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THE "ELAS" LIFE INCOME MORTALITY TABLE

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THIS paper describes the derivation of the ELAS Life Income Mortality Table, which has been adopted by the Equitable Life Assurance Society as the mortality basis for the life income option of the modes of settlement in its current series of policy forms and for the calculation of premiums under currently issued individual deferred annuity contracts. The table is a practical adaptation of the a-1949 Table with Projection B.

In considering a new rate basis for life income settlements and individual deferred annuity contracts, we had in mind the latest intercompany study of mortality under settlement options and deferred annuities (covering the experience from 1945 to 1950). We felt that our new table should reflect that experience, with provision for future improvement in mortality based on the Projection B rates described in Messrs. Jenkins and Lew's paper "A New Mortality Basis for Annuities" (*TSA* I).

In Table 1 there is digested the experience brought out in the intercompany study. (See *TSA* 1951 Reports of Mortality and Morbidity Experience.) From Table 1 the following is apparent:

(1) The a-1949 Table may be considered as generally representative of the mortality between 1945 and 1950 under life income settlements arising from matured endowments and cash values. For other types of life income settlement, the a-1949 Table provides some margins as related to the 1945–1950 experience.

(2) For female life income settlements arising from death claims (comprising 96% of the combined male and female experience under death claim settlements) the mortality is higher than in the case of settlements arising from endowment maturities and surrenders, and this is true for both payee and nonpayee elections. The mortality under nonpayee elections is higher than under payee elections.

(3) The mortality under maturities of deferred annuity contracts, combining both the refund and nonrefund types of settlement, is generally higher than the mortality under settlements arising from endowment maturities and surrenders, but lower than the mortality under death claim settlements. There is an appreciably lighter mortality under deferred annuities that have matured under a straight life annuity option than under those maturing under an annuity with a guaranteed period or refund provision.

The results of the intercompany experience would indicate that one approach to the derivation of a rate basis for life income settlements in a new series of policy forms would involve recognition of the varying mortality for the different types of settlement. Under such a program the rate basis for settlements arising from Retirement Income policies and endowment maturities and surrenders would be more conservative than the basis applicable to death claim payee elections, and the latter in turn would be more conservative than the basis for nonpayee death claim elections. To avoid inconsistencies between deferred annuities and the

TABLE 1

INTERCOMPANY EXPERIENCE UNDER LIFE INCOME SETTLEMENTS BETWEEN 1945 AND 1950 ANNIVERSARIES

CLASS	MORTALITY RATIOS ON *a*-1949 TABLE	
	By Number of Contracts	By Amount of Annual Income
Settlements Arising from Endowment Maturities and Cash Values		
Male	102%	105%
Female	100	96
Settlements Arising from Death Claims—Female*		
Payee Elections	111	111
Nonpayee Elections	124	124
Payee and Nonpayee Combined	117	117
Maturities of Deferred Annuity Contracts		
Male—With guarantee period or refund provision	126	121
Male—Without " " " " "	109	102
Male—All contracts	124	119
Female—With guarantee period or refund provision	116	113
Female—Without " " " " "	99	92
Female—All contracts	111	108

* Males not shown, as females comprise 96% of experience under death claim settlements.

Retirement Income type of policy, the underlying rate basis should be the same for settlements under these two types.

An alternative approach would use a common rate basis for all life income types of settlements, designed to make all classes combined self-supporting. Such a basis would be somewhat on the liberal side in considering anticipated mortality under retirement incomes, endowment maturities and cash value settlements; it would be conservative for life income settlements arising from death claims. The Equitable decided to adopt this alternative approach, for the sake of simplicity of operation and simplicity of contract wording. Moreover, it was recognized that in

any event some important averaging is necessary, as in combining refund and nonrefund types under deferred annuities.

While we wished to make provision for future mortality improvement, along the lines of the Projection B rates, it seemed to us that a double entry mortality table, under which the rate of mortality is a function of both attained age and calendar year in which the age is attained, is a difficult tool to handle. It requires the publication of a multiplicity of tables in the policy forms, depending upon the calendar year of settlement, and would imply changes each year in some or all premiums for Retirement Income and deferred annuity contracts. These problems are reduced but not eliminated if we work with, say, decennial calendar year groups. Broader averaging seemed justifiable to us, considering the elements of uncertainty in any forecasting of future mortality improvement.

