i>	<i>98%</i>	<i>94%</i>	<i>81%</i>	<i>105%</i>	<i>100%</i>
FEMALES						
Under 60.....	<i>49%</i>	<i>62%</i>	<i>58%</i>	<i>49%</i>	<i>58%</i>	<i>54%</i>
60-69.....	53	71	66	60	71	68
70-79.....	64	94	91	64	98	92
80 and over.....	70	121	119	73	124	120
All Ages.....	<i>62%</i>	<i>105%</i>	<i>100%</i>	<i>65%</i>	<i>109%</i>	<i>103%</i>
All Ages Adjusted.....	<i>62%</i>	<i>105%</i>	<i>100%</i>	<i>65%</i>	<i>109%</i>	<i>103%</i>

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE 7  
COMPARISON OF MORTALITY RATIOS ON INDIVIDUAL IMMEDIATE REFUND ANNUITIES  
EXPERIENCE BETWEEN 1941-46, 1946-48, AND 1948-53 ANNIVERSARIES  
Expected Deaths Based on 1937 Standard Annuity Table

ATTAINED AGES	BY NUMBER OF CONTRACTS									BY AMOUNTS OF ANNUAL INCOME								
	Contract Years 1-5			Contract Years 6 and Over			All Contract Years			Contract Years 1-5			Contract Years 6 and Over			All Contract Years		
	1941-46	1946-48	1948-53	1941-46	1946-48	1948-53	1941-46	1946-48	1948-53	1941-46	1946-48	1948-53	1941-46	1946-48	1948-53	1941-46	1946-48	1948-53
MALES																		
Under 60 . . . . .	108%	74%	102%	113%	105%	96%	111%	93%	97%	119%	133%	161%	109%	172%	115%	113%	157%	128%
69-69 . . . . .	104	96	98	113	104	103	109	101	102	98	104	114	134	115	112	120	111	113
70-79 . . . . .	101	92	98	108	114	110	106	109	108	109	101	98	136	105	116	129	104	112
80 and over . . . . .	107	124	100	122	110	104	118	112	104	108	103	114	137	118	108	130	116	109
All Ages . . . . .	104%	98%	99%	114%	111%	106%	110%	108%	105%	107%	105%	109%	135%	114%	112%	126%	112%	111%
All Ages Adjusted	104%	99%	99%	115%	111%	106%	111%	108%	105%	106%	104%	109%	135%	114%	112%	127%	112%	111%
FEMALES																		
Under 60 . . . . .	69%	74%	47%	94%	75%	88%	82%	75%	78%	65%	111%	47%	100%	72%	95%	86%	85%	82%
60-69 . . . . .	74	73	80	81	86	80	78	82	80	73	90	86	80	77	77	78	81	79
70-79 . . . . .	94	86	80	103	103	98	100	100	96	95	89	79	107	105	103	103	102	100
80 and over . . . . .	126	134	109	136	129	128	133	130	127	118	153	113	140	134	129	136	136	128
All Ages . . . . .	92%	90%	85%	108%	109%	109%	103%	105%	106%	91%	104%	87%	112%	110%	111%	107%	109%	108%
All Ages Adjusted	94%	92%	85%	114%	111%	109%	110%	109%	106%	92%	106%	87%	118%	113%	111%	112%	112%	108%



**TABLE B**  
**EXPOSURES AND DEATHS UNDER INDIVIDUAL IMMEDIATE ANNUITIES**  
**ISSUES OF 1931 TO 1952**  
**EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES**

CONTRACT YEARS	NONREFUND ANNUITIES		REFUND ANNUITIES	
	Number of Contracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income
<b>Exposures</b>				
<i>Males:</i>				
1-5.....	16,864	\$ 8,459,850	39,234	\$ 14,623,887
6 and over.....	64,071	28,203,265	140,581	46,305,634
All Contract Years..	80,935	\$36,663,115	179,815	\$ 60,929,521
<i>Females:</i>				
1-5.....	41,757	\$14,508,044	83,382	\$ 24,001,056
6 and over.....	219,065	61,432,507	427,876	106,878,293
All Contract Years..	260,822	\$75,940,551	511,258	\$130,879,349
<b>Deaths</b>				
<i>Males:</i>				
1-5.....	627	\$ 375,806	1,565	\$ 661,513
6 and over.....	4,101	2,131,179	8,332	2,926,772
All Contract Years..	4,728	\$ 2,506,985	9,897	\$ 3,588,285
<i>Females:</i>				
1-5.....	795	\$ 318,035	1,994	\$ 577,795
6 and over.....	10,610	3,295,595	18,795	4,758,125
All Contract Years..	11,405	\$ 3,613,630	20,789	\$ 5,335,920

