THE 1982 DISABILITY TABLES

E. PAUL BARNHART

ABSTRACT

Since the publication of the "1971 Experience Modification of the 1964 Commissioners Disability Table" (*TSA*, XXV, 119), disability experience has changed dramatically, particularly the average duration of disability and the experience at ages of disablement below 40. This has rendered the "1971 Table" nearly as obsolete today as was the 1964 Commissioners Disability Table ("1964 Table") at the time the 1971 Table appeared.

This paper is intended, first, to "update" the predecessor 1971 Table and take into account major changes in the reported experience of the past decade. However, it does much more than that. The 1971 Table did a reasonable job of valuing experience claim costs and associated claim rates over varying elimination periods. But with respect to long-term continuance measurement, crucial to the valuation of disability claim reserves, it was defective. The graduation technique used resulted, at all ages of disablement below 60, in rates of termination that continually declined with advancing duration, even for lifetime disabilities. The 1982 Tables correct this defect by utilizing a third functional "element" for the graduation of long-term continuance, which invariably produces increasing rates of termination and thereby makes it possible to obtain realistic disabled life annuities over long duration periods.

The new tables also refine the measurement of accident disability and male "Occupation Class II" disability, both of which vary, relative to sickness, with elimination period and duration. The 1971 Table, like the 1964 Table, assigned a single "accident factor" to each age, which was invariant as to elimination period, duration of disability, or occupation class.

Finally, the new tables, again by means of the third graduating element, make it possible to approximate interest discount (using the same basic method as the 1971 Table) more accurately over an extended range.

The author believes these several improvements will render the new tables substantially more useful to actuaries working in the disability field.

This paper also includes test comparisons of disabled life reserves on the new tables against corresponding 1964 Table values. In addition, it includes test comparisons of policy reserve values. These comparisons

serve to emphasize again how unsuitable the 1964 Table has become, for both purposes. In general, that table tends toward substantial deficiency for disabled life reserves, and toward substantial redundancy for policy reserves. The 1964 Table is particularly inappropriate for the valuation of policy reserves on female lives, where it often produces midterminal values many times excessive. In frequent instances, it also yields positive midterminal values where substantially negative values would be appropriate for female morbidity. In the aggregate, use of the 1964 Table to value policy reserves on female lives produces overvaluation to the point of absurdity. Yet the 1964 Table remains the regulatory minimum standard. The test comparisons in the paper should therefore underscore once again the urgency with which the industry and the regulators await the forthcoming report of the Society's Committee to Recommend New Disability Tables for Valuation.

Eleven years have passed since the publication of the "1971 Experience Modification of the 1964 Commissioners Disability Table" in the *Transactions*. During that time, disability insurance experience has changed dramatically, most notably in terms of sharply increasing average durations of disability in almost all categories. The "1971 Modification" has remained until now the most recent published attempt at construction of a reasonably comprehensive array of disability continuance tables, and the experience of the 1970s has rendered it thoroughly obsolete. A new array of disability tables is urgently needed by actuaries working in the disability field, particularly those who do not have ready access to the experience of the largest writers of loss-of-time coverage.

This paper seeks to fill this need, by bringing to the profession not merely an update of the 1971 Modification, but rather an entirely new construction of disability continuance. It is based on as much of the available published data of the 1970s as is practical, and it has been expanded and refined to address several additional areas. In the process, a basic defect of the 1971 Modification has been corrected: the fact that at most ages the long-term termination rates implicit in that table continue to decrease indefinitely. As a result the table begins to overvalue disabled life reserves at prolonged durations of disability, where increasing mortality obviously begins to produce increasing termination rates.

I. SOURCES OF DATA AND METHODS USED

These new 1982 Disability Tables rely mostly on two of the periodic reports published in the *Reports* of the *Transactions*: Experience under

Individual Loss-of-Time Policies and Group Long-Term Disability Insurance. The study has used the former reports from the issues of 1973, 1975, 1977, and 1979, which cover the experience years of 1970–77, and the latter reports from the issues of 1975 and 1980, covering experience years 1969–78.

The individual reports cover the first year of the benefit period and, to a limited extent, the second year. The group reports cover all years of disablement for which any significant experience exists. The procedure used was to develop the continuance for the first 2 years primarily from the individual data, but with reference to the group data, particularly as to claim rates after 3- and 6-month elimination periods. The continuance was then extended beyond 2 years with heavy reliance on the reported group long-term disability (LTD) termination rates following 2 years of disablement.

Some use was also made of the New York Insurance Department individual disability study of 1976, which the author felt was helpful in strengthening the continuance assumptions for the second year of disablement, particularly for female lives. Data for females are missing from the individual *TSA* reports.

