

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1949 REPORTS**

**1949 REPORT OF THE COMMITTEE ON GROUP MORTALITY
AND MORBIDITY**

SECTION IV—GROUP ANNUITY MORTALITY

THE last report of the Actuarial Society Committee to Prepare Mortality Studies on Group Annuities (TASA XLIX, 203) set forth the active life experience for the year 1946 and the matured life experience for the years 1941 through 1945. The current report, prepared on the same basis and set forth in the six tables which follow, brings the experience forward to the end of 1947. The active life study covers the year 1947 and is subdivided between contracts including predominantly clerical employees and all other contracts. The matured life study covers the years 1946 and 1947 on a combined basis and is subdivided between cases of retirement on or after normal retirement date and cases of retirement prior to normal retirement date.

While the active life experience shows no significant change as compared with the 1946 experience, the ratios of actual to expected mortality on matured lives retired on or after the normal retirement date for the years 1946 and 1947 show a relatively substantial decline from the experience of the prior years.

TABLE I

Inter-company Group Annuity Mortality Active Life Experience during 1947—Men by Number of Lives

Central Age	Years Exposed	Deaths	Deaths including Terminations in Ill Health	Expected Deaths by		Ratio† Based on							
				Combined Annuity Table	1937 Standard Annuity Table	Combined Ann. Table			1937 St. Ann. Table				
						Deaths	Deaths incl. Ill H. Term.	Deaths	Deaths incl. Ill H. Term.	Deaths	Deaths incl. Ill H. Term.		
Contracts including predominantly Clerical Employees													
18	286	1	1	.54	.37			*				*	
23	1929	1	4	4.19	2.74			*				*	
28	7069	8	16	15.98	12.51	(67%)	50%	(89%)	100%	(85%)	64%	(114%)	128%
33	14428	22	39	37.80	35.64	(46%)	58%	(57%)	103%	(48%)	62%	(61%)	109%
38	19030	47	63	72.31	68.70	(37%)	65%	(60%)	87%	(39%)	68%	(63%)	92%
43	19720	68	101	112.01	104.12	(64%)	61%	(75%)	90%	(69%)	65%	(81%)	97%
48	17174	103	140	145.98	132.58	(70%)	71%	(91%)	96%	(77%)	78%	(100%)	106%
53	14456	122	165	183.88	163.06	(66%)	66%	(88%)	90%	(75%)	75%	(99%)	101%
58	8982	121	169	171.02	148.20	(68%)	71%	(86%)	99%	(79%)	82%	(99%)	114%
63	4641	102	130	132.18	111.94	(72%)	77%	(93%)	98%	(86%)	91%	(110%)	116%
68	189	5	5	8.06	6.67			*					*
Over 70	10			.64	.52								
Total	107914	600	833	884.59	787.05	(64%)	68%	(84%)	94%	(72%)	76%	(94%)	106%
All Others													
18	2539	4	7	4.77	3.25		*		*		*		*
23	15505	27	49	33.65	22.02	(117%)	80%	(196%)	146%	(179%)	123%	(300%)	223%
28	38141	53	106	86.20	67.51	(83%)	61%	(145%)	123%	(105%)	79%	(185%)	157%
33	72600	107	203	190.21	179.32	(55%)	56%	(128%)	107%	(59%)	60%	(136%)	113%

38	85677	169	284	325.57	309.29	(59%)	52%	(104%)	87%	(62%)	55%	(109%)	92%
43	81324	298	419	461.92	429.39	(55%)	65%	(92%)	91%	(60%)	69%	(99%)	98%
48	68647	391	537	583.50	529.95	(66%)	67%	(94%)	92%	(73%)	74%	(103%)	101%
53	57680	554	692	733.69	650.63	(85%)	76%	(108%)	94%	(95%)	85%	(122%)	106%
58	41847	621	732	796.77	690.48	(70%)	78%	(85%)	92%	(80%)	90%	(98%)	106%
63	23973	511	566	682.75	578.23	(74%)	75%	(82%)	83%	(87%)	88%	(97%)	98%
68	1249	31	34	53.23	44.05	(55%)	58%	(59%)	64%	(67%)	70%	(71%)	77%
Over 70	97	2	2	6.42	5.18				*				*
Total	489279	2768	3631	3958.68	3509.30	(69%)	70%	(96%)	92%	(78%)	79%	(108%)	103%

* Fewer than 10 deaths and ill-health terminations.

