

TRANSACTIONS OF SOCIETY OF ACTUARIES  
1960 REPORTS

REPORT OF THE  
COMMITTEE ON GROUP ANNUITY MORTALITY

GROUP ANNUITY MORTALITY

THE current report includes only the regular matured life study and like the previous reports is limited to the experience of single life matured annuities under Group Annuity contracts. Experience under plans which do not have a stated normal retirement date and under which annuities are purchased at the actual retirement dates of the employees has been included for the first time in this report. The mortality experience is compared with the *Ga*-1951 male and female tables (without projection) as well as with the 1937 Standard Annuity Table.

Tables 1, 2, and 4 show the experience for the year 1959 by attained five year age groups for lives retiring on or after normal retirement date, for lives retiring prior to normal retirement date, and for lives retiring on plans having no stated normal retirement date, respectively. Since there was a significant amount of experience reported in 1959 which actually occurred in 1958, the ratios relating to the 1958 experience shown in these tables have been adjusted to recognize this experience and these ratios supersede those included in last year's report.

The mortality ratios shown in Table 4 are somewhat higher than those shown in Table 1. It is possible that the higher mortality ratios in Table 4 may be an indication of an inherently higher mortality under plans having no stated normal retirement date than under plans with a stated normal retirement date during the period after normal retirement date. Under plans with no stated normal retirement date those lives retiring for reasons of health would be automatically included in the experience shown in Table 4. Under plans with a stated normal retirement date, the experience on lives retired for reasons of health prior to the normal retirement date would not be included in Table 1 but would be shown in Table 2.

Table 3 compares the experience for the year 1959 for lives retiring on or after normal retirement date with the corresponding experience for other periods. This table includes the experience for the year 1958 on two bases: as shown in last year's report, and adjusted to include 1958 experience reported in 1959. The Committee has reason to believe that the 1959 experience will not be subject to adjustment to the same extent as that for 1958.

Table 5 shows the experience since 1946 for male lives retiring on or

TABLE 1

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1959  
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH Ga-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.
MEN												
50 & under	17.32	1	\$ 20,981	\$ 67	.14	(*) *%	\$ 183	(*) *%	.09	(*) *%	\$ 124	(*) *%
51-55....	134.05	4	159,787	2,583	1.75	(*) *	2,040	(*) *	1.33	(*) *	1,551	(*) *
56-60....	1,151.48	16	1,148,749	5,905	20.45	(129) 78	20,660	(48) 29	15.97	(165) 100	16,213	(61) 36
61-65....	22,021.18	564	23,801,640	544,658	619.11	(96) 91	665,859	(87) 82	522.71	(114) 108	561,197	(103) 97
66-70....	88,278.02	2,923	79,124,151	2,454,234	3,157.91	(98) 93	2,813,459	(93) 87	2,882.63	(108) 101	2,564,631	(102) 96
71-75....	50,752.89	2,798	35,770,732	1,859,318	2,606.50	(104) 107	1,828,449	(100) 102	2,593.44	(105) 108	1,817,107	(101) 102
76-80....	20,253.35	1,655	13,150,343	1,016,833	1,482.46	(116) 112	960,796	(105) 106	1,615.21	(106) 102	1,046,307	(96) 97
81-85....	5,722.22	685	4,003,464	483,427	597.94	(120) 115	417,578	(121) 116	700.29	(103) 98	488,930	(103) 99
86-90....	1,268.11	234	1,039,682	208,423	186.67	(117) 125	153,440	(105) 136	216.19	(101) 108	177,594	(91) 117
91-95....	177.00	45	200,180	45,812	36.45	(156) 123	40,899	(123) 112	40.39	(141) 111	45,319	(110) 101
96 & over.	19.67	6	10,840	2,940	6.27	(*) *	3,455	(*) *	6.44	(*) *	3,566	(*) *
All Ages	189,795.29	8,931	\$158,430,549	\$6,624,200	8,715.65	(105) 102%	\$6,906,818	(98) 96%	8,594.69	(107) 104%	\$6,722,539	(101) 99%