It appeared to us that in a general way the desired over-all financial result would be achieved by constructing a single table of mortality for males, and a corresponding table for females, based on an assumed common calendar year of birth. The assumed year of birth would have reference to the year in which life income payees resulting from current issues will, on the average, have been born. To arrive at this average year of birth we made a study of the relative volume of our life income settlements arising from death claims, by age of the payee-beneficiary at the date of settlement. We also derived an average age of the insured at death corresponding to each age at settlement of the payee-beneficiary. With this information at hand, and assuming our current distribution of issues by age at issue, we calculated, for the year of issue 1954, the anticipated average policy duration at the time of settlement for each age at settlement of the payee-beneficiary, from which we arrived at the average calendar year of birth corresponding to each such age of the payee. The latter figure was weighted by the relative volume of settlements at each payee's age at settlement, producing an average calendar year of birth for all payees under death claim life income settlements that would flow out of 1954 issues. This calculated average calendar year of birth was the year 1921.

Similarly, we derived an approximate average calendar year of birth for payees after maturity under Retirement Income at 65 policies to be issued in the year 1954. Our calculations produced the year 1915 as the average calendar year of birth for this class.

We finally decided to construct our tables, assuming the year of birth 1915, and to reflect the a–1949 Projection B mortality rates applicable to that year of birth. There are, we believe, offsetting elements of conservatism and liberality in this basis for all life income settlements combined

that will result from our current series of policy forms. On the conservative side it may be noted that the *a*-1949 Table closely approximates the mortality between 1945 and 1950 under life income settlements arising from matured endowments and cash values, but generally understates the rate of mortality during the same period under death claim settlements and maturities of deferred annuities. On the other hand, the assumption of the year 1915 as the average year of birth, which is appropriate for Retirement Income at 65 policies issued in 1954, introduces an element of liberality in the rate basis for death claim life income settlements flowing out of 1954 issues (for which the calculated average calendar year of birth was the year 1921). Moreover, we anticipate continuing with our current series of policy forms for some years in the future, and the average year of birth for life income payees resulting from issues after the year 1954 will be later than for 1954 issues.

We also had in mind that some caution should be exercised in relating figures appearing in Table 1 to the derivation of a satisfactory rate basis for life income settlements that will flow out of currently issued contracts. The 1945–1950 intercompany experience is based on life income settlements arising from older series of policies issued many years ago, with life income guarantees substantially more liberal than the guarantees that would appear in currently issued policies. It would appear reasonable to make provision for lighter anticipated mortality under settlements that will arise from currently issued policies, because a greater degree of selection may be exercised where the settlement guarantees are less attractive.

CONSTRUCTION OF ELAS LIFE INCOME MORTALITY TABLE

(1) The ELAS Life Income Mortality Table is a single entry table designed to reflect for each attained age a rate of mortality based on the *a*-1949 Projection B Table for lives born in 1915, with the provision, however, that in no event is the rate of mortality to be higher than the rate of mortality applicable to the calendar year 1954. Accordingly, in constructing this table we started with the following ungraduated mortality rates:

Attained Age x	Ungraduated Mortality Rate
39 and under.....	Based on *a*-1949 Table projected 4 years
40 and over.....	Based on *a*-1949 Table projected ($x-35$ years)

(2) For the important age ranges 60–90 for males and 55–85 for females, the rates described above were then graduated by the following Makeham formulas with a common value of c for males and females:

Male (ages 60–90 inclusive):

$$\text{colog } p_x = .00277 + .00817\ (1.132)^{x-70}$$

Female (ages 55–85 inclusive):

$$\text{colog } p_x = .00070 + .00589\ (1.132)^{x-70}$$

(3) The mortality rates of the ELAS Life Income Mortality Table are equal to the rates described in (1) above for ages 0–53 for males and 0–49 for females, and are equal to the graduated rates described in (2) above for ages 60–90 for males and 55–85 for females. A smooth progression of rates was adopted at the intermediate ages to produce a blending of the two sets of rates. For ages 91 and over for males and for ages 93 and over for females, the rates adopted are those described in (1) above; and again, a smooth blending of rates was made at female ages 86–92 inclusive.

(4) For the purpose of calculating joint life annuity values on two lives of different age, equivalent equal ages are used. Such equivalent ages are based on the assumption that the Makeham formulas described in (2) above apply throughout the entire range of the male and female tables, respectively.

Table 2 presents the ELAS Life Income Mortality Table and shows for all ages the elementary functions, mortality rates, and life annuity values at $2\frac{1}{2}\%$ interest.