† Percentages in parentheses are for Active Life Experience during 1946.

TABLE II

Inter-company Group Annuity Mortality Active Life Experience during 1947 - Women by Number of Lives

Central Age	Years Exposed	Deaths	Deaths including Terminations in Ill Health	Expected Deaths by		Ratio Based on							
				Combined Annuity Table	1937 Standard Annuity Table	Combined Ann. Table		1937 St. Ann. Table					
						Deaths	Deaths incl. Ill H. Term	Deaths	Deaths incl. Ill H. Term.				
Contracts including Predominantly Clerical Employees													
18	7478	1	46	12.49	9.42	(12%)	32%	(187%)	368%	(15%)	42%	(248%)	488%
23	11275	5	48	21.87	14.43	(24%)	23%	(193%)	219%	(36%)	35%	(288%)	333%
28	6660	1	25	14.65	9.46	(22%)	7%	(103%)	171%	(34%)	11%	(160%)	264%
33	6050	8	32	13.85	10.71	(20%)	58%	(98%)	231%	(25%)	75%	(127%)	299%
38	7102	7	33	19.74	17.54	(48%)	35%	(163%)	167%	(54%)	40%	(181%)	188%
43	6240	8	25	25.71	22.53	(42%)	31%	(63%)	97%	(48%)	36%	(72%)	111%
48	4726	18	35	29.11	24.95	(66%)	62%	(120%)	120%	(77%)	72%	(140%)	140%
53	3225	22	37	29.73	24.90	(65%)	74%	(92%)	124%	(78%)	88%	(110%)	149%
58	2073	9	18	28.59	23.38	(50%)	31%	(69%)	63%	(61%)	38%	(84%)	77%
63	593	1	8	12.23	9.78				*				*
68	10			.31	.24				*				*
Over 70	3			.14	.11				*				*
Total	55435	83	307	208.42	167.45	(41%)	40%	(111%)	147%	(55%)	50%	(138%)	183%
All Others													
18	3793		7	6.33	4.78				*				*
23	12006	7	51	23.29	15.37	(30%)	30%	(308%)	219%	(45%)	46%	(467%)	332%
28	9864	6	45	21.70	14.01	(70%)	28%	(346%)	207%	(109%)	43%	(535%)	321%
33	9805	4	37	22.45	17.35	(31%)	18%	(300%)	165%	(41%)	23%	(388%)	213%

38	13295	15	68	36.96	32.84	(41%)	41%	(218%)	184%	(46%)	46%	(246%)	207%
43	12417	25	81	51.16	44.83	(36%)	49%	(171%)	158%	(41%)	56%	(195%)	181%
48	9751	29	70	60.07	51.49	(56%)	48%	(157%)	117%	(65%)	56%	(183%)	136%
53	6637	32	61	61.19	51.24	(69%)	52%	(123%)	100%	(83%)	62%	(147%)	119%
58	3893	24	36	53.68	43.91	(25%)	45%	(51%)	67%	(31%)	55%	(62%)	82%
63	1533	19	21	31.63	25.29	(68%)	60%	(100%)	66%	(85%)	75%	(124%)	83%
68	70			2.16	1.69				*				*
Over 70	17			.79	.60				*				*
Total	83081	161	477	371.41	303.40	(46%)	43%	(172%)	128%	(57%)	53%	(211%)	157%

* Fewer than 10 deaths and ill-health terminations.

† Percentages in parentheses are for Active Life Experience during 1946.