TABLE 1—Continued

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH Ga-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.
WOMEN												
50 & under	15.09	0	\$ 14,192	\$ 0	.08	(*) * %	\$ 55	(*) * %	.01	(*) * %	\$ 28	(*) * %
51-55....	258.21	1	131,730	2,281	2.36	(*) *	1,194	(*) *	1.14	(*) *	593	(*) *
56-60....	2,058.48	19	1,148,911	10,621	25.73	(*) 74	14,451	(*) 73	14.48	(*) 131	8,110	(*) 131
61-65....	8,439.06	106	4,382,401	52,219	150.67	(65) 70	77,603	(58) 67	99.84	(98) 106	51,210	(88) 102
66-70....	16,280.49	259	6,842,428	112,032	399.55	(69) 65	167,335	(77) 67	296.97	(92) 87	124,229	(104) 90
71-75....	7,667.94	242	2,932,672	89,708	270.49	(82) 89	103,781	(79) 86	257.61	(86) 94	99,123	(83) 91
76-80....	2,610.60	143	1,029,227	57,064	131.53	(109) 109	52,119	(123) 109	152.00	(95) 94	60,297	(106) 95
81-85....	805.14	84	363,073	37,022	59.05	(127) 142	26,869	(110) 138	74.82	(100) 112	34,089	(87) 109
86-90....	183.45	24	92,011	13,076	19.02	(159) 126	9,465	(136) 138	24.74	(122) 97	12,320	(105) 106
91-95....	32.68	6	19,503	3,280	4.91	(*) *	2,818	(*) *	6.56	(*) *	3,753	(*) *
96 & over.	3.00	0	1,232	0	.64	(*) *	266	(*) *	.90	(*) *	379	(*) *
All Ages	38,354.14	884	\$ 16,957,380	\$ 377,303	1,064.03	(80) 83%	\$ 455,956	(82) 83%	929.07	(93) 95%	\$ 394,131	(95) 96%

\* Less than 10 deaths.

† Percentages in parentheses are for the year 1958 as adjusted in 1959.

TABLE 2

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1959  
RETIREMENT PRIOR TO NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH Ga-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.
MEN												
50 & under	260.28	8	\$ 66,783	\$ 1,071	1.90	(*) * %	\$ 523	(*) * %	1.17	(*) * %	\$ 338	(*) * %
51-55 . . . .	1,170.91	27	644,528	16,199	14.97	(262) 180	8,220	(206) 197	11.47	(344) 235	6,258	(271) 259
56-60 . . . .	9,532.78	272	5,963,715	138,127	168.18	(189) 162	106,288	(147) 130	131.87	(242) 206	83,377	(188) 166
61-65 . . . .	21,890.55	860	17,460,133	548,364	549.92	(163) 156	439,228	(132) 125	450.70	(198) 191	360,061	(161) 152
66-70 . . . .	14,354.32	679	10,157,358	415,262	508.78	(140) 133	357,599	(131) 116	463.39	(153) 147	325,243	(144) 128
71-75 . . . .	7,034.21	474	4,009,636	250,591	360.13	(119) 132	204,368	(106) 123	358.07	(120) 132	202,949	(107) 123
76-80 . . . .	2,199.28	191	1,332,433	111,142	159.95	(133) 119	96,657	(132) 115	174.03	(122) 110	105,024	(121) 106
81-85 . . . .	624.34	91	442,798	59,757	65.45	(133) 139	46,681	( 99) 128	76.73	(113) 119	54,721	( 84) 109
86 & over.	143.00	30	130,065	20,238	21.56	( 96) 139	20,261	( 89) 100	24.93	( 83) 120	23,285	( 78) 87
All Ages	57,209.67	2,632	\$ 40,207,449	\$1,560,751	1,850.84	(146) 142%	\$1,279,825	(128) 122%	1,692.36	(160) 156%	\$1,161,256	(140) 134%

