

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1955 REPORTS**

**REPORT OF THE COMMITTEE ON GROUP
ANNUITY MORTALITY**

GROUP ANNUITY MORTALITY

THE current study has been prepared on the same general basis as previous reports and thus is limited to the experience of single life matured annuities under Group Annuity contracts. This report continues the practice that was adopted last year of showing comparisons with the *Ga*-1951 Male and Female Tables, respectively, (without projection) as well as with the 1937 Standard Annuity Table. However, a new method of reporting the data of contributing companies, which was adopted this year, made it convenient to review the exposures and deaths reported in previous studies, and to adjust such experience so as to correct some underreporting of deaths and minor variations in exposure in the previously reported experience. It was found that although these adjustments produced changes in the ratios of actual to expected deaths previously reported, they did not materially affect the trends of such ratios. An indication of the effect of the adjustments on the experience of 1953 can be seen in Tables 1 and 2 where the ratios for all ages combined are shown for the year 1953 on both bases. Table 5 in this report, showing the adjusted figures for other periods, may be compared with the corresponding table in last year's report. All of the tables shown in the current report are based on the adjusted experience.

Tables 1 and 2 show the experience for the year 1954 at attained five year age groups for lives retiring on and after normal retirement date and for lives retiring prior to normal retirement date, respectively. Tables 3 and 4 show the experience for the four years 1951-1954 combined, in the same form as in Tables 1 and 2. Table 5 compares the experience for the year 1954 for lives retiring on and after normal retirement date with the corresponding experience for other periods. The comparison with the *Ga*-1951 Table has been carried back to experience years prior to 1951, an extension that was not available for last year's report.

The 1954 experience shows in general a continuation of the previous trend toward improvement in mortality of retired lives. There is a particularly marked decrease in 1954 mortality of female lives, which, however, represents only a small part of the entire experience.

TABLE 1

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1954
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH GZ-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 and under...	4 00	0	\$ 2,679	\$ 0	03	(*) *	\$ 19	(*) *	.03	(*) *	\$ 11	(*) *
51-55	36 17	0	65,676	0	44	(*) *	851	(*) *	.35	(*) *	653	(*) *
56-60	337 86	11	531,118	12,426	6 20	(177) 177%	9,629	(186) 129%	4 84	(226) 227%	7,558	(237) 164%
61-65	17,589 84	509	14,040,918	374,261	496 44	(98) 103	394,518	(92) 95	419 49	(116) 121	332,961	(109) 112
66-70	60,399 23	2,118	40,948,581	1,375,702	2,149 97	(103) 99	1,451,105	(102) 95	1,960 30	(113) 108	1,321,843	(112) 104
71-75	28,667 62	1,527	17,756,910	977,915	1,460 36	(102) 105	894,211	(99) 109	1,450 08	(103) 105	895,269	(99) 109
76-80	9,733 21	808	6,619,817	529,258	712 22	(120) 113	484,902	(126) 109	775 92	(110) 104	528,442	(115) 100
81-85	2,755 25	360	2,186,293	276,996	287 25	(129) 125	229,260	(107) 121	336 35	(110) 107	268,524	(91) 103
86-90	602 42	99	566,840	88,396	89 06	(147) 111	83,089	(150) 106	103 02	(127) 96	96,245	(130) 92
91-95	81 00	29	59,493	15,537	16 57	(132) 175	12,110	(141) 128	18 36	(119) 158	13,425	(127) 116
96 and over...	8 92	3	4,897	1,311	2 59	(*) *	1,419	(*) *	2 73	(*) *	1,501	(*) *
All	120,215 52	5,464	\$2,783,222	\$3,651,802	5,221 13	(107) 105% 104%†	\$3,561,113	(105) 103% 104%†	5,071 47	(110) 108% 108%†	\$3,466,432	(108) 105% 106%†
WOMEN												
50 and under...	1 92	0	\$ 577	\$ 0	01	(*) *	\$ 3	(*) *	.00	(*) *	\$ 1	(*) *
51-55	180 99	0	83,202	0	1 66	(*) *	761	(*) *	.77	(*) *	379	(*) *
56-60	1,475 21	11	730,133	5,051	18 49	(91) 59%	9,182	(92) 55%	10 42	(162) 106%	5,144	(163) 98%
61-65	5,702 90	54	2,484,150	23,532	101 15	(73) 53	43,710	(82) 54	66 80	(110) 81	28,769	(125) 82
66-70	7,994 20	140	2,960,619	47,029	194 79	(71) 72	72,323	(83) 65	144 36	(95) 97	53,669	(112) 88
71-75	3,099 27	91	1,214,930	32,901	108 12	(82) 84	42,566	(81) 77	102 10	(86) 89	40,351	(86) 82
76-80	1,118 50	52	516,615	24,307	57 01	(143) 91	26,593	(161) 91	66 19	(124) 79	30,961	(139) 79
81-85	333 67	35	181,841	13,961	24 36	(167) 144	13,207	(160) 106	30 79	(133) 114	16,720	(126) 83
86-90	77 00	12	38,423	4,557	8 03	(*) 149	3,958	(*) 115	10 47	(*) 115	5,153	(*) 88
91-95	12 00	4	7,369	1,471	1 75	(*) *	1,073	(*) *	2 34	(*) *	1,433	(*) *
96 and over...	2 58	0	792	0	83	(*) *	242	(*) *	1 27	(*) *	370	(*) *
All	19,998 24	399	\$ 8,218,651	\$ 152,809	516 20	(88) 77% 86%†	\$ 213,618	(98) 72% 97%†	435 51	(104) 92% 103%†	\$ 182,950	(114) 84% 113%†