TABLE C  
 INDIVIDUAL IMMEDIATE ANNUITIES  
 ISSUES OF 1934 TO 1952  
 EXPERIENCE BETWEEN 1948 AND 1953 ANNIVERSARIES  
 NONREFUND—MALE LIVES

ATTAINED AGES BY CONTRACT YEAR	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON 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>Year 1</i>												
Under 50 . . . . .	61	24,736	0	0	37	150	*	*	.18	84	*	*
50-59 . . . . .	300	118,356	3	783	4 34	1,756	*	*	3.34	1,369	*	*
60-69 . . . . .	1,030	468,422	18	12,979	30 67	14,115	<i>59%</i>	<i>92%</i>	24.94	11,431	<i>72%</i>	<i>114%</i>
70-79 . . . . .	1,024	672,279	32	13,295	57 96	39,903	<i>55</i>	<i>33</i>	52.05	36,124	<i>61</i>	<i>37</i>
80 and over . . . . .	289	177,054	23	14,621	31 69	18,816	<i>73</i>	<i>78</i>	33.15	19,508	<i>69</i>	<i>75</i>
All Ages . . . . .	2,704	1,460,847	76	41,678	125 03	74,740	<i>61%</i>	<i>56%</i>	113.66	68,516	<i>67%</i>	<i>61%</i>
<i>Year 2</i>												
Under 50 . . . . .	65	20,681	0	0	40	125	*	*	.19	68	*	*
50-59 . . . . .	335	114,377	1	1,200	4 83	1,733	*	*	3.77	1,360	*	*
60-69 . . . . .	1,093	481,317	27	13,190	32 99	14,687	<i>82%</i>	<i>90%</i>	26.80	11,936	<i>101%</i>	<i>111%</i>
70-79 . . . . .	1,175	709,555	53	24,203	66 76	41,914	<i>79</i>	<i>58</i>	60.00	37,916	<i>88</i>	<i>64</i>
80 and over . . . . .	362	232,644	26	17,924	40 79	24,721	<i>64</i>	<i>73</i>	43.07	25,668	<i>60</i>	<i>70</i>
All Ages . . . . .	3,030	1,558,574	107	56,517	145 77	83,180	<i>73%</i>	<i>68%</i>	133.83	76,948	<i>80%</i>	<i>73%</i>

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE C—Continued  
NONREFUND—MALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	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 Con- tracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Number of Con- tracts	Amounts of An- nual Income	Number of Contracts	Amounts of Annual Income	Number of Con- tracts	Amounts of An- nual Income
<i>Year 3</i>												
Under 50...	90	26,684	0	0	.63	173	*	*	.28	97	*	*
50-59.....	389	142,940	4	1,732	5.63	2,151	*	*	4.38	1,684	*	*
60-69.....	1,200	522,721	27	11,324	36.12	15,684	75%	72%	29.27	12,715	92%	89%
70-79.....	1,406	827,279	74	58,722	79.04	47,483	94	124	70.79	42,643	105	138
80 and over	478	305,071	27	27,794	54.03	32,991	50	84	57.19	34,449	47	81
All Ages.	3,563	1,824,695	132	99,572	175.45	98,482	75%	101%	161.91	91,588	82%	109%
<i>Year 4</i>												
Under 50...	116	26,940	1	545	.87	178	*	*	.45	107	*	*
50-59.....	367	127,258	4	797	5.37	1,918	*	*	4.15	1,504	*	*
60-69.....	1,164	477,537	23	12,872	35.13	14,495	65%	89%	28.63	11,761	80%	109%
70-79.....	1,569	884,557	79	29,497	89.56	51,405	88	57	80.49	46,316	98	64
80 and over	553	305,547	37	23,704	63.68	35,193	58	67	67.70	37,372	55	63
All Ages.	3,769	1,821,839	144	67,415	194.61	103,189	74%	65%	181.42	97,060	79%	69%
<i>Year 5</i>												
Under 50...	100	23,866	0	0	.74	165	*	*	.42	104	*	*
50-59.....	388	112,399	6	4,727	5.43	1,699	*	*	4.24	1,326	*	*
60-69.....	1,098	438,060	31	21,298	33.03	13,126	94%	162%	26.85	10,650	115%	200%
70-79.....	1,615	888,746	69	49,076	93.39	52,179	74	94	84.15	47,130	82	104
80 and over	597	330,824	62	35,523	69.44	38,660	89	92	74.06	41,271	84	86
All Ages.	3,798	1,793,895	168	110,624	202.03	105,829	83%	105%	189.72	100,481	89%	110%