TABLE 2—Continued

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH G2-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.
WOMEN												
50 & under	138.61	0	\$ 27,103	\$ 0	.75	(*) * %	\$ 151	(*) * %	.32	(*) * %	\$ 67	(*) * %
51-55....	838.41	7	265,135	1,475	7.03	(*) * %	\$ 2,232	(*) * %	3.43	(*) * %	\$ 1,101	(*) * %
56-60....	2,412.10	38	773,862	12,644	28.79	(103) 132	\$ 9,253	(84) 137	15.86	(187) 240	\$ 5,076	(154) 249
61-65....	4,170.91	74	1,556,245	27,987	71.94	(107) 103	\$ 26,893	(98) 104	46.87	(163) 158	\$ 17,563	(150) 159
66-70....	2,551.40	66	877,923	24,203	62.15	(88) 106	\$ 21,302	(108) 114	46.09	(119) 143	\$ 15,763	(146) 154
71-75....	1,080.53	40	366,258	10,976	37.98	(128) 105	\$ 12,874	(128) 85	36.05	(135) 111	\$ 12,235	(134) 90
76-80....	343.17	23	124,737	6,597	17.20	(117) 134	\$ 6,301	(105) 105	19.86	(101) 116	\$ 7,279	(91) 91
81-85....	92.00	17	49,245	10,208	6.71	(*) 253	\$ 3,583	(*) 285	8.46	(*) 201	\$ 4,534	(*) 225
86 & over.	14.00	3	7,662	903	1.59	(*) *	\$ 857	(*) *	2.07	(*) *	\$ 1,120	(*) *
All Ages	11,641.13	268	\$ 4,048,170	\$ 94,993	234.14	(107) 114%	\$ 83,446	(103) 114%	179.01	(140) 150%	\$ 64,738	(133) 147%

\* Less than 10 deaths.

† Percentages in parentheses are for the year 1958 as adjusted in 1959.

TABLE 3  
INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE TO 12-31-59  
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

CALENDAR YEARS	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH GQ-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio Act./Exp.	Expected Deaths	Ratio Act./Exp.	Expected Deaths	Ratio Act./Exp.	Expected Deaths	Ratio Act./Exp.
MEN												
1924-1940	56,297.34	2,923	\$ 59,377,823	\$ 2,964,846	2,369.53	123%	\$ 2,553,456	116%	2,289.45	128%	\$ 2,485,673	119%
1941-1945	114,397.15	5,905	86,810,361	4,792,550	4,908.85	120	3,918,035	122	4,766.51	124	3,862,496	124
1946-1950	256,894.00	11,990	171,307,970	8,254,898	10,913.99	110	7,533,929	110	10,553.92	114	7,375,031	112
1951-1955	517,925.53	24,294	358,230,640	16,262,942	22,419.88	108	15,474,282	105	21,765.02	112	15,063,360	108
1956	143,411.03	6,523	107,338,309	4,631,712	6,362.08	103	4,643,253	100	6,214.96	105	4,512,024	103
1957	157,525.43	7,316	121,400,303	5,267,214	7,069.75	103	5,268,089	100	6,926.82	106	5,121,510	103
1958*	173,075.75	7,999	140,101,904	5,793,505	7,861.79	102	6,072,005	95	7,727.73	104	5,900,703	98
1958†	173,575.66	8,253	140,376,198	5,952,422	7,874.82	105	6,076,350	98	7,738.49	107	5,903,068	101
1959	189,795.29	8,931	158,430,549	6,624,200	8,715.65	102	6,906,818	96	8,594.69	104	6,722,539	99
WOMEN												
1924-1940	9,852.36	275	\$ 5,823,610	\$ 153,541	219.79	125%	\$ 127,454	120%	174.83	157%	\$ 99,999	154%
1941-1945	17,593.08	491	8,937,855	239,864	416.16	118	214,271	112	339.17	145	176,096	136
1946-1950	38,883.60	909	17,087,770	423,918	947.61	96	429,591	99	784.37	116	364,336	116
1951-1955	87,676.96	1,983	36,229,335	861,270	2,241.26	88	937,052	92	1,884.60	105	802,246	107
1956	26,732.72	615	11,236,846	277,785	702.35	88	293,373	95	596.78	103	250,852	111
1957	30,127.03	625	12,825,716	253,263	804.19	78	337,102	75	687.58	91	288,470	88
1958*	34,130.79	717	14,772,299	313,596	926.70	77	392,537	80	799.09	90	337,308	93
1958†	33,997.53	740	14,765,673	321,819	923.47	80	392,285	82	796.64	93	337,116	95
1959	38,354.14	884	16,957,380	377,303	1,064.03	83	455,956	83	929.07	95	394,131	96

