

**TRANSACTIONS OF SOCIETY OF ACTUARIES  
1954 REPORTS**

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

**GROUP ANNUITY MORTALITY**

**W**ITH one exception the current study has been prepared on the same basis as in other recent years. Since a number of companies are now basing premium rates on the *Ga*-1951 Table,\* comparisons with that table (without projection) are included in this report for the first time, in addition to the usual comparisons with the 1937 Standard Annuity Table.

Tables 1 and 2 show the experience for the year 1953 at attained age for lives retiring on and after normal retirement date and for lives retiring prior to normal retirement date, respectively. Tables 3 and 4 correspond to Tables 1 and 2 except that the experience shown is that for the years 1951, 1952 and 1953 combined, in order to give as extensive a comparison as practicable with the *Ga*-1951 Table. Table 5 compares the experience for the year 1953 for lives retiring on and after normal retirement date with the corresponding experience for other periods.

In general the 1953 experience shows a continuation of the previous trend toward improvement in mortality of retired lives.

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  
Metropolitan Life Insurance Company  
Prudential Insurance Company of America  
Sun Life Assurance Company of Canada  
The Travelers Insurance Company

\* *TSA* IV, 246.

TABLE 1

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1953  
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH G-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..	6.00	0	\$ 4,660	\$ 0	.05	(*) *	\$ 40	(*) *	.03	(*) *	\$ 27	(*) *
51-55.....	39.50	1	74,883	112	.48	(*) *	965	(*) *	.40	(*) *	737	(*) *
56-60.....	462.82	15	586,315	16,718	8.36	(182) 179%	10,551	(177) 158%	6.58	(233) 228%	8,284	(225) 202%
61-65.....	15,427.04	405	11,454,613	289,755	434.69	(108) 93	321,312	(112) 90	367.09	(128) 110	271,039	(133) 107
66-70.....	52,835.36	1,886	35,039,409	1,241,404	1,879.02	(106) 100	1,240,899	(106) 100	1,713.15	(116) 110	1,130,250	(116) 110
71-75.....	23,919.51	1,228	14,814,803	737,500	1,217.83	(109) 101	754,534	(107) 98	1,209.11	(110) 102	749,180	(108) 98
76-80.....	8,404.81	723	5,821,176	531,711	615.93	(108) 117	427,483	(112) 124	671.33	(99) 108	466,298	(103) 114
81-85.....	2,295.74	303	1,891,154	212,004	240.86	(121) 126	200,151	(103) 106	282.07	(103) 107	234,539	(88) 90
86-90.....	578.25	118	492,813	104,714	85.91	(122) 137	73,160	(144) 143	99.38	(105) 119	84,615	(124) 124
91-95.....	73.08	19	48,603	13,828	15.04	(116) 126	10,024	(323) 138	16.66	(105) 114	11,091	(291) 125
96 and over...	5.75	0	2,722	0	1.81	(*) *	796	(*) *	1.86	(*) *	839	(*) *
All.....	104,047.86	4,698	\$70,231,151	\$3,147,746	4,499.98	(108) 104%	\$3,039,915	(110) 104%	4,367.66	(112) 108%	\$2,956,899	(113) 106%
WOMEN												
50 and under..	2.00	0	\$ 634	\$ 0	.01	(*) *	\$ 3	(*) *	.00	(*) *	\$ 2	(*) *
51-55.....	171.44	0	83,378	0	1.56	(*) *	760	(*) *	.77	(*) *	379	(*) *
56-60.....	1,378.76	15	674,600	7,236	17.29	(*) 87%	8,484	(*) 85%	9.71	(*) 154%	4,762	(*) 152%
61-65.....	4,930.30	63	2,090,818	30,078	86.79	(84) 73	36,493	(80) 82	57.20	(127) 110	23,935	(122) 126
66-70.....	6,651.12	111	2,472,183	48,805	161.68	(81) 69	60,126	(87) 81	119.72	(110) 93	44,516	(117) 110
71-75.....	2,448.50	69	993,912	27,916	85.45	(104) 81	34,681	(101) 80	80.81	(110) 85	32,783	(106) 85
76-80.....	959.58	69	483,989	39,970	48.65	(116) 142	24,741	(105) 162	56.37	(100) 122	28,726	(90) 139
81-85.....	286.25	35	154,123	17,883	20.84	(156) 168	11,124	(173) 161	26.32	(123) 133	14,067	(137) 127
86-90.....	67.00	9	31,214	2,754	6.90	(175) *	3,159	(238) *	8.98	(136) *	4,107	(183) *
91-95.....	11.00	2	6,423	669	1.54	(*) *	900	(*) *	2.08	(*) *	1,194	(*) *
96 and over...	2.00	0	718	0	.63	(*) *	206	(*) *	96	(*) *	312	(*) *
All.....	16,907.95	373	\$ 6,991,992	\$ 175,311	431.34	(93) 86%	\$ 180,677	(96) 97%	362.92	(111) 103%	\$ 154,783	(112) 113%