TABLE C, 1954 REPORTS, PAGE 52--*Corrected*

NONREFUND—MALE LIVES

ATTAINED AGES BY CONTRACT YEAR	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>Years 6 and over</i>												
Under 50.....	1,197	273,779	5	1,120	7.31	1,623	*	*	4.21	949	*	*
50-59.....	4,440	1,304,121	50	14,030	63.41	19,138	79%	73%	49.33	14,929	101%	94%
60-69.....	13,186	5,018,308	289	124,615	400.52	152,081	72	82	325.21	123,404	89	101
70-79.....	27,917	12,568,379	1,737	904,368	1,685.77	775,436	103	117	1,531.04	707,333	113	128
80 and over..	17,331	9,038,678	2,068	1,105,465	2,060.52	1,099,915	100	101	2,213.75	1,190,952	93	93
All Ages...	64,071	28,203,265	4,149	2,149,598	4,217.53	2,048,193	98%	105%	4,123.54	2,037,567	101%	105%
<i>All Years</i>												
Under 50.....	1,629	396,686	6	1,665	10.32	2,414	*	*	5.73	1,409	*	*
50-59.....	6,219	1,919,451	68	23,269	89.01	28,395	76%	82%	69.21	22,172	98%	105%
60-69.....	18,771	7,406,365	415	196,278	568.46	224,188	73	88	461.70	181,897	90	108
70-79.....	34,706	16,550,795	2,044	1,079,161	2,072.48	1,008,320	99	107	1,878.52	917,462	109	118
80 and over..	19,610	10,389,818	2,243	1,225,031	2,320.15	1,250,296	97	98	2,488.92	1,349,220	90	91
All Ages...	80,935	36,663,115	4,776	2,525,404	5,060.42	2,513,613	94%	100%	4,904.08	2,472,160	97%	102%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE C—Continued  
NONREFUND—FEMALE LIVES

ATTAINED AGES BY CONTRACT YEAR	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>Year 1</i>												
Under 50 . . . . .	102	47,499	1	600	.42	214	*	*	.10	100	*	*
50-59 . . . . .	745	248,542	3	1,133	7.64	2,504	*	*	3.95	1,296	*	*
60-69 . . . . .	2,538	816,693	24	14,893	50.02	16,465	48%	90%	31.88	10,567	75%	141%
70-79 . . . . .	1,843	799,700	34	14,933	71.83	31,288	47	48	60.74	26,455	56	56
80 and over . . . . .	350	192,895	14	10,734	25.73	14,497	54	74	28.84	16,437	49	65
All Ages . . . . .	5,578	2,105,329	76	42,293	155.64	64,968	49%	65%	125.51	54,855	61%	77%
<i>Year 2</i>												
Under 50 . . . . .	114	41,605	0	0	.45	187	*	*	.11	87	*	*
50-59 . . . . .	851	283,759	4	2,681	8.77	2,844	*	*	4.51	1,477	*	*
60-69 . . . . .	3,002	960,310	21	5,602	59.40	19,229	35%	29%	38.03	12,311	55%	46%
70-79 . . . . .	2,286	944,257	55	19,610	90.04	37,366	61	52	76.54	31,760	72	62
80 and over . . . . .	508	279,796	14	6,303	37.98	21,653	37	29	43.00	24,991	33	25
All Ages . . . . .	6,761	2,509,727	94	34,196	196.64	81,279	48%	42%	162.19	70,626	58%	48%
<i>Year 3</i>												
Under 50 . . . . .	125	47,119	0	0	.54	214	*	*	.14	102	*	*
50-59 . . . . .	1,021	345,787	5	1,684	10.52	3,543	*	*	5.45	1,838	*	*
60-69 . . . . .	3,770	1,147,335	29	8,555	75.13	23,075	39%	37%	48.07	14,784	60%	58%
70-79 . . . . .	3,077	1,183,528	77	32,428	120.24	46,905	64	69	101.92	39,916	76	81
80 and over . . . . .	737	356,549	42	25,151	55.64	27,848	75	90	63.54	32,343	66	78
All Ages . . . . .	8,730	3,080,318	153	67,818	262.07	101,585	58%	67%	219.12	88,983	70%	76%