SPURIOUS MORTALITY GAINS AND LOSSES

The averaging inherent in the construction of the ELAS Life Income Mortality Table may be expected to produce spurious mortality gains or losses. Table 3 elaborates on this point. For this purpose, Table 3 has been prepared on the assumption that the average year of birth of life income payees will be the calendar year 1915, and that actual mortality experienced on such payees will follow exactly the *a*–1949 Projection B rates. The table illustrates that in the immediate future we should expect spurious gains to predominate over spurious losses, with the opposite effect in the more distant future.

A company adopting this type of approximation to the more exact double entry type of mortality table should recognize where mortality gains or losses are spurious in studying its experience. This is particularly important if the results of the mortality study are used in apportioning surplus under life income settlements.

COMPARISON WITH PROGRESSIVE ANNUITY TABLE

Since the Progressive Annuity Table was designed to produce annuity values for persons born in 1900, and adjustments for other generations are made by an age setback (or set-forward) of one year of age for each 25 calendar years in birth date, it is interesting to compare the relationship of both the ELAS Life Income Mortality Table and the Progressive Annuity Table set back three-fifths of a year in age, with the *a*–1949 Projection B Table for lives born in 1915.

Table 4*a* presents this comparison for rates of mortality and Table 4*b* makes the comparison for life annuity values at $2\frac{1}{2}\%$ interest.

TABLE 2

ELAS LIFE INCOME MORTALITY TABLE

ELEMENTARY FUNCTIONS AND ANNUITY VALUES

MALES

Age x	l_x	d_x	1,000 q_x	a_x at 2½% Interest
0.....	1,000.0000	3.8400	3.84	33.074
1.....	996.1600	1.4942	1.50	33.032
2.....	994.6658	.8355	.84	32.909
3.....	993.8303	.6758	.68	32.760
4.....	993.1545	.5959	.60	32.602
5.....	992.5586	.5360	.54	32.437
6.....	992.0226	.4960	.50	32.266
7.....	991.5266	.4759	.48	32.089
8.....	991.0507	.4559	.46	31.907
9.....	990.5948	.4557	.46	31.719
10.....	990.1391	.4555	.46	31.527
11.....	989.6836	.4652	.47	31.330
12.....	989.2184	.4748	.48	31.129
13.....	988.7436	.4845	.49	30.922
14.....	988.2591	.4941	.50	30.711
15.....	987.7650	.5038	.51	30.494
16.....	987.2612	.5134	.52	30.273
17.....	986.7478	.5328	.54	30.046
18.....	986.2150	.5523	.56	29.814
19.....	985.6627	.5618	.57	29.576
20.....	985.1009	.5812	.59	29.333
21.....	984.5197	.6104	.62	29.084
22.....	983.9093	.6297	.64	28.829
23.....	983.2796	.6588	.67	28.569
24.....	982.6208	.6878	.70	28.303
25.....	981.9330	.7168	.73	28.031
26.....	981.2162	.7555	.77	27.752
27.....	980.4607	.7942	.81	27.468
28.....	979.6665	.8327	.85	27.178
29.....	978.8338	.8810	.90	26.881
30.....	977.9528	.9388	.96	26.578
31.....	977.0140	.9966	1.02	26.268
32.....	976.0174	1.0541	1.08	25.953
33.....	974.9633	1.1212	1.15	25.630
34.....	973.8421	1.1978	1.23	25.301
35.....	972.6443	1.2839	1.32	24.966
36.....	971.3604	1.3793	1.42	24.624
37.....	969.9811	1.4841	1.53	24.275
38.....	968.4970	1.5980	1.65	23.920
39.....	966.8990	1.7211	1.78	23.559