† Percentages in parentheses are for the year 1952.

\* Less than 10 deaths.

TABLE 2

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEAR 1953  
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 and under.....	142.94	2	\$ 26,389	\$ 387	1.04	(*) *	\$ 211	(*) *	.68	(*) *	\$ 139	(*) *
51-55.....	652.37	19	266,874	9,696	8.22	(284) 231%	3,382	(276) 287%	6.26	(373) 304%	2,571	(363) 377%
56-60.....	4,665.85	199	2,265,784	82,423	82.59	(201) 241	40,468	(242) 204	64.77	(256) 307	31,747	(308) 260
61-65.....	9,273.75	395	5,917,946	208,587	232.87	(209) 170	148,796	(175) 140	190.79	(255) 207	121,958	(214) 171
66-70.....	7,371.48	370	4,157,011	194,787	260.82	(147) 142	146,879	(138) 133	237.56	(162) 156	133,727	(151) 146
71-75.....	2,653.01	167	1,541,752	79,526	134.59	(130) 124	78,399	(132) 101	133.56	(131) 125	77,814	(133) 102
76-80.....	960.07	86	675,727	44,634	70.55	(118) 122	49,750	(123) 90	76.91	(109) 112	54,302	(113) 82
81-85.....	236.50	24	218,775	21,222	24.41	(151) 98	23,103	(112) 92	28.56	(129) 84	27,091	(95) 78
86 and over.....	31.00	5	46,677	26,314	4.81	(*) *	6,850	(*) *	5.52	(*) *	7,912	(*) *
All.....	25,986.97	1,267	\$15,116,935	\$667,576	819.90	(168) 155%	\$497,838	(155) 134%	744.61	(185) 170%	\$457,261	(169) 146%
WOMEN												
50 and under.....	93.86	2	\$ 18,230	\$ 314	.48	(*) *	\$ 89	(*) *	.23	(*) *	\$ 43	(*) *
51-55.....	439.86	5	101,713	1,620	3.70	(*) *	858	(*) *	1.82	(*) *	425	(*) *
56-60.....	1,028.63	19	293,594	5,850	12.32	(171) 154%	3,548	(204) 165%	6.75	(311) 281%	1,955	(372) 299%
61-65.....	1,442.72	32	504,568	16,483	24.56	(142) 130	8,619	(147) 191	15.93	(219) 201	5,602	(226) 294
66-70.....	940.99	33	316,539	10,781	22.77	(79) 145	7,678	(40) 140	16.81	(107) 196	5,677	(54) 190
71-75.....	329.25	20	118,781	6,831	11.56	(97) 173	4,194	(65) 163	10.97	(102) 182	3,996	(68) 171
76-80.....	121.67	6	60,423	2,491	6.05	(*) *	3,060	(*) *	7.02	(*) *	3,538	(*) *
81-85.....	22.00	3	11,555	2,524	1.67	(*) *	867	(*) *	2.11	(*) *	1,101	(*) *
86 and over.....	4.00	0	3,905	0	.65	(*) *	546	(*) *	.95	(*) *	768	(*) *
All.....	4,422.98	120	\$ 1,429,308	\$ 46,894	83.76	(128) 143%	\$ 29,459	(120) 159%	62.59	(173) 192%	\$ 23,105	(154) 203%

† Percentages in parentheses are for the year 1952.