The termination rates finally used to determine point values beyond two years for solving the elemental parameters of each of the three functions applying to each age of disablement (using the process described in the Appendix) were arrived at as percentages of the 1964 Table termination rates. The values of these ratios are given in Table 1, and were chosen largely in reference to the general pattern of corresponding experience ratios shown in the group LTD reports: for instance, Table D-1B, page 278 of the *1975 Reports;* Table A-3, page 158 of the *1980 Reports.*

TABLE 1

ASSUMED RATIOS OF 1982 TABLE ANNUAL TERMINATION RATES TO 1964 TABLE
ANNUAL TERMINATION RATES AFTER SECOND YEAR OF DISABLEMENT

YEAR OF DISABLEMENT	AGE AT DISABLEMENT										
	22	27	32	37	42	47	52	57	62	67	72
Male Lives											
3	105%	104%	106%	100%	98%	95%	90%	90%	89%	89%	89%
4	90	89	92	88	88	85	84	83	77	77	75
5 and after	75	75	75	75	75	75	75	75	75	75	75
Female Lives											
3	115%	111%	109%	106%	103%	100%	97%	95%	92%	90%	89%
4	80	74	75	73	72	71	70	70	67	66	65
5 and after	60	60	60	60	60	60	60	60	60	60	60

Values over the first two years of disability, for the total (three-function) experience were derived by testing combinations of claim rates and claim costs in the individual reports and in the New York study.

All these experience values have varied so greatly, over the years of experience used, with the costs in general rising (primarily as a result, as mentioned earlier, of increasing durations of disability), that the author decided not to use actual weighted composite values over the experience years observed. Instead judgment values were selected, for each experience cell, from an examination of the general pattern of the trends and averages. Considerable judgment was also used in breaking down the ten-year age brackets of the individual reports to derive the central-age quinquennial values actually constructed for the 1982 Tables.

It seems best simply to display the results of these determinations by showing sample values calculated from the 1982 Tables in comparison with various actual raw experience values appearing in the several reports. These comparisons are shown in Tables 2:

Table 2A: Rates of disablement versus various individual reports values;
Table 2B: Rates of disablement versus six-month and three-month claim rates in the group reports; and
Table 2C: Claim costs versus various individual reports values.

Reliance primarily upon individual data over the first two years of disablement, followed by reliance on rates of termination assumed in reference to group data, produces, of course, "hybrid" continuance values. The validity of this approach has certainly not been demonstrated, and users will have to decide for themselves how much faith to place in this. The author at least found some measure of comfort in the Table 2B comparisons, which appear rather reasonable, even though the 1982 Table values shown for three and six months depend entirely on the analysis of individual experience data, whereas the comparison made here is against the group experience data.

The *Reports* data used to construct the 1982 Tables continue to underscore the need to modify the basic continuance by elimination period, as was found to be the case in constructing the 1971 Modification Table. No one specific table of values will satisfactorily serve over a range of elimination periods. A *b* factor, as described in the Appendix, was incorporated for this purpose, operating in the same manner as in the 1971 Modification except as follows:

1. The basic 1982 functional tables are constructed for a thirty-day elimination period, rather than seven days as in the 1971 Modification. This change was made because thirty days has been relatively more important than seven days. It is the shortest period offered today, under many programs.

2. The 1982 b factors then operate to modify the continuance in either direction: toward seven (or zero) days, or toward longer elimination periods, the limiting adjustment being at ninety days, or $e = 3$, in months, again as defined in the Appendix.
3. Under the three-element construction employed for the 1982 Tables, b factors are incorporated with the first two elements.

II. CLAIM COSTS CALCULATED FROM THE 1982 TABLES

Tables 3 show annual claim costs per $100 monthly income, for each sex and at three selected rates of interest: 3 percent, 4.5 percent, and 7.5 percent.

The 3 percent tables, shown for only a limited range of plans, are included only as tabular support for tests of 1982 Table policy midterminal reserve values against 1964 Commissioners Disability Table values, for

TABLE 2A

1982 TABLE : ANNUAL RATES OF DISABLEMENT ENTERING VARIOUS DURATIONS, COMPARED TO TSA INDIVIDUAL LOSS-OF-TIME REPORTS DATA

(Occupation Group 1)