* Less than 10 deaths.

† Percentages in parentheses are for the year 1953 on the basis of the adjusted experience referred to in the text.

‡ Percentages for the year 1953 as previously published in the 1954 Report.

TABLE 2

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1954
RETIREMENT PRIOR TO NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH 6a-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 and under	157.92	2	\$ 27,245	\$ 277	1.09	(*) *	\$ 207	(*) *	.68	(*) *	\$ 134	(*) *
51-55	684.56	26	317,412	7,119	8.59	(242) 303%	4,016	(285) 177%	6.49	(318) 401%	3,055	(375) 233%
56-60	5,090.82	206	2,618,314	76,604	90.11	(261) 229	46,816	(207) 164	70.62	(333) 292	36,729	(264) 209
61-65	10,797.20	503	7,045,409	302,881	270.55	(172) 186	177,005	(142) 171	221.59	(209) 227	145,055	(173) 209
66-70	8,390.72	419	4,844,290	214,707	297.94	(144) 141	167,135	(134) 128	271.57	(158) 154	155,778	(147) 138
71-75	3,080.01	191	1,800,182	95,636	155.71	(126) 123	90,960	(103) 105	154.38	(127) 124	90,134	(104) 106
76-80	1,083.09	107	759,327	66,983	79.51	(119) 135	55,860	(87) 120	86.74	(109) 123	60,955	(80) 110
81-85	304.67	38	267,592	34,659	31.71	(103) 120	28,510	(92) 122	37.13	(88) 102	33,413	(79) 104
86 and over	40.00	10	32,299	7,194	6.07	(*) 165	4,799	(*) 150	6.99	(*) 143	5,549	(*) 130
All	29,628.99	1,502	\$17,712,070	\$806,060	941.28	(159) 160% 155%†	\$875,308	(135) 140% 134%†	856.19	(175) 175% 170%†	\$530,802	(148) 152% 146%†
WOMEN												
50 and under	113.31	2	\$ 24,389	\$ 455	4.58	(*) *	\$ 130	(*) *	.26	(*) *	\$ 61	(*) *
51-55	497.45	8	117,081	2,441	4.13	(*) *	983	(*) *	2.02	(*) *	486	(*) *
56-60	1,174.96	19	337,585	4,561	13.96	(164) 136%	4,033	(156) 113%	7.69	(297) 247%	2,214	(282) 206%
61-65	1,700.02	34	579,085	15,180	29.16	(143) 117	9,960	(203) 152	18.99	(221) 179	6,489	(313) 234
66-70	1,111.15	31	376,767	13,965	27.02	(144) 115	9,139	(142) 153	20.00	(195) 155	6,752	(192) 207
71-75	407.23	14	148,764	5,270	14.25	(178) 98	5,215	(166) 101	13.48	(189) 104	4,955	(174) 106
76-80	141.67	7	67,270	2,350	7.18	(*) *	3,430	(*) *	8.30	(*) *	3,979	(*) *
81-85	25.00	3	14,197	2,648	1.83	(*) *	1,014	(*) *	2.31	(*) *	1,280	(*) *
86 and over	6.00	1	4,991	1,362	.60	(*) *	512	(*) *	.77	(*) *	668	(*) *
All	5,176.79	119	\$ 1,670,129	\$ 48,232	98.71	(150) 121% 143%†	\$ 34,416	(164) 140% 159%†	73.82	(202) 161% 192%†	\$ 26,884	(211) 179% 203%†

* Less than 10 deaths.