\* Less than 10 deaths.

TABLE 3

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEARS 1951-1953  
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH G <sub>a</sub> -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	15 33	1	\$ 8,015	\$ 360	14	*	\$ 66	*	05	*	\$ 43	*
51-55	154 10	2	270,565	3,091	1 92	*	5,443	*	1 54	*	2,621	*
56-60	1 223 64	41	1,497,485	41,605	22 08	186%	26,704	156%	17 32	237%	20,956	199%
61-65	40 939 91	1,142	30,004,888	857,386	1,153 46	99	841,126	102	974 19	117	709,488	121
66-70	139,000 41	5,099	90,321,513	3,223,678	4,931 99	103	3,196,666	101	4,494 28	113	2,911,250	111
71-75	61,558 52	3,353	38,616,875	2,057,825	3,134 88	107	1,973,761	104	3,112 67	108	1,961,492	105
76-80	21,247 64	1,771	14,877,788	1,257,103	1,556 83	114	1,094,188	115	1,696 66	104	1,193,973	105
81-85	6,101 21	797	5,203,342	643,925	639 39	125	549,871	117	748 83	106	644,363	100
86-90	1,391 15	266	1,172,556	230,783	206 49	129	173,850	133	238 91	111	201,117	115
91-95	178 92	48	210,908	79,207	36 62	131	42,481	186	40 63	118	47,163	168
96 and over	21 75	6	17,186	5,985	7 34	*	6,372	*	7 45	*	6,305	*
All	271,832 58	12,526	\$182,201,121	\$8,400,948	11,691 14	107%	\$7,908,528	106%	11,332 53	111%	\$7,698,771	109%
WOMEN												
50 and under	11 84	0	\$ 3,918	\$ 0	05	*	\$ 21	*	01	*	\$ 11	*
51-55	499 48	3	243,512	960	4 56	*	2,215	*	2 22	*	1,103	*
56-60	3,825 19	31	1,794,314	14,031	47 96	65%	22,582	62%	27 02	115%	12,672	111%
61-65	13,099 45	186	5,519,093	82,891	229 88	81	95,936	86	151 16	123	62,812	132
66-70	16,873 77	316	6,358,894	135,455	409 19	77	154,150	88	302 56	104	114,306	119
71-75	6,202 82	207	2,580,825	84,167	217 78	95	90,885	93	206 82	100	86,509	97
76-80	2,440 24	154	1,271,568	83,658	123 86	124	65,067	129	143 53	107	75,566	111
81-85	741 25	89	392,003	48,728	54 01	165	28,498	171	68 31	130	36,072	135
86-90	173 25	27	82,012	13,254	17 96	150	8,550	155	23 31	116	11,137	119
91-95	26 00	6	12,612	2,050	3 59	*	1,755	*	4 82	*	2,325	*
96 and over	6 00	0	2,154	0	1 74	*	574	*	2 64	*	856	*
All	43,899 29	1,019	\$ 18,260,905	\$ 465,194	1,110 58	92%	\$ 470,533	99%	932 40	109%	\$ 403,369	115%

\* Less than 10 deaths.

100

TABLE 4

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE FOR THE YEARS 1951-1953  
RETIREMENT PRIOR TO NORMAL RETIREMENT DATE