ATTAINED AGE	1982 TABLE*	TSA Reports† (TABLE 5)				1982 TABLE*	TSA Reports† (TABLE 5)			
		1973	1975	1977	1979		1973	1975	1977	1979
		Men: 8 Days					Women: 8 Days			
20–29	.0627	.081	.085	.104	.097	.0854	.115	.109	.132	.098
30–39	.1009	.079	.079	.100	.094	.0891	.137	.120	.142	.128
40–49	.1079	.092	.089	.094	.095	.1393	.147	.150	.157	.138
50–59	.1308	.119	.115	.117	.107	.1280	.147	.146	.160	.141
60–69	.1886	.140	.150	.150	.144	.1176	.118	.155	.179	.146
		Men: 31 Days					Women: 31 Days			
20–29	.0136	.012	.012	.013	.015	.0258	.016	.014	.019	.027
30–39	.0147	.015	.014	.013	.013	.0316	.032	.026	.028	.033
40–49	.0209	.022	.022	.020	.021	.0441	.053	.042	.043	.041
50–59	.0370	.036	.039	.036	.035	.0566	.046	.046	.049	.050
60–69	.0649	.067	.065	.063	.058	.0581	.081	.064	.056	.054
		Men: 12 Months‡								
20–29	.0049	.00047	.0014	.0029	.0037					
30–39	.0041	.00201	.0015	.0022	.0039					
40–49	.0060	.00269	.0036	.0044	.0048					
50–59	.0103	.00576	.0073	.0074	.0097					
60–69	.0175	.01301	.0174	.0173	.0183					

* Age 27 used for 20–29; age 62 used for 60–69. For other age groups, values are the mean of the quinquennial age values.

† TSA Report year: 1973 1975 1977 1979

    Years of experience: 1970–71 1972–73 1974–75 1976–77

‡ 1982 Table: initial 7-day elimination period; TSA Reports: combined initial 0-day accident and 7-day sickness elimination period, Table 11.

which the highest rate in publication is 3 percent. The 4.5 and 7.5 percent tables, provided in greater detail, are included for such further value as they may have to users in ratemaking or for reserve purposes.

III. MODIFICATION FOR MALE OCCUPATION GROUP II

It would perhaps have been possible, from the available data, to construct an entirely separate 1982 Table to fit experience under Male Occupation Group II, although reported experience is limited almost entirely to the first benefit year. However, after testing a two-factor modification approach (percentage plus a constant) similar to that used in the 1971 Modification paper (*TSA*, XXV, 132), the author concluded that an entirely separate table was not necessary: satisfactory modification could be achieved using the two-factor formula, which takes this form:

$$^{(Male\ II)}S_x^{tT} = (r_t \cdot {}^{(Male\ II)}S_x^{tT}) + (s_t \cdot {}^{(Male\ II)}S_{27}^{t}) . \tag{1}$$

TABLE 2B

1982 Table: Annual Rates of Disablement Entering Various Durations, Compared to *TSA* Group Long-Term Disability Reports

ATTAINED AGE	1982 TABLE†	TSA Reports		1982 TABLE	TSA Reports	
		1975 Table 1 (Years 69–73)‡	1980 Table 1-1 (Years 74–78)‡		1975 Table 1 (Years 69–73)‡	1980 Table 1-1 (Years 74–78)‡
		Men: 6 Months			Women: 6 Months	
Under 40	.0014	.00084	.00087	.0023	.00102	.00115
40–44	.0026	.00222	.00175	.0039	.00379	.00303
45–49	.0032	.00338	.00350	.0050	.00468	.00439
50–54	.0047	.00654	.00642	.0058	.00610	.00672
55–59	.0087	.01133	.01145	.0089	.00885	.01020
60–64	.0152	.01631	.01567	.0144	.00995	.01314
	1982 Table*	1975 Table 2 (Years 69–73)	1980 Table II-1 (Years 74–78)	1982 Table*	1975 Table 2 (Years 69–73)	1980 Table II-1 (Years 74–78)
		Men: 3 Months			Women: 3 Months	
Under 40	.0017	.00217	.00161	.0041	.00252	.00211
40–44	.0032	.00403	.00333	.0063	.00598	.00563
45–49	.0038	.00581	.00571	.0076	.00872	.00774
50–54	.0057	.00986	.00825	.0100	.00885	.00948
55–59	.0104	.01490	.01499	.0158	.01234	.01389
60–64	.0177	.01859	.02060	.0173	.01233	.01937

* Mean of values for ages 27, 32, and 37 used for "under 40." Central ages used for other age groups.

† Class of employees with at least 75 percent salaried averaged 97 percent of these values in composite.

‡ Class of employees with majority salaried averaged 96 percent of these values in composite.

The values of r and S need to vary by elimination period. The best fit, in the author's judgment, for elimination periods of seven, fourteen, and thirty days was achieved using the r, and S, values shown in Table 4.