TABLE III
Inter-company Group Annuity Mortality Mated Life Experience for the Years 1946 and 1947 Combined
Retirement on or after Normal Retirement Date

Attained Age	Number of Lives		Amount of Annual Income (Dollars)		By Combined Annuity Table				By 1937 Standard Annuity Table				
					Number of Lives		Amount of Annual Income (Dollars)		Number of Lives		Amount of Annual Income (Dollars)		
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio†	Expected Deaths	Ratio†	Expected Deaths	Ratio†	Expected Deaths	Ratio†	
<i>Men</i>													
50 & Under	16.42		41,231		.16	*	398	*	.15	*	360	*	
51-55	50.35	1	97,173	2,098	.68	(315%)	1,319	(214%)	.82	(359%)	1,185	(243%)	
56-60	454.80	18	570,433	18,482	9.56	(122%)	183%	11,700	(171%)	158%	8.27	(142%)	218%
61-65	13269.99	315	8,909,112	211,134	443.85	(87%)	71%	295,186	(91%)	72%	372.99	(103%)	84%
66-70	40063.61	1,312	25,105,404	920,121	1,704.98	(93%)	77%	1,074,961	(91%)	86%	1,414.24	(112%)	93%
71-75	16819.56	904	11,816,903	662,508	1,053.87	(97%)	86%	743,536	(105%)	89%	856.56	(119%)	106%
76-80	6411.02	520	5,428,937	392,880	591.36	(104%)	88%	504,686	(103%)	78%	471.58	(131%)	110%
81-85	1898.14	241	1,778,945	238,240	253.47	(118%)	95%	236,879	(102%)	101%	198.84	(151%)	121%
86-90	393.76	62	386,283	58,474	75.36	(110%)	82%	73,909	(114%)	79%	58.35	(142%)	106%
91-95	59.42	20	81,853	31,110	16.27	(97%)	123%	22,861	(72%)	136%	12.49	(126%)	160%
96 & Over	19.24	3	14,911	1,913	7.80	*	*	5,962	*	*	6.26	*	*
Total.....	79456.11	3,396	54,231,185	2,536,960	4,157.36	(97%)	82%	2,971,397	(99%)	85%	3,400.35	(119%)	100%
<i>Women</i>													
50 & Under	5.75		3,372		.05	*	23	*	.03	*	18	*	
51-55	195.21	1	78,594	418	2.16	*	866	*	1.81	*	717	*	
56-60	1343.88	6	589,908	1,401	20.69	(48%)	*	9,124	(42%)	*	16.82	(59%)	*
61-65	3754.57	40	1,802,407	19,862	81.17	(80%)	49%	38,713	(79%)	51%	64.80	(100%)	62%
66-70	3773.92	77	1,599,339	29,692	117.40	(80%)	66%	49,924	(78%)	59%	91.91	(102%)	84%
71-75	1684.24	82	912,963	45,492	77.17	(108%)	108%	42,194	(91%)	108%	59.20	(137%)	139%
76-80	600.74	37	322,519	17,980	40.26	(117%)	92%	21,697	(113%)	82%	30.28	(156%)	122%
81-85	140.16	21	73,343	12,637	13.69	(140%)	153%	7,367	(130%)	172%	10.09	(189%)	208%
86-90	39.00	8	18,094	2,933	5.39	(160%)	*	2,567	(169%)	*	3.92	(220%)	*
91-95	5.00	1	2,531	313	.99	*	493	*	.69	*	357	*	
96 & Over	1.50		360		.61	*	122	*	.37	*	88	*	
Total.....	11543.97	273	5,403,480	130,678	359.48	(90%)	76%	173,030	(86%)	76%	279.92	(116%)	98%

† Percentages in parentheses are for the period 1941-1945.

* Fewer than 10 deaths.