TABLE C—Continued  
NONREFUND—FEMALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON Q-1949 TABLE			
					EXPECTED DEATHS		MORTALITY RATIO		EXPECTED DEATHS		MORTALITY RATIO	
	Number of Contracts	Amounts of Annual Income	Number of Con- tracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Num- ber of Con- tracts	Amounts of An- nual Income	Number of Contracts	Amounts of Annual Income	Num- ber of Con- tracts	Amounts of An- nual Income
<i>Year 4</i>												
Under 50..	118	39,114	0	0	.49	172	*	*	.12	71	*	*
50-59.....	992	318,003	5	696	10.33	3,270	*	*	5.30	1,710	*	*
60-69.....	4,103	1,186,720	57	8,352	82.60	23,922	69%	35%	53.08	15,350	107%	54%
70-79.....	3,683	1,366,109	102	35,006	144.17	54,084	71	65	122.18	46,028	83	76
80 and over	973	436,350	55	25,513	74.48	34,465	74	74	85.70	40,289	64	63
All Ages.	9,869	3,346,296	219	69,567	312.07	115,913	70%	60%	266.38	103,448	82%	67%
<i>Year 5</i>												
Under 50..	116	35,671	0	0	.46	158	*	*	.13	69	*	*
50-59.....	886	254,040	6	839	9.18	2,611	*	*	4.65	1,361	*	*
60-69.....	4,250	1,188,282	58	26,350	86.22	24,149	67%	109%	55.53	15,536	104%	170%
70-79.....	4,343	1,482,243	112	43,275	169.31	58,932	66	73	143.15	50,283	78	86
80 and over	1,224	506,138	77	33,697	93.88	40,460	82	83	108.22	47,657	71	71
All Ages.	10,819	3,466,374	253	104,161	359.05	126,310	70%	82%	311.68	114,906	81%	91%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE C—Continued  
NONREFUND—FEMALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	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 Con- tracts	Amounts of Annual Income	Number of Contracts	Amounts of Annual Income	Num- ber of Con- tracts	Amounts of An- nual Income	Number of Contracts	Amounts of Annual Income	Num- ber of Con- tracts	Amounts of An- nual Income
<i>Years 6 and over</i>												
Under 50 . . .	1,928	598,416	6	458	7.70	2,416	*	*	3.19	1,122	*	*
50-59 . . . .	8,805	2,538,858	54	15,774	89.21	25,658	61%	61%	46.26	13,349	117%	118%
60-69 . . . .	46,237	12,030,444	690	177,496	975.52	251,780	71	70	636.13	163,698	108	108
70-79 . . . .	102,677	27,016,137	4,008	1,087,689	4,283.90	1,136,055	94	96	3,727.61	991,847	108	110
80 and over	59,418	19,248,652	5,852	2,014,178	4,912.28	1,663,909	119	121	5,898.31	2,044,538	99	99
All Ages.	219,065	61,432,507	10,610	3,295,595	10,268.61	3,079,818	103%	107%	10,311.50	3,214,554	103%	103%
<i>All Years</i>												
Under 50 . . .	2,503	809,424	7	1,058	10.06	3,361	*	*	3.79	1,551	*	*
50-59 . . . .	13,300	3,988,989	77	22,807	135.65	40,430	57%	56%	70.12	21,031	110%	108%
60-69 . . . .	63,900	17,329,784	879	241,248	1,328.89	358,620	66	67	862.72	232,246	102	104
70-79 . . . .	117,909	32,791,974	4,388	1,232,941	4,879.49	1,364,630	90	90	4,232.14	1,186,289	104	104
80 and over	63,210	21,020,380	6,054	2,115,576	5,199.99	1,802,832	116	117	6,227.61	2,206,255	97	96
All Ages.	260,822	75,940,551	11,405	3,613,630	11,554.08	3,569,873	99%	101%	11,396.38	3,647,372	100%	99%