Because of the modifying effect of the b factors by elimination period, which also varies by age, the total adjustment implicit in the two-factor formula, applied to attained age and to age 27, respectively, becomes a compound adjustment that appears to work relatively well. As will be shown in the following section dealing with modification for accident, this compounding effect also improves the total accident modification and adds substantially to the power and flexibility of the three-element construction underlying the 1982 Tables.

TABLE 2C

1982 TABLE: ANNUAL CLAIM COST PER $100 MONTHLY BENEFIT (0 PERCENT INTEREST), COMPARED TO TSA INDIVIDUAL LOSS-OF-TIME REPORTS DATA

(Occupation Group 1)

ATTAINED AGE	1982 Table*	TSA Reports† (TABLE 5)				1982 Table*	TSA Reports† (TABLE 5)			
		1973	1975	1977	1979		1973	1975	1977	1979
		Men: 7 Day/12 Months					Women: 7 Day/12 Months			
20–29	17.81	11.60	13.90	19.40	23.40	17.06	13.60	14.30	19.50	19.40
30–39	17.47	11.70	12.60	20.70	19.70	23.26	22.60	23.10	24.30	25.80
40–49	21.48	17.70	18.90	22.90	23.90	31.98	27.00	28.70	31.70	32.50
50–59	30.28	27.30	28.70	32.00	31.30	36.03	30.50	29.40	35.50	39.50
60–69	46.93	37.90	42.70	47.20	47.20	38.98	27.70	32.10	33.40	37.90
		Men: 30 Day/12 Months					Women: 30 Day/12 Months			
20–29	4.57	2.70	2.70	3.30	4.50	5.27	3.40	2.60	3.40	6.60
30–39	3.99	2.90	3.40	3.70	4.00	8.95	7.70	6.50	5.30	10.30
40–49	6.87	6.20	6.30	6.30	7.00	11.69	10.30	11.10	11.60	11.60
50–59	13.61	11.40	13.40	13.60	13.30	18.28	13.80	14.60	15.10	21.00
60–69	25.88	24.70	25.70	25.80	24.90	22.81	23.10	23.10	18.70	20.50
		Men: Second Year of Benefit Period‡								
20–29	3.94	0.32	1.05	2.53	3.99					
30–39	3.52	1.67	1.09	1.77	3.76					
40–49	5.48	2.22	3.34	4.40	4.41					
50–59	10.19	5.65	7.24	7.40	8.97					
60–69	18.80	13.11	16.68	16.63	17.55					

* Age 27 used for 20–29; age 62 used for 60–69. For other age groups, values are the mean of the quinquennial age values.

† TSA Report year: 1973   1975   1977   1979
   Years of experience: 1970–71 1972–73 1974–75 1976–77

‡ 1982 Table: initial 7-day elimination period; TSA Reports: combined initial 0-day accident and 7-day sickness elimination period, Table 11.

1982 DISABILITY TABLE
MALE NET ANNUAL CLAIM COSTS PER $100 MONTHLY BENEFIT
AT 7.50 PERCENT INTEREST
(24-Month Maximum after Age 65)