TABLE 2—*Continued*

MALES

Age x	l_x	d_x	1,000 q_x	a_x at 2½% Interest
40	965.1779	1.8338	1.90	23.191
41	963.3441	1.9845	2.06	22.816
42	961.3596	2.1823	2.27	22.434
43	959.1773	2.4363	2.54	22.047
44	956.7410	2.7267	2.85	21.656
45	954.0143	3.0528	3.20	21.261
46	950.9615	3.4044	3.58	20.862
47	947.5571	3.7902	4.00	20.461
48	943.7669	4.2092	4.46	20.057
49	939.5577	4.6320	4.93	19.650
50	934.9257	5.0766	5.43	19.241
51	929.8491	5.5419	5.96	18.830
52	924.3072	6.0080	6.50	18.416
53	918.2992	6.5016	7.08	18.000
54	911.7976	7.0026	7.68	17.582
55	904.7950	7.5098	8.30	17.161
56	897.2852	8.0397	8.96	16.737
57	889.2455	8.5545	9.62	16.311
58	880.6910	9.0623	10.29	15.881
59	871.6287	9.5966	11.01	15.447
60	862.0321	10.1203	11.74	15.009
61	851.9118	10.6233	12.47	14.567
62	841.2885	11.1639	13.27	14.120
63	830.1246	11.7629	14.17	13.668
64	818.3617	12.4391	15.20	13.211
65	805.9226	13.1930	16.37	12.750
66	792.7296	14.0234	17.69	12.286
67	778.7062	14.9200	19.16	11.820
68	763.7862	15.9249	20.85	11.353
69	747.8613	16.9914	22.72	10.884
70	730.8699	18.1840	24.88	10.416
71	712.6859	19.4563	27.30	9.948
72	693.2296	20.8177	30.03	9.483
73	672.4119	22.2568	33.10	9.021
74	650.1551	23.7892	36.59	8.563
75	626.3659	25.3741	40.51	8.111
76	600.9918	26.9966	44.92	7.665
77	573.9952	28.6424	49.90	7.226
78	545.3528	30.2671	55.50	6.795
79	515.0857	31.8271	61.79	6.375
80	483.2586	33.2917	68.89	5.964
81	449.9669	34.5710	76.83	5.566
82	415.3959	35.6244	85.76	5.180
83	379.7715	36.3631	95.75	4.807
84	343.4084	36.7241	106.94	4.449

TABLE 2—*Continued*

MALES

Age x	l_x	d_x	1,000 q_x	a_x at 2½% Interest
85	306.6843	36.6304	119.44	4.106
86	270.0539	36.0144	133.36	3.780
87	234.0395	34.8391	148.86	3.471
88	199.2004	33.0812	166.07	3.180
89	166.1192	30.7570	185.15	2.908
90	135.3622	27.9144	206.22	2.658
91	107.4478	24.4111	227.19	2.433
92	83.0367	20.5375	247.33	2.226
93	62.4992	16.8098	268.96	2.032
94	45.6894	13.3468	292.12	1.849
95	32.3426	10.2471	316.83	1.677
96	22.0955	7.5814	343.12	1.517
97	14.5141	5.3843	370.97	1.367
98	9.1298	3.6551	400.35	1.227
99	5.4747	2.3607	431.20	1.097
100	3.1140	1.4431	463.42	.977
101	1.6709	.8302	496.87	.865
102	.8407	.4467	531.39	.763
103	.3940	.2233	566.76	.669
104	.1707	.1029	602.71	.583
105	.0678	.0433	638.96	.504
106	.0245	.0165	675.14	.431
107	.0080	.0057	710.90	.353
108	.0023	.0017	745.82	.256
109	.0006	.0006	1,000.00	.....

TABLE 2—*Continued*

ELAS LIFE INCOME MORTALITY TABLE

ELEMENTARY FUNCTIONS AND ANNUITY VALUES

FEMALES

Age x	l_x	d_x	1,000 q_x	a_x at 2½% Interest
0.....	1,000.0000	3.0500	3.05	33.997
1.....	996.9500	1.2861	1.29	33.954
2.....	995.6639	.6671	.67	33.848
3.....	994.9968	.4975	.50	33.717
4.....	994.4993	.3978	.40	33.577
5.....	994.1015	.3181	.32	33.431
6.....	993.7834	.2584	.26	33.277
7.....	993.5250	.2186	.22	33.118
8.....	993.3064	.1987	.20	32.954
9.....	993.1077	.1788	.18	32.784
10.....	992.9289	.1787	.18	32.610
11.....	992.7502	.1986	.20	32.431
12.....	992.5516	.2084	.21	32.248
13.....	992.3432	.2282	.23	32.062
14.....	992.1150	.2480	.25	31.871
15.....	991.8670	.2579	.26	31.676
16.....	991.6091	.2777	.28	31.476
17.....	991.3314	.2974	.30	31.272
18.....	991.0340	.3171	.32	31.063
19.....	990.7169	.3368	.34	30.850
20.....	990.3801	.3565	.36	30.632
21.....	990.0236	.3762	.38	30.409
22.....	989.6474	.3959	.40	30.181
23.....	989.2515	.4155	.42	29.948
24.....	988.8360	.4450	.45	29.710
25.....	988.3910	.4744	.48	29.466
26.....	987.9166	.4940	.50	29.217
27.....	987.4226	.5332	.54	28.963
28.....	986.8894	.5625	.57	28.703
29.....	986.3269	.5918	.60	28.437
30.....	985.7351	.6309	.64	28.166
31.....	985.1042	.6797	.69	27.888
32.....	984.4245	.7186	.73	27.605
33.....	983.7059	.7673	.78	27.316
34.....	982.9386	.8257	.84	27.021
35.....	982.1129	.8839	.90	26.720
36.....	981.2290	.9420	.96	26.412
37.....	980.2870	1.0097	1.03	26.099
38.....	979.2773	1.0870	1.11	25.779
39.....	978.1903	1.1640	1.19	25.453