\* As originally reported.

† As adjusted in 1959.

after normal retirement date for successive five year periods compared with the *Ga*-1951 male table (without projection). This tabulation has been adjusted to reflect all late reported experience. Because of these adjustments, the totals shown in this table for the periods of 1946-1950 and 1951-1955 differ somewhat from those shown in Table 3.

In general, this report indicates a continued improvement in the mortality of male retired lives.

The following companies have contributed experience for the investigation covered by this report:

Aetna Life Insurance Company  
Bankers Life Company  
Canada Life Assurance Company  
Confederation Life Association  
Connecticut General Life Insurance Company  
Equitable Life Assurance Society  
Great-West Life Assurance Company  
John Hancock Mutual Life Insurance Company  
Massachusetts Mutual Life Insurance Company  
Metropolitan Life Insurance Company  
North American Life Assurance Company  
Pacific Mutual Life Insurance Company  
Prudential Insurance Company of America  
Sun Life Assurance Company of Canada  
The Travelers Insurance Company

TABLE 4

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1959  
RETIREMENT UNDER A PLAN HAVING NO STATED NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH GA-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.
MEN												
50 & under	4.90	0	1,974	0	.03	(*) * %	12	(*) * %	.02	(*) * %	10	(*) * %
51-55 . . . .	35.25	5	23,853	2,671	.46	(*) *	304	(*) *	.35	(*) *	235	(*) *
56-60 . . . .	319.75	10	258,028	2,928	5.70	(*) 175	4,678	(*) 63	4.46	(*) 224	3,670	(*) 80
61-65 . . . .	3,750.46	103	3,054,564	78,943	102.53	(147) 100	83,493	(113) 95	85.96	(175) 120	69,988	(134) 113
66-70 . . . .	15,294.62	594	10,639,095	363,328	549.92	(109) 108	378,666	(106) 96	502.66	(119) 118	345,306	(117) 105
71-75 . . . .	8,245.96	430	4,440,768	231,085	420.57	(109) 102	225,226	(115) 103	417.75	(110) 103	223,393	(116) 103
76-80 . . . .	2,908.54	210	1,427,681	111,645	213.03	(118) 99	104,447	(115) 107	232.19	(108) 90	113,798	(105) 98
81-85 . . . .	770.35	79	431,801	82,483	79.92	(127) 99	45,127	(113) 183	93.54	(108) 84	52,873	(96) 156
86-90 . . . .	182.22	28	102,002	14,757	26.70	(106) 105	15,016	(215) 98	30.93	(91) 91	17,379	(186) 85
91 & over.	24.00	6	11,377	2,473	5.48	(*) *	2,654	(*) *	5.95	(*) *	2,873	(*) *
All Ages	31,536.05	1,465	\$ 20,391,143	\$ 890,313	1,404.34	(114) 104%	\$ 859,623	(112) 104%	1,373.81	(118) 107%	\$ 829,525	(117) 107%