AGE	ELIMINATION PERIOD (MONTHS)					
	.23	.46	1	2	3	6
6-Month Accident, 6-Month Sickness Maximums						
17	8.005	5.544	2.364	0.619	0.555	0.456
22	12.100	8.199	3.290	0.930	0.833	0.668
27	13.546	8.879	3.295	1.045	0.952	0.772
32	14.363	8.237	2.332	0.924	0.891	0.813
37	13.788	8.895	3.230	0.764	0.702	0.614
42	17.063	10.776	4.042	1.755	1.637	1.402
47	16.366	11.414	5.177	2.033	1.921	1.749
52	19.149	13.746	6.761	2.968	2.777	2.530
57	25.645	19.310	10.635	5.455	5.137	4.720
62	34.068	26.469	15.845	9.336	8.849	8.258
67	33.548	28.287	20.386	14.261	13.229	12.147
72	40.367	35.235	26.901	19.293	17.604	15.748
12-Month Accident, 12-Month Sickness Maximums						
17	10.547	7.400	3.318	1.036	0.955	0.816
22	15.468	10.557	4.447	1.527	1.400	1.162
27	17.416	11.454	4.482	1.734	1.605	1.338
32	17.006	9.966	3.326	1.694	1.640	1.507
37	17.372	11.421	4.465	1.344	1.267	1.142
42	20.731	13.450	5.733	3.048	2.884	2.535
47	21.454	15.367	7.693	3.706	3.561	3.299
52	24.688	18.257	9.937	5.406	5.176	4.827
57	34.151	26.541	16.165	10.019	9.635	9.044
62	45.473	36.780	24.713	17.372	16.788	15.932
67	46.539	40.970	32.599	26.070	24.897	23.431
72	57.072	51.588	42.683	34.517	32.620	30.226
18-Month Accident, 18-Month Sickness Maximums						
17	12.094	8.551	3.959	1.374	1.284	1.119
22	17.365	11.908	5.183	1.983	1.839	1.556
27	19.569	12.907	5.236	2.253	2.104	1.784
32	18.512	11.068	4.118	2.355	2.286	2.110
37	19.584	13.028	5.346	1.852	1.766	1.618
42	22.918	15.165	7.008	4.122	3.932	3.516
47	24.889	18.169	9.699	5.203	5.034	4.704
52	28.534	21.558	12.554	7.643	7.384	6.953
57	40.343	32.072	20.853	14.240	13.807	13.074
62	54.407	45.248	32.592	24.881	24.218	23.128
67	57.968	52.316	43.806	37.114	35.824	34.014
72	71.687	66.113	57.046	48.667	46.611	43.753
24-Month Accident, 24-Month Sickness Maximums						
17	13.182	9.371	4.443	1.663	1.567	1.384
22	18.652	12.836	5.724	2.352	2.197	1.884
27	21.018	13.897	5.793	2.671	2.509	2.155
32	19.595	11.915	4.789	2.933	2.853	2.645
37	21.179	14.215	6.052	2.314	2.222	2.056
42	24.528	16.488	8.075	5.064	4.857	4.394
47	27.575	20.427	11.422	6.567	6.378	5.993
52	31.665	24.328	14.883	9.718	9.435	8.933
57	45.542	36.842	25.091	18.181	17.704	16.845
62	62.298	52.873	39.879	31.926	31.189	29.881
67	68.579	62.882	54.290	47.474	46.073	43.938
72	85.224	79.601	70.435	61.894	59.689	56.393

AGE	ELIMINATION PERIOD (MONTHS)					
	.46	1	2	3	6	12
	60-Month Accident. 60-Month Sickness Maximums					
17	11.821	6.084	2.897	2.782	2.550	2.244
22	15.567	7.513	3.766	3.584	3.198	2.689
27	16.825	7.684	4.271	4.079	3.643	3.052
32 . . . . ,	15.009	7.516	5.424	5.307	4.997	4.483
37	18.178	8.815	4.512	4.397	4.166	3.837
42	21.608	12.634	9.323	9.064	8.453	7.589
47	29.152	18.743	12.931	12.670	12.078	11.140
52	36.117	25.503	19.625	19.234	18.419	17.147
57	58.013	44.890	37.151	36.473	35.023	32.712
62	59.372	45.576	36.381	34.512	29.881	27.960
67	62.882	54.290	47.474	46.073	43.938	41.086
72	79.601	70.435	61.894	59.689	56.393	52.439
	To Age 60 Accident. to Age 60 Sickness Maximums					
17	15.135	8.677	5.289	5.148	4.837	4.381
22	19.187	10.224	6.261	6.051	5.581	4.913
27	20.904	10.798	7.214	6.989	6.457	5.685
32	20.145	12.473	10.261	10.091	9.623	8.810
37	23.797	13.618	9.014	8.848	8.468	7.853
42	29.586	20.249	16.701	16.346	15.455	14.053
47	39.002	27.826	21.526	21.121	20.104	18.355
52	42.487	31.390	25.102	24.486	23.012	20.482
57	40.806	28.366	20.667	19.558	16.845	15.658
	To Age 65 Accident. to Age 65 Sickness Maximums					
17	15.159	8.682	5.291	5.150	4.839	4.383
22	19.223	10.233	6.268	6.057	5.587	4.919
27	20.968	10.826	7.239	7.015	6.483	5.711
32	20.250	12.575	10.364	10.193	9.726	8.912
37	24.071	13.850	9.239	9.073	8.693	8.078
42	30.484	21.117	17.557	17.202	16.311	14.909
47	41.875	30.577	24.244	23.838	22.822	21.073
52	50.422	38.980	32.538	31.922	30.448	27.918
57	69.735	55.976	47.610	46.501	43.788	39.068
62	59.372	45.576	46.381	34.512	29.881	27.960
	Lifetime Accident. Lifetime Sickness Maximums					
17	15.246	8.693	5.292	5.150	4.839	4.383
22	19.331	10.244	6.270	6.060	5.590	4.922
27	21.107	10.846	7.252	7.027	6.495	5.723
32	20.311	12.629	10.417	10.247	9.780	8.966
37	24.321	13.996	9.372	9.206	8.826	8.211
42	31.150	21.721	18.139	17.784	16.893	15.491
47	44.289	32.782	26.421	26.016	24.999	23.250
52	57.117	45.207	38.646	38.030	36.556	34.025
57	94.790	80.142	71.424	70.315	67.602	62.882
62	146.028	131.381	121.449	119.580	114.950	106.691
67	186.394	176.878	168.372	165.309	158.292	146.144
72	223.884	213.554	202.864	198.541	189.033	173.285