TABLE IV
Inter-company Group Annuity Mortality Matured Life Experience for the Years 1946 and 1947 Combined Retirement Prior to Normal Retirement Date

Attained Age	Number of Lives		Amount of Annual Income (Dollars)		By Combined Annuity Table				By 1937 Standard Annuity Table							
	Exposed	Actual Deaths	Exposed	Actual Deaths	Number of Lives		Amount of Annual Income (Dollars)		Number of Lives		Amount of Annual Income (Dollars)					
					Expected Deaths	Ratio†	Expected Deaths	Ratio†	Expected Deaths	Ratio†	Expected Deaths	Ratio†				
<i>Men</i>																
50 & Under	145.43	3	31,306	218	1.28	*	*	293	*	*	1.15	*	*	285	*	*
51-55	890.97	30	411,571	10,284	9.80	(302%)	306%	5,888	(272%)	175%	8.65	(343%)	347%	5,186	(308%)	198%
56-60	3451.10	144	1,583,919	52,912	70.36	(272%)	205%	32,356	(105%)	164%	60.76	(315%)	237%	27,937	(226%)	189%
61-65	7233.51	343	4,144,598	172,477	214.00	(169%)	160%	123,289	(132%)	140%	181.06	(200%)	189%	104,271	(156%)	165%
66-70	4892.57	244	3,004,974	135,757	209.81	(125%)	116%	130,056	(94%)	104%	173.83	(151%)	140%	107,775	(113%)	126%
71-75	2227.08	145	1,579,587	97,036	139.22	(114%)	104%	98,817	(91%)	98%	113.18	(141%)	128%	80,325	(112%)	121%
76-80	635.34	63	683,728	57,103	57.09	(121%)	110%	61,662	(98%)	93%	45.60	(162%)	138%	49,224	(122%)	116%
81-85	64.87	8	50,696	7,230	8.29	*	*	6,473	*	*	6.51	*	*	5,087	*	*
86 & Over	6.58	1	5,421	2,416	1.31	*	*	945	*	*	1.01	*	*	732	*	*
Total.....	19,347.25	981	11,495,700	535,442	710.86	(150%)	138%	459,779	(112%)	116%	591.75	(181%)	166%	380,802	(135%)	141%
<i>Women</i>																
50 & Under	52.73	2	12,703	417	.85	*	*	89	*	*	.32	*	*	74	*	*
51-55	429.57	10	113,239	3,702	4.26	*	235%	1,122	*	330%	3.53	*	283%	934	*	396%
56-60	927.09	10	288,922	2,494	13.40	(125%)	75%	4,217	(127%)	59%	10.94	(153%)	91%	3,442	(156%)	72%
61-65	887.25	13	307,625	5,727	18.75	(108%)	69%	6,500	(101%)	88%	14.99	(135%)	87%	5,192	(126%)	110%
66-70	550.99	17	204,256	5,249	17.22	(125%)	99%	6,425	(134%)	82%	13.48	(160%)	126%	5,023	(171%)	104%
71-75	205.26	8	96,680	3,648	9.23	(137%)	*	4,431	(119%)	*	7.09	(177%)	*	3,399	(156%)	*
76-80	49.83	3	24,749	1,701	3.33	*	*	1,836	*	*	2.49	*	*	1,231	*	*
81-85	10.00	1	7,769	360	1.01	*	*	767	*	*	.75	*	*	566	*	*
86 & Over	3.58		2,619		.79	*	*	537	*	*	.57	*	*	389	*	*
Total.....	3116.30	64	1,058,562	23,298	68.34	(121%)	94%	25,724	(114%)	91%	54.16	(152%)	118%	20,250	(144%)	115%

† Percentages in parentheses are for the period 1941-1945.
 * Fewer than 10 deaths.