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TABLE C—Continued  
REFUND—MALE LIVES

ATTAINED AGES BY CONTRACT YEAR	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>q</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>Year 1</i>												
Under 50...	335	123,089	2	1,727	1.78	682	*	*	.91	392	*	*
50-59.....	921	303,609	9	4,251	13.11	4,425	*	*	10.25	3,447	*	*
60-69.....	2,514	981,764	60	27,662	73.52	28,768	82%	96%	59.50	23,262	101%	119%
70-79.....	1,559	679,057	67	29,204	87.32	38,333	77	76	78.28	34,336	86	85
80 and over	386	154,642	36	15,509	41.49	16,613	87	93	43.11	17,275	84	90
All Ages.	5,715	2,242,161	174	78,353	217.22	88,821	80%	88%	192.05	78,712	91%	100%
<i>Year 2</i>												
Under 50...	406	141,746	3	632	2.13	773	*	*	1.06	445	*	*
50-59.....	998	339,347	17	13,028	14.28	4,881	119%	267%	11.08	3,806	153%	342%
60-69.....	2,918	1,106,627	83	35,959	85.72	32,425	97	111	69.37	26,212	120	137
70-79.....	1,942	820,099	110	46,006	109.18	45,935	101	100	97.77	41,098	113	112
80 and over	444	180,041	52	26,813	48.90	19,901	106	135	51.37	20,880	101	128
All Ages.	6,708	2,587,860	265	122,438	260.21	103,915	102%	118%	230.65	92,441	115%	132%
<i>Year 3</i>												
Under 50...	495	164,801	5	1,362	2.52	896	*	*	1.30	513	*	*
50-59.....	1,195	421,159	22	11,401	17.13	5,934	128%	192%	13.32	4,612	165%	247%
60-69.....	3,532	1,350,366	114	50,183	104.20	39,686	109	126	84.41	32,106	135	156
70-79.....	2,517	1,014,658	138	63,200	142.20	57,267	97	110	127.48	51,300	108	123
80 and over	581	215,137	65	29,676	63.90	23,504	102	126	67.22	24,591	97	121
All Ages.	8,320	3,166,121	344	155,822	329.95	127,287	104%	122%	293.73	113,122	117%	138%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE C—Continued  
REFUND—MALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>q</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>Year 4</i>												
Under 50 . . .	508	163,068	1	26	2.60	894	*	*	1.35	512	*	*
50-59 . . . . .	1,265	420,363	18	7,224	18.17	5,950	99%	121%	14.18	4,622	127%	156%
60-69 . . . . .	3,645	1,327,308	119	54,353	108.54	39,477	110	138	88.09	31,991	135	170
70-79 . . . . .	2,821	1,072,938	171	71,711	159.81	60,959	107	118	143.39	54,703	119	131
80 and over	727	262,410	73	27,739	81.45	29,348	90	95	86.08	30,932	85	90
All Ages . . .	8,966	3,246,087	382	161,053	370.57	136,628	103%	118%	333.09	122,760	115%	131%
<i>Year 5</i>												
Under 50 . . .	559	173,241	4	650	2.92	944	*	*	1.54	537	*	*
50-59 . . . . .	1,259	404,586	13	9,808	17.97	5,691	72%	172%	14.00	4,408	93%	223%
60-69 . . . . .	3,613	1,307,929	93	35,528	107.32	38,990	87	91	87.14	31,610	107	112
70-79 . . . . .	3,217	1,170,675	182	53,359	180.21	65,591	101	81	161.23	58,682	113	91
80 and over	877	325,227	108	44,502	99.70	36,872	108	121	105.70	39,039	102	114
All Ages . . .	9,525	3,381,658	400	143,847	408.12	148,088	98%	97%	369.61	134,276	108%	107%