1982 Disability Table
Female Net Annual Claim Costs per $100 Monthly Benefit
at 7.50 Percent Interest
(24-Month Maximum after Age 65)

Age	Elimination Period (Months)					
	.23	.46	1	2	3	6
6-Month Accident, 6-Month Sickness Maximums						
17	8.601	5.914	2.415	0.475	0.330	0.219
22	11.436	7.886	3.162	0.613	0.455	0.319
27	15.066	10.570	4.429	0.968	0.758	0.535
32	17.477	12.815	6.130	1.818	1.486	1.047
37	21.485	16.085	8.182	2.845	2.350	1.626
42	26.148	18.802	8.740	3.071	2.594	1.899
47	28.839	20.805	9.854	3.767	3.229	2.407
52	28.103	21.754	11.970	4.464	3.715	2.785
57	28.607	23.489	14.929	6.804	5.631	4.098
62	29.045	23.910	15.471	7.945	6.952	5.681
67	32.593	27.447	18.807	10.705	9.440	7.835
72	32.989	29.030	22.006	14.436	12.848	10.579
12-Month Accident, 12-Month Sickness Maximums						
17	9.268	6.429	2.734	0.673	0.520	0.394
22	12.426	8.623	3.604	0.901	0.732	0.569
27	16.931	11.947	5.222	1.442	1.208	0.933
32	20.642	15.265	7.644	2.726	2.341	1.788
37	26.036	19.636	10.413	4.232	3.649	2.737
42	30.404	22.165	11.043	4.727	4.159	3.264
47	34.122	24.974	12.727	5.886	5.241	4.187
52	34.522	27.060	15.662	6.980	6.135	4.998
57	36.718	30.523	20.204	10.472	9.151	7.313
62	38.009	31.920	22.008	13.265	12.142	10.578
67	43.378	37.357	27.352	18.100	16.680	14.722
72	46.153	41.443	33.159	24.351	22.531	19.756
18-Month Accident, 18-Month Sickness Maximums						
17	9.582	6.701	2.947	0.840	0.684	0.548
22	12.842	8.982	3.894	1.139	0.963	0.786
27	17.712	12.597	5.712	1.814	1.569	1.266
32	22.097	16.489	8.563	3.413	3.005	2.396
37	28.162	21.414	11.747	5.256	4.638	3.640
42	32.474	23.987	12.564	6.000	5.393	4.405
47	36.780	27.303	14.678	7.558	6.868	5.706
52	38.091	30.209	18.219	9.095	8.209	6.968
57	41.625	34.976	23.932	13.547	12.167	10.180
62	44.064	37.637	27.209	18.009	16.818	15.067
67	51.152	44.857	34.430	24.799	23.292	21.093
72	56.043	51.112	42.459	33.270	31.333	28.236
24-Month Accident, 24-Month Sickness Maximums						
17	9.807	6.905	3.122	0.989	0.831	0.688
22	13.133	9.252	4.133	1.347	1.168	0.981
27	18.223	13.054	6.096	2.131	1.880	1.559
32	23.049	17.336	9.268	3.992	3.572	2.929
37	29.549	22.638	12.766	6.116	5.478	4.430
42	33.940	25.350	13.792	7.092	6.464	5.421
47	38.692	29.078	16.288	9.020	8.305	7.077
52	40.730	32.638	20.356	11.007	10.095	8.783
57	45.392	38.498	27.065	16.332	14.915	12.827
62	49.113	42.521	31.838	22.386	21.141	19.240
67	57.899	51.481	40.858	31.021	29.441	27.033
72	64.781	59.755	50.939	41.550	39.517	36.138