TABLE V
Inter-company Group Annuity Mortality Matured Life Experience to December 31, 1947
Retirement on or after Normal Retirement Date

Calendar Year	Number of Lives		Amount of Annual Income (Dollars)		By Combined Annuity Table				By 1937 Standard Annuity Table			
					Number of Lives		Amount of Annual Income (Dollars)		Number of Lives		Amount of Annual Income (Dollars)	
	Exposed	Actual Deaths	Exposed	Actual Deaths	Expected Deaths	Ratio	Expected Deaths	Ratio	Expected Deaths	Ratio	Expected Deaths	Ratio
Men												
1924-1940	56449.77	2,909	59,602,837	2,970,512	2905.31	100%	3,136,516	95%	2377.66	122%	2,563,378	116%
1941-1945	114011.55	5,830	86,617,580	4,763,390	5999.22	97%	4,809,318	99%	4903.63	119%	3,918,008	122%
1946	36534.04	1,625	25,140,306	1,216,426	1910.97	85%	1,378,390	88%	1562.93	104%	1,123,940	108%
1947	42922.07	1,771	29,090,879	1,320,534	2246.39	79%	1,593,007	83%	1837.42	96%	1,299,092	102%
1946-1947	79456.11	3,396	54,231,185	2,536,960	4157.36	82%	2,971,397	85%	3400.35	100%	2,423,032	105%
1924-1947	249917.43	12,135	200,451,602	10,270,862	13061.89	93%	10,917,231	94%	10681.64	114%	8,904,418	115%
Women												
1925-1940	9905.51	274	5,821,092	153,349	282.42	97%	162,575	94%	220.89	124%	127,330	120%
1941-1945	17451.84	480	8,915,053	234,277	531.27	90%	274,306	85%	113.97	116%	213,750	110%
1946	5337.75	134	2,533,297	66,878	165.45	81%	80,662	83%	128.85	104%	62,718	107%
1947	6200.22	139	2,870,183	63,800	191.03	72%	92,368	69%	151.07	92%	71,789	89%
1946-1947	11543.97	273	5,403,480	130,678	359.48	76%	173,030	76%	279.92	98%	134,507	97%
1925-1947	38901.32	1,027	20,139,625	518,304	1173.17	88%	609,911	85%	914.78	112%	475,587	109%

TABLE VI
Inter-company Group Annuity Mortality Matures Life Experience to December 31, 1947
Retirement Prior to Normal Retirement Date

Calendar Year	Number of Lives		Amount of Annual Income (Dollars)		By Combined Annuity Table				By 1947 Standard Annuity Table			
	Exposed	Actual Deaths	Exposed	Actual Deaths	Number of Lives		Amount of Annual Incomes (Dollars)		Number of Lives		Amount of Annual Income (Dollars)	
					Expected Deaths	Ratio	Expected Deaths	Ratio	Expected Deaths	Ratio	Expected Deaths	Ratio
Men												
1924-1940	16844.97	741	14,831,901	606,021	530.79	132%	490,188	124%	469.98	158%	411,125	147%
1941-1945	26414.88	1,473	17,961,619	785,776	979.97	150%	700,468	112%	815.75	181%	581,375	135%
1946	8667.44	481	5,219,768	261,875	320.53	150%	209,993	125%	266.72	180%	173,822	151%
1947	10679.81	500	6,275,932	273,567	390.43	128%	249,876	100%	325.03	154%	206,989	132%
1946-1947	19347.25	981	11,495,700	535,442	710.96	138%	459,779	116%	591.75	166%	380,802	141%
1924-1947	62607.10	3,195	44,289,220	1,927,239	2251.72	142%	1,650,435	117%	1877.48	170%	1,373,302	140%
Women												
1927-1940	1923.08	45	808,383	20,465	34.17	132%	15,094	136%	27.41	164%	12,098	169%
1941-1945	3899.75	100	1,447,564	37,805	82.66	121%	33,121	111%	65.75	152%	26,211	144%
1946	1423.76	34	488,354	12,327	30.90	110%	11,762	105%	21.51	133%	9,219	134%
1947	1692.54	30	570,208	10,971	37.44	80%	11,022	78%	29.62	101%	11,031	99%
1946-1947	3116.30	64	1,058,562	23,298	68.34	94%	25,721	91%	54.16	118%	20,250	115%
1927-1947	8939.13	209	3,314,509	81,568	185.17	113%	73,939	110%	147.32	142%	58,559	139%