TABLE 2—*Continued*

FEMALES

Age x	l_x	d_x	1,000 q_x	a_x at 2½% Interest
40	977.0263	1.2408	1.27	25.120
41	975.7855	1.3271	1.36	24.781
42	974.4584	1.4130	1.45	24.435
43	973.0454	1.5082	1.55	24.082
44	971.5372	1.6128	1.66	23.723
45	969.9244	1.7265	1.78	23.356
46	968.1979	1.8493	1.91	22.983
47	966.3486	1.9907	2.06	22.602
48	964.3579	2.1312	2.21	22.215
49	962.2267	2.2997	2.39	21.821
50	959.9270	2.4766	2.58	21.420
51	957.4504	2.6617	2.78	21.012
52	954.7887	2.8548	2.99	20.598
53	951.9339	3.0652	3.22	20.176
54	948.8687	3.2736	3.45	19.747
55	945.5951	3.5176	3.72	19.311
56	942.0775	3.7683	4.00	18.868
57	938.3092	4.0535	4.32	18.417
58	934.2557	4.3536	4.66	17.959
59	929.9021	4.7239	5.08	17.494
60	925.1782	5.0977	5.51	17.023
61	920.0805	5.5573	6.04	16.546
62	914.5232	6.0633	6.63	16.062
63	908.4599	6.6045	7.27	15.574
64	901.8554	7.2419	8.03	15.080
65	894.6135	7.9352	8.87	14.582
66	886.6783	8.7160	9.83	14.080
67	877.9623	9.5698	10.90	13.576
68	868.3925	10.5336	12.13	13.068
69	857.8589	11.5725	13.49	12.560
70	846.2864	12.7451	15.06	12.050
71	833.5413	14.0285	16.83	11.540
72	819.5128	15.4232	18.82	11.031
73	804.0896	16.9422	21.07	10.523
74	787.1474	18.5688	23.59	10.019
75	768.5786	20.3443	26.47	9.517
76	748.2343	22.2151	29.69	9.020
77	726.0192	24.2127	33.35	8.529
78	701.8065	26.2897	37.46	8.044
79	675.5168	28.4393	42.10	7.566
80	647.0775	30.6132	47.31	7.095
81	616.4643	32.7959	53.20	6.634
82	583.6684	34.9034	59.80	6.182
83	548.7650	36.8770	67.20	5.740
84	511.8880	38.6680	75.54	5.307

TABLE 2—*Continued*

FEMALES

Age x	l_x	d_x	1,000 q_x	a_x at 2½% Interest
85.....	473.2200	40.1764	84.90	4.884
86.....	433.0436	42.2867	97.65	4.471
87.....	390.7569	43.9172	112.39	4.078
88.....	346.8397	44.8256	129.24	3.709
89.....	302.0141	44.8823	148.61	3.367
90.....	257.1318	43.4836	169.11	3.053
91.....	213.6482	40.8089	191.01	2.766
92.....	172.8393	36.8580	213.25	2.505
93.....	135.9813	32.3241	237.71	2.263
94.....	103.6572	27.1520	261.94	2.043
95.....	76.5052	22.0450	288.15	1.838
96.....	54.4602	17.2307	316.39	1.646
97.....	37.2295	12.9064	346.67	1.468
98.....	24.3231	9.2182	378.99	1.304
99.....	15.1049	6.2424	413.27	1.152
100.....	8.8625	3.9828	449.40	1.012
101.....	4.8797	2.3775	487.22	.884
102.....	2.5022	1.3174	526.48	.768
103.....	1.1848	.6716	566.87	.662
104.....	.5132	.3120	608.02	.566
105.....	.2012	.1307	649.46	.479
106.....	.0705	.0487	690.67	.400
107.....	.0218	.0159	731.09	.325
108.....	.0059	.0045	770.10	.232
109.....	.0014	.0014	1,000.00	.....