† Percentages in parentheses are for the year 1953 on the basis of the adjusted experience referred to in the text.

‡ Percentages for the year 1953 as previously published in the 1954 Report.

TABLE 3

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEARS 1951-1954
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH 60-1951 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 and under ...	23.33	1	\$ 19,013	\$ 360	.22	*	\$ 159	*	.13	*	\$ 105	*
51-55	147.34	1	327,614	2,979	1.76	*	4,172	*	1.45	*	3,180	*
56-60	1,359.93	40	1,962,225	54,768	24.89	161%	35,207	156%	19.50	205%	27,636	198%
61-65	58,989.46	1,678	44,337,475	1,252,619	1,662.87	101	1,243,896	101	1,404.73	119	1,049,417	119
66-70	200,423.16	7,311	131,696,695	4,635,957	7,118.77	103	4,652,215	100	6,487.92	113	4,246,983	109
71-75	90,571.58	4,927	56,458,943	3,058,265	4,612.51	107	2,872,337	106	4,579.78	108	2,861,098	107
76-80	30,909.75	2,600	21,500,299	1,797,674	2,263.08	115	1,579,100	114	2,465.98	105	1,722,357	104
81-85	8,812.45	1,169	7,393,785	928,687	922.06	127	779,631	119	1,079.79	108	913,460	102
86-90	1,948.82	366	1,713,525	320,181	288.13	127	252,507	127	333.54	110	292,322	110
91-95	255.92	79	269,631	95,353	52.40	151	54,450	175	58.08	136	60,428	158
96 and over	27.84	9	21,817	7,296	8.70	*	7,671	*	9.01	*	7,693	*
All	393,469.58	18,181	\$265,701,022	\$12,154,139	16,955.39	107%	\$11,481,345	106%	16,439.91	111%	\$11,184,679	109%
WOMEN												
50 and under ...	11.34	0	\$ 3,583	\$ 0	.06	*	\$ 20	*	.01	*	\$ 9	*
51-55	696.88	3	331,099	960	6.40	*	3,015	*	2.99	*	1,506	*
56-60	5,359.96	44	2,533,815	19,818	67.21	65%	31,875	62%	37.97	116%	17,880	111%
61-65	18,995.41	242	8,051,793	106,748	334.41	72	140,534	76	220.29	110	92,182	116
66-70	25,018.28	464	9,360,157	185,278	607.55	76	227,712	81	449.43	103	168,644	110
71-75	9,335.44	300	3,807,362	117,506	327.12	92	133,898	88	310.14	97	127,288	92
76-80	3,577.66	209	1,794,929	108,592	181.82	115	92,007	118	210.86	99	106,928	102
81-85	1,072.34	124	574,472	62,689	78.14	159	41,733	150	98.74	126	52,854	119
86-90	248.25	39	119,954	17,810	25.80	151	12,462	143	33.49	116	16,231	110
91-95	38.00	10	19,981	3,521	5.34	187	2,828	125	7.16	140	3,758	94
96 and over	8.58	0	2,946	0	2.57	*	816	*	3.91	*	1,226	*
All	64,362.14	1,435	\$ 26,600,091	\$ 622,922	1,636.42	88%	\$ 686,900	91%	1,374.99	104%	\$ 588,486	106%

* Less than 10 deaths.