AGE	ELIMINATION PERIOD (MONTHS)					
	.46	1	2	3	6	12
	60-Month Accident, 60-Month Sickness Maximums					
17	7.703	3.868	1.685	1.519	1.355	1.226
22	10.325	5.150	2.299	2.108	1.890	1.692
27	14.724	7.642	3.543	3.274	2.904	2.549
32	20.370	12.069	6.553	6.101	5.370	4.650
37	27.070	16.879	9.929	9.245	8.068	6.932
42	30.850	19.069	12.099	11.416	10.217	8.970
47	36.474	23.428	15.874	15.088	13.657	12.147
52	42.734	29.976	20.223	19.221	17.650	16.078
57	53.258	41.124	29.742	28.192	25.718	23.373
62	46.591	35.398	25.136	23.192	19.240	17.462
67	51.481	40.858	31.021	29.441	27.033	24.747
72	59.755	50.939	41.550	39.517	36.138	32.929
	To Age 60 Accident, to Age 60 Sickness Maximums					
17	9.313	5.459	3.251	3.069	2.858	2.639
22	12.554	7.348	4.453	4.241	3.959	3.640
27	18.079	10.940	6.765	6.464	6.000	5.465
32	26.202	17.795	12.145	11.635	10.734	9.687
37	35.439	25.097	17.950	17.179	15.748	14.122
42	40.607	28.693	21.525	20.726	19.188	17.289
47	46.474	33.285	25.506	24.561	22.662	20.255
52	48.500	35.562	25.547	24.331	22.127	19.342
57	41.311	29.416	18.076	16.215	12.827	11.204
	To Age 65 Accident, to Age 65 Sickness Maximums					
17	9.315	5.461	3.253	3.071	2.860	2.641
22	12.563	7.357	4.462	4.250	3.968	3.648
27	18.115	10.976	6.801	6.500	6.036	5.501
32	26.339	17.931	12.280	11.770	10.869	9.822
37	35.911	25.566	18.415	17.644	16.213	14.587
42	41.845	29.927	22.753	21.955	20.416	18.517
47	49.579	36.383	28.596	27.651	25.752	23.344
52	56.119	43.146	33.105	31.889	29.685	26.900
57	61.590	49.185	37.413	35.552	32.164	28.066
62	46.591	35.398	25.136	23.192	19.240	17.462
	Lifetime Accident, Lifetime Sickness Maximums					
17	9.316	5.462	3.254	3.072	2.861	2.642
22	12.567	7.361	4.465	4.254	3.971	3.652
27	18.135	10.995	6.819	6.518	6.055	5.519
32	26.419	18.009	12.356	11.847	10.945	9.898
37	36.237	25.885	18.726	17.955	16.524	14.898
42	42.772	30.847	23.666	22.868	21.329	19.430
47	52.089	38.884	31.089	30.143	28.245	25.837
52	62.894	49.903	39.850	38.634	36.430	33.645
57	80.875	68.382	56.554	54.693	51.305	47.207
62	103.607	92.148	81.601	79.657	75.705	70.024
67	130.359	118.966	107.878	105.304	99.976	92.141
72	154.156	114.472	133.561	130.203	122.942	112.363

1982 DISABILITY TABLE
MALE NET ANNUAL CLAIM COSTS PER $100 MONTHLY BENEFIT
AT 4.50 PERCENT INTEREST
(24-Month Maximum after Age 65)

AGE	ELIMINATION PERIOD (MONTHS)					
	.23	.46	1	2	3	6
6-Month Accident, 6-Month Sickness Maximums						
17	8.057	5.586	2.386	0.627	0.563	0.466
22	12.164	8.247	3.308	0.933	0.838	0.678
27	13.615	8.925	3.306	1.043	0.953	0.781
32	14.438	8.288	2.350	0.934	0.903	0.830
37	13.805	8.913	3.240	0.771	0.710	0.626
42	17.083	10.783	4.028	1.746	1.637	1.419
47	16.465	11.496	5.226	2.060	1.951	1.789
52	19.276	13.859	6.836	3.013	2.825	2.591
57	25.833	19.479	10.759	5.540	5.230	4.836
62	34.334	26.717	16.047	9.499	9.025	8.474
67	33.852	28.588	20.671	14.529	13.512	12.483
72	40.785	35.649	27.302	19.676	18.002	16.204
12-Month Accident, 12-Month Sickness Maximums						
17	10.656	7.484	3.362	1.054	0.975	0.838
22	15.604	10.653	4.489	1.543	1.419	1.189
27	17.567	11.552	4.514	1.744	1.621	1.365
32	17.141	10.057	3.367	1.724	1.673	1.549
37	17.448	11.482	4.497	1.365	1.291	1.174
42	20.815	13.501	5.745	3.065	2.913	2.591
47	21.667	15.540	7.802	3.779	3.640	3.396
52	24.950	18.481	10.094	5.520	5.298	4.974
57	34.549	26.893	16.435	10.237	9.869	9.325
62	46.034	37.300	25.163	17.779	17.222	16.446
67	47.203	41.629	33.245	26.713	25.573	24.214
72	57.973	52.485	43.569	35.400	33.539	31.268
18-Month Accident, 18-Month Sickness Maximums						
17	12.255	8.675	4.027	1.406	1.318	1.157
22	17.563	12.049	5.250	2.016	1.876	1.602
27	19.788	13.052	5.294	2.283	2.140	1.834
32	18.698	11.197	4.189	2.411	2.347	2.183
37	19.729	13.140	5.409	1.894	1.812	1.674
42	23.071	15.272	7.065	4.181	4.005	3.621
47	25.222	18.442	9.885	5.339	5.178	4.873
52	28.933	21.903	12.814	7.851	7.604	7.209
57	40.967	32.631	21.308	14.637	14.226	13.562
62	55.309	46.099	33.361	25.612	24.987	24.014
67	59.090	53.435	44.919	38.239	36.999	35.347
72	73.184	67.610	58.541	50.177	48.178	45.501
24-Month Accident, 24-Month Sickness Maximums						
17	13.392	9.533	4.536	1.712	1.617	1.440
22	18.904	13.019	5.818	2.405	2.254	1.952
27	21.297	14.085	5.879	2.724	2.569	2.229
32	19.832	12.087	4.896	3.022	2.947	2.753
37	21.397	14.384	6.151	2.382	2.294	2.140
42	24.756	16.660	8.188	5.176	4.984	4.557
47	28.036	20.812	11.698	6.778	6.600	6.246
52	32.212	24.809	15.265	10.042	9.774	9.318
57	46.419	37.640	25.770	18.798	18.350	17.577
62	63.604	54.120	41.039	33.051	32.363	31.204
67	70.256	64.560	55.968	49.180	47.845	45.911
72	87.434	81.814	72.655	64.147	62.017	58.954