TABLE C—Continued  
REFUND—MALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	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>Years 6 and over</i>												
Under 50 . . .	7,012	2,339,775	26	16,536	38.14	12,709	<i>68%</i>	<i>130%</i>	21.93	7,298	<i>119%</i>	<i>227%</i>
50-59 . . . . .	16,010	4,902,153	227	78,522	225.93	69,893	100	112	175.49	54,375	129	144
60-69 . . . . .	35,614	11,634,954	1,088	385,920	1,052.43	344,411	103	112	850.52	278,981	128	138
70-79 . . . . .	54,427	18,147,259	3,558	1,240,593	3,230.22	1,073,848	110	116	2,922.61	971,112	122	128
80 and over	27,518	9,281,493	3,433	1,205,201	3,287.01	1,115,862	104	108	3,532.24	1,202,087	97	100
All Ages . . .	140,581	46,305,634	8,332	2,926,772	7,833.73	2,616,723	106%	112%	7,502.79	2,513,853	111%	116%
<i>All Years</i>												
Under 50 . . .	9,315	3,105,720	41	20,933	50.09	16,898	<i>82%</i>	<i>124%</i>	28.09	9,697	<i>146%</i>	<i>216%</i>
50-59 . . . . .	21,648	6,791,217	306	124,234	306.59	96,774	100	128	238.32	75,270	128	165
60-69 . . . . .	51,836	17,708,948	1,557	589,605	1,531.73	523,757	102	113	1,239.03	424,162	126	139
70-79 . . . . .	66,483	22,904,686	4,226	1,504,073	3,908.94	1,341,933	108	112	3,530.76	1,211,231	120	124
80 and over	30,533	10,418,950	3,767	1,349,440	3,622.45	1,242,100	104	109	3,885.72	1,334,804	97	101
All Ages . . .	179,815	60,929,521	9,897	3,588,285	9,419.80	3,221,462	105%	111%	8,921.92	3,055,164	111%	117%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE C—Continued  
REFUND—FEMALE LIVES

ATTAINED AGES BY CONTRACT YEAR	EXPOSURES		ACTUAL DEATHS		BASED ON 1937 STANDARD ANNUITY TABLE				BASED ON <i>q</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>Year 1</i>												
Under 50..	618	267,239	0	0	2 21	1,059	*	*	83	484	*	*
50-59.....	1,841	631,444	5	1,685	18 26	6,239	*	*	9 51	3,227	*	*
60-69.....	4,681	1,425,932	65	20,774	91 59	28,048	71%	74%	58 24	17,849	112%	116%
70-79.....	2,996	962,769	74	21,060	117 27	37,391	63	56	99 35	31,529	74	67
80 and over	714	241,496	33	14,283	52 32	17,874	63	80	58 75	20,157	56	71
All Ages..	10,850	3,528,880	177	57,802	281 65	90,611	63%	64%	226 68	73,246	78%	79%
<i>Year 2</i>												
Under 50..	727	285,551	1	185	2 64	1,127	*	*	1 12	520	*	*
50-59.....	2,201	725,615	7	3,168	21 85	7,102	*	*	11 28	3,663	*	*
60-69.....	5,533	1,636,804	79	25,450	108 92	32,079	73%	79%	69 39	20,389	114%	125%
70-79.....	3,855	1,194,914	125	41,195	150 87	46,377	83	89	127 85	39,116	98	105
80 and over	954	297,756	89	27,405	71 27	22,700	125	121	80 90	26,036	110	105
All Ages..	13,270	4,140,640	301	97,403	355 55	109,385	85%	89%	290 54	89,724	104%	109%
<i>Year 3</i>												
Under 50..	865	330,728	4	1,052	3 16	1,292	*	*	1 39	587	*	*
50-59.....	2,699	838,567	15	3,666	26 83	8,129	56%	45%	13 77	4,192	109%	87%
60-69.....	7,077	1,950,667	126	36,335	139 72	38,211	90	95	88 93	24,275	142	150
70-79.....	5,410	1,581,258	173	45,973	212 08	61,302	82	75	179 74	51,682	96	89
80 and over	1,368	411,834	125	47,282	103 32	31,129	121	152	117 99	35,565	106	133
All Ages..	17,419	5,113,054	443	134,308	485 11	140,063	91%	96%	401 82	116,301	110%	115%