TABLE 4

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEARS 1951-1954
RETIREMENT PRIOR TO NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH GO-1951 TABLE (WITHOUT PROJECTION)			
	Exposed	Actual Deaths	Exposed	Actual Deaths	By Number of Lives		By Amount of Annual Income		By Number of Lives		By Amount of Annual Income	
					Expected Deaths	Ratio Act./Exp.	Expected Deaths	Ratio Act./Exp.	Expected Deaths	Ratio Act./Exp.	Expected Deaths	Ratio Act./Exp.
MEN												
50 and under..	572.02	14	\$ 101,437	\$ 1,719	4.22	332%	\$ 811	212%	2.63	532%	\$ 531	324%
51-55.....	2,543.63	90	1,057,532	34,108	32.08	281	13,411	254	24.38	369	10,205	334
56-60.....	18,179.72	752	8,918,116	314,865	320.37	235	158,862	198	251.14	299	124,608	253
61-65.....	36,383.72	1,712	22,428,281	903,451	912.29	188	563,513	160	747.34	229	461,797	196
66-70.....	27,098.98	1,376	15,510,020	722,228	957.74	144	543,357	133	871.92	158	498,108	145
71-75.....	9,781.77	659	5,855,653	358,339	497.02	133	298,944	120	493.30	134	297,008	121
76-80.....	3,568.65	316	2,530,576	207,738	261.84	121	185,903	112	285.49	111	202,780	102
81-85.....	868.75	112	889,705	103,485	89.87	125	93,523	111	105.23	106	109,561	94
86 and over..	110.42	21	109,569	38,939	16.41	128	15,786	247	19.05	110	18,315	213
All.....	99,107.66	5,052	\$57,400,889	\$2,684,872	3,091.84	163%	\$1,874,090	143%	2,800.48	180%	\$1,722,913	156%
WOMEN												
50 and under..	359.54	5	\$ 73,128	\$ 782	1.77	*	\$ 368	*	.74	*	\$ 167	*
51-55.....	1,625.75	25	380,673	7,182	13.51	185%	3,188	225%	6.61	378%	1,574	456%
56-60.....	4,056.12	64	1,159,608	17,632	48.30	133	13,933	127	26.58	241	7,658	230
61-65.....	5,479.54	118	1,901,208	50,318	93.34	126	32,446	155	60.64	195	21,077	239
66-70.....	3,325.23	92	1,125,856	31,809	80.57	114	27,289	117	59.53	155	20,169	158
71-75.....	1,243.99	55	465,314	17,615	43.75	126	16,448	107	41.53	132	15,697	112
76-80.....	410.01	27	204,959	14,389	20.45	132	10,359	139	23.61	114	11,972	120
81-85.....	81.50	8	45,888	5,457	6.07	*	3,368	*	7.64	*	4,270	*
86 and over..	14.00	3	13,819	3,065	1.46	*	1,449	*	1.89	*	1,890	*
All.....	16,595.68	397	\$ 5,370,453	\$ 148,249	309.22	128%	\$ 108,848	136%	228.77	174%	\$ 84,474	175%

* Less than 10 deaths.

TABLE 5
 INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE TO 12-31-54
 RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

CALENDAR YEARS	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH GG-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	78,443.56	3,687	51,998,049	2,400,995	3,344.78	110	2,255,175	106	3,235.25	114	2,204,166	109
1952	90,274.82	4,211	60,456,392	2,899,278	3,876.69	109	2,623,836	110	3,755.75	112	2,553,407	114
1953	104,535.68	4,819	70,463,359	3,202,064	4,512.79	107	3,041,221	105	4,377.44	110	2,960,674	108
1954	120,215.52	5,464	82,783,222	3,651,802	5,221.13	105	3,561,113	103	5,071.47	108	3,466,432	105
WOMEN												
1925-1940	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	12,638.52	306	5,287,499	141,099	315.69	97	135,396	104	264.15	116	115,987	122
1952	14,658.06	349	6,060,253	151,421	369.79	94	156,268	97	309.16	113	134,028	113
1953	17,067.32	381	7,033,688	177,593	434.74	88	181,618	98	365.27	104	155,521	114
1954	19,998.24	399	8,218,651	152,809	516.20	77	213,618	72	435.51	92	182,950	84

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

Aetna Life Insurance 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
Life Insurance Company of Virginia
Massachusetts Mutual Life Insurance Company
Metropolitan Life Insurance Company
Pacific Mutual Life Insurance Company
Prudential Insurance Company of America
Sun Life Assurance Company of Canada
The Travelers Insurance Company

**RUSHMORE MUTUAL LIFE
LIBRARY**