ATTAINED AGES	NUMBER OF LIVES		AMOUNT OF ANNUAL INCOME		COMPARISON WITH 1937 STANDARD ANNUITY TABLE				COMPARISON WITH G <sub>a</sub> -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...	415.94	12	\$ 73,396	\$ 1,442	3.16	380%	\$ 599	241%	1.98	606%	\$ 389	371%
51-55.....	1,812.66	63	719,083	26,877	22.89	275	9,121	295	17.43	361	6,943	387
56-60.....	12,840.47	509	6,186,280	228,946	226.07	225	110,054	208	177.23	287	86,320	265
61-65.....	25,477.55	1,184	15,392,959	594,347	639.29	185	387,061	154	523.77	226	317,247	187
66-70.....	18,997.48	947	10,747,318	502,121	670.58	141	379,287	132	610.33	155	345,206	145
71-75.....	6,869.76	472	4,101,355	265,305	349.81	135	210,300	126	347.39	136	209,167	127
76-80.....	2,523.90	214	1,789,363	146,082	185.17	116	131,365	111	201.79	106	143,259	102
81-85.....	571.08	75	627,671	69,917	58.86	127	65,589	107	68.90	109	76,824	91
86 and over...	72.92	12	80,282	32,348	10.92	110	11,787	274	12.67	95	13,621	237
All.....	69,581.76	3,488	\$39,717,707	\$1,867,385	2,166.75	161%	\$1,305,163	143%	1,961.49	178%	\$1,198,976	156%
WOMEN												
50 and under...	239.15	3	\$ 47,227	\$ 327	1.16	*	\$ 229	*	52	*	\$ 106	*
51-55.....	1,127.29	17	262,934	4,741	9.39	181%	2,200	216%	4.61	369%	1,084	437%
56-60.....	2,903.82	45	823,362	13,595	34.63	130	9,911	137	18.98	237	5,445	250
61-65.....	3,827.49	81	1,328,147	34,204	65.05	125	22,598	151	42.17	192	14,664	233
66-70.....	2,270.58	63	760,735	17,992	54.91	115	18,438	98	40.56	155	13,632	132
71-75.....	863.76	41	322,317	12,347	30.43	135	11,437	108	28.96	142	10,935	113
76-80.....	277.34	21	140,010	12,237	13.75	153	7,053	174	15.89	132	8,140	150
81-85.....	57.50	5	31,922	2,809	4.31	*	2,369	*	5.42	*	3,008	*
86 and over...	11.00	2	10,607	1,703	1.86	*	1,530	*	2.68	*	2,147	*
All.....	11,577.93	278	\$ 3,727,261	\$ 99,955	215.49	129%	\$ 75,765	132%	159.79	174%	\$ 59,161	169%

\* Less than 10 deaths.

TABLE 5

INTERCOMPANY GROUP ANNUITY MORTALITY—MATURED LIFE EXPERIENCE TO 12-31-53  
RETIREMENT ON OR AFTER NORMAL RETIREMENT DATE

CALENDAR YEARS	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												
1924-1940..	56,449.77	2,909	\$ 59,602,837	\$2,970,512	2,377.66	122%	\$2,563,378	116%				
1941-1945..	114,011.55	5,830	86,617,580	4,763,390	4,903.63	119	3,918,008	122				
1946-1950..	255,073.87	11,837	170,552,450	8,169,605	10,879.45	109	7,522,169	109				
1951.....	78,070.35	3,642	51,830,344	2,373,068	3,332.95	109	2,255,543	105	3,225.07	113%	\$2,198,013	108%
1952.....	89,714.37	4,186	60,139,626	2,880,134	3,858.21	108	2,613,070	110	3,739.80	112	2,543,859	113
1953.....	104,047.86	4,698	70,231,151	3,147,746	4,499.98	104	3,039,915	104	4,367.66	108	2,956,899	106
WOMEN												
1925-1940..	9,905.51	274	\$ 5,821,092	\$ 153,349	220.89	124%	\$ 127,330	120%				
1941-1945..	17,451.84	480	8,915,053	234,277	413.97	116	213,750	110				
1946-1950..	38,389.45	891	16,941,132	418,845	938.77	95	426,556	98				
1951.....	12,517.58	305	5,257,846	140,909	313.21	97	134,688	105	262.21	116%	\$ 115,399	122%
1952.....	14,473.76	341	6,011,067	148,974	366.03	93	155,168	96	307.27	111	133,187	112
1953.....	16,907.95	373	6,991,992	175,311	431.34	86	180,677	97	362.92	103	154,783	113