TABLE C—Continued  
REFUND—FEMALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	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>Year 4</i>												
Under 50..	896	309,257	1	120	3.29	1,180	*	*	1.41	550	*	*
50-59.....	2,833	872,251	13	3,608	28.07	8,473	46%	43%	14.41	4,380	90%	82%
60-69.....	7,890	2,008,712	108	29,000	156.88	39,827	69	73	100.27	25,415	108	114
70-79.....	6,377	1,736,062	212	56,968	249.72	67,612	85	84	211.68	57,138	100	100
80 and over	1,716	482,944	147	39,847	130.43	37,127	113	107	149.70	42,889	98	93
All Ages..	19,712	5,409,226	481	129,543	568.39	154,219	85%	84%	477.47	130,372	101%	99%
<i>Year 5</i>												
Under 50..	967	313,738	4	2,333	3.63	1,202	*	*	1.62	565	*	*
50-59.....	2,970	874,364	16	4,964	29.66	8,539	54%	58%	15.38	4,410	104%	113%
60-69.....	8,499	2,065,245	155	42,127	170.48	41,126	91	102	109.26	26,293	142	160
70-79.....	7,500	1,965,202	237	62,773	292.97	76,548	81	82	248.18	64,685	95	97
80 and over	2,195	590,707	180	46,542	167.15	45,730	108	102	192.24	52,986	94	88
All Ages..	22,131	5,809,256	592	158,739	663.89	173,145	89%	92%	566.68	148,939	104%	107%

\* Less than 10 contracts terminated by death.

NOTE.—Mortality ratio in italics where less than 50 but not less than 10 contracts terminated by death.

TABLE C—Continued  
REFUND—FEMALE LIVES—Continued

ATTAINED AGES BY CONTRACT YEAR	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	Num- ber of Con- tracts	Amounts of An- nual Income	Number of Contracts	Amounts of Annual Income	Num- ber of Con- tracts	Amounts of An- nual Income
<i>Years 6 and over</i>												
Under 50 . . .	12,671	4,180,373	53	13,974	47.52	15,669	112%	89%	21.84	7,268	243%	192%
50-59 . . . . .	35,050	9,958,733	299	94,910	350.96	98,996	85	96	182.27	51,363	164	185
60-69 . . . . .	114,385	28,967,285	1,886	451,589	2,345.23	589,683	80	77	1,514.56	379,887	125	119
70-79 . . . . .	175,510	41,323,349	6,922	1,739,687	7,042.58	1,685,019	98	103	6,089.61	1,452,133	114	120
80 and over	90,260	22,448,553	9,635	2,457,965	7,500.13	1,902,211	128	129	9,032.23	2,311,715	107	106
All Ages . . .	427,876	106,878,293	18,795	4,758,125	17,286.42	4,291,578	109%	111%	16,840.51	4,202,366	112%	113%
<i>All Years</i>												
Under 50 . . .	16,744	5,686,886	63	17,664	62.45	21,529	101%	82%	28.21	9,974	223%	177%
50-59 . . . . .	47,594	13,900,974	355	112,001	475.63	137,478	75	81	246.62	71,235	144	157
60-69 . . . . .	148,065	38,054,645	2,419	605,275	3,012.82	768,974	80	79	1,940.65	494,108	125	122
70-79 . . . . .	201,648	48,763,554	7,743	1,967,656	8,065.49	1,974,249	96	100	6,956.41	1,696,283	111	116
80 and over	97,207	24,473,290	10,209	2,633,324	8,024.62	2,056,771	127	128	9,631.81	2,489,348	106	106
All Ages . . .	511,258	130,879,349	20,789	5,335,920	19,641.01	4,959,001	106%	108%	18,803.70	4,760,948	111%	112%