TABLE 4—Continued

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH GQ-1951 TABLE (WITHOUT PROJECTION)			
					By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.	Expected Deaths	Ratio† Act./Exp.
WOMEN												
50 & under	6.00	0	\$ 3,555	\$ 0	.03	(*) * %	\$ 21	(*) * %	.01	(*) * %	\$ 10	(*) * %
51-55 . . .	36.08	1	18,732	93	.32	(*) *	157	(*) *	.13	(*) *	77	(*) *
56-60 . . .	151.49	2	78,105	923	1.82	(*) *	947	(*) *	1.02	(*) *	522	(*) *
61-65 . . .	855.15	14	407,808	5,413	15.36	(*) 91	7,386	(*) 73	10.19	(*) 137	4,926	(*) 110
66-70 . . .	1,657.24	41	819,604	22,779	40.22	(69) 102	19,698	(72) 116	29.73	(93) 138	14,505	(98) 157
71-75 . . .	647.82	10	308,815	3,827	22.81	(80) 44	10,939	(91) 35	21.76	(84) 46	10,445	(96) 37
76-80 . . .	206.58	5	88,224	3,448	10.36	(*) *	4,425	(*) *	12.00	(*) *	5,100	(*) *
81-85 . . .	45.00	3	18,646	1,453	3.21	(*) *	1,315	(*) *	4.04	(*) *	1,660	(*) *
86-90 . . .	6.00	0	4,100	0	.61	(*) *	418	(*) *	.78	(*) *	542	(*) *
91 & over .	0	0	0	0	0	— —	0	— —	0	— —	0	— —
All Ages	3,611.36	76	\$ 1,747,589	\$ 37,936	94.74	(73) 80%	\$ 45,306	(77) 84%	79.66	(88) 95%	\$ 37,787	(94) 100%

\* Less than 10 deaths.

† Percentages in parentheses are for the year 1958 as adjusted in 1959.

**TABLE 5**  
**INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED**  
**LIFE EXPERIENCE TO 12-31-59**  
**RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE**  
**COMPARISON WITH Ga-1951 TABLE (WITHOUT PROJECTION)**  
**MEN**

Attained Ages	1946-1950	1951-1955	1952-1956	1953-1957	1954-1958	1955-1959
Actual Deaths, by Number of Lives						
60 & under...	46	49	50	53	54	64
61-65.....	1,207	2,131	2,281	2,444	2,600	2,646
66-70.....	4,788	9,645	10,550	11,506	12,461	13,266
71-75.....	3,159	6,764	7,652	8,733	9,918	11,186
76-80.....	1,731	3,545	4,118	4,811	5,533	6,380
81-85.....	855	1,567	1,775	2,030	2,344	2,674
86-90.....	232	494	577	621	682	813
91-95.....	60	104	115	139	172	188
96 & over....	6	11	12	10	12	15
Total.....	12,084	24,310	27,130	30,347	33,776	37,232
Ratio Actual/Expected, by Number of Lives						
60 & under...	190%	177%	170%	171%	158%	139%
61-65.....	118	117	116	114	114	111
66-70.....	113	113	111	110	108	107
71-75.....	113	110	108	107	107	107
76-80.....	110	107	106	106	106	105
81-85.....	119	108	106	105	103	101
86-90.....	108	111	112	105	101	103
91-95.....	154	133	125	128	132	124
96 & over....	*	104	106	75	68	69
Total.....	114%	111%	109%	108%	107%	106%
Ratio Actual/Expected, by Amount of Annual Income						
60 & under...	200%	151%	146%	149%	117%	93%
61-65.....	114	115	114	110	108	104
66-70.....	114	108	106	104	102	100
71-75.....	112	108	105	104	104	103
76-80.....	101	104	104	106	102	101
81-85.....	121	99	98	100	102	101
86-90.....	90	108	112	102	96	102
91-95.....	169	156	161	133	126	119
96 & over....	*	92	97	62	63	65
Total.....	112%	108%	106%	105%	103%	101%

\* Less than 10 deaths.