TABLE 3

EXTENT OF SPURIOUS MORTALITY GAINS AND LOSSES RESULTING FROM ELAS LIFE INCOME MORTALITY TABLE, ASSUMING (1) LIFE INCOME PAYEES BORN IN 1915, ON THE AVERAGE, AND (2) MORTALITY EXPERIENCE EXACTLY FOLLOWS *a*–1949 TABLE WITH PROJECTION B

CALENDAR YEAR	ATTAINED AGES PRODUCING SPURIOUS MORTALITY GAINS		ATTAINED AGES PRODUCING SPURIOUS MORTALITY LOSSES	
	Age	Extent of Spurious Gain	Age	Extent of Spurious Loss
1954	40 41 etc.	1 year of projection 2 years of projection etc.	none	
1955	41 42 etc.	1 year of projection 2 years of projection etc.	all ages under 40	1 year of projection
1956	42 43 etc.	1 year of projection 2 years of projection etc.	40 all ages under 40	1 year of projection 2 years of projection
1957	43 44 etc.	1 year of projection 2 years of projection etc.	41 40 all ages under 40	1 year of projection 2 years of projection 3 years of projection
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.	.	.	.	.
.	.	.	.	.
1975	61 62 etc.	1 year of projection 2 years of projection etc.	59 58 . . . . 41 40 all ages under 40	1 year of projection 2 years of projection 19 years of projection 20 years of projection 21 years of projection
etc.	etc.	etc.	etc.	etc.

TABLE 4*a*

COMPARISON OF MORTALITY RATES, FOR LIVES BORN IN 1915, ON *a*-1949 PROJECTION B, ELAS LIFE INCOME, AND PROGRESSIVE ANNUITY TABLE (SET BACK THREE-FIFTHS OF A YEAR)

AGE	MORTALITY RATES—1,000 q_x			COMPARISON	
	(1) *a*-1949 Proj. B	(2) ELAS Life Inc. Mort. Table	(3) Prog. Ann. Table	(4) (2)-(1) As % of (1)	(5) (3)-(1) As % of (1)
	Male				
45	3.197	3.20	1.934	+ .09%	−39.51%
55	8.265	8.30	5.482	+ .42	−33.67
65	16.552	16.37	15.489	−1.10	− 6.42
75	40.330	40.51	43.354	+ .45	+ 7.50
85	118.393	119.44	118.238	+ .88	− .13
	Female				
45	1.780	1.78	1.275	.00%	−28.37%
55	3.681	3.72	3.615	+1.06	− 1.79
65	8.903	8.87	10.230	− .37	+14.91
75	26.513	26.47	28.774	− .16	+ 8.53
85	92.436	84.90	79.552	−8.15	−13.94

TABLE 4*b*

COMPARISON OF LIFE ANNUITY VALUES (a_x AT 2½%), FOR LIVES BORN IN 1915, ON *a*–1949 PROJECTION B, ELAS LIFE INCOME, AND PROGRESSIVE ANNUITY TABLE (SET BACK THREE-FIFTHS OF A YEAR)

AGE	a_x AT 2½%			COMPARISON	
	(1) *a*–1949 Proj. B*	(2) ELAS Life Inc. Mort. Table	(3) Prog. Ann. Table	(4) (2)–(1) As % of (1)	(5) (3)–(1) As % of (1)
	Male				
45	21.319	21.261	21.804	– .27%	+ 2.27%
55	17.234	17.161	17.422	– .42	+ 1.09
65	12.812	12.750	12.653	– .48	– 1.24
75	8.173	8.111	8.033	– .76	– 1.71
85	4.117	4.106	4.257	– .27	+ 3.40
	Female				
45	23.360	23.356	23.384	– .02%	+ .10%
55	19.307	19.311	19.241	+ .02	– .34
65	14.552	14.582	14.579	+ .21	+ .19
75	9.402	9.517	9.818	+1.22	+ 4.42
85	4.739	4.884	5.627	+3.06	+18.74

* Sternbell's method used in computing these values.