AGE	ELIMINATION PERIOD (MONTHS)					
	.46	1	2	3	6	12
	60-Month Accident, 60-Month Sickness Maximums					
17	12.185	6.331	3.073	2.962	2.739	2.448
22	15.966	7.776	3.965	3.788	3.415	2.923
27	17.245	7.952	4.490	4.306	3.887	3.318
32	15.476	7.897	5.771	5.662	5.373	4.893
37	18.709	9.188	4.809	4.702	4.491	4.199
42	22.268	13.207	9.878	9.639	9.080	8.289
47	30.355	19.747	13.801	13.559	13.021	12.183
52	37.705	26.938	20.971	20.608	19.877	18.757
57	60.826	47.534	39.717	39.093	37.801	35.780
62	61.040	47.111	37.804	35.913	31.204	29.562
67	64.560	55.968	49.180	47.845	45.911	43.445
72	81.814	72.655	64.147	62.017	58.954	55.449
	To Age 60 Accident, to Age 60 Sickness Maximums					
17	16.665	10.035	6.557	6.415	6.101	5.635
22	20.814	11.646	7.594	7.384	6.913	6.235
27	22.748	12.419	8.764	8.542	8.012	7.231
32	22.735	14.957	12.689	12.517	12.045	11.215
37	26.262	15.805	11.068	10.902	10.519	9.892
42	32.773	23.308	19.697	19.347	18.462	17.043
47	42.666	31.196	24.676	24.268	23.239	21.450
52	45.209	33.911	27.477	26.855	25.360	22.768
57	41.853	29.259	21.451	20.331	17.577	16.552
	To Age 65 Accident, to Age 65 Sickness Maximums					
17	16.700	10.049	6.568	6.425	6.111	5.645
22	20.875	11.678	7.622	7.412	6.942	6.263
27	22.878	12.510	8.853	8.630	8.100	7.319
32	23.025	15.244	12.975	12.804	12.332	11.501
37	26.831	16.325	11.579	11.413	11.029	10.402
42	34.412	24.912	21.286	20.937	20.052	18.632
47	47.077	35.467	28.906	28.497	27.468	25.679
52	55.570	43.893	37.276	36.654	35.159	32.567
57	74.653	60.661	52.128	51.008	48.254	43.417
62	61.040	47.111	37.804	35.913	31.204	29.562
	Lifetime Accident, Lifetime Sickness Maximums					
17	16.798	10.065	6.572	6.430	6.116	5.650
22	21.006	11.703	7.638	7.428	6.958	6.280
27	23.080	12.580	8.915	8.693	8.163	7.382
32	23.257	15.468	13.199	13.028	12.556	11.725
37	27.410	16.783	12.020	11.854	11.471	10.844
42	36.040	26.468	22.811	22.462	21.577	20.157
47	52.153	40.314	33.718	33.309	32.280	30.491
52	67.212	55.020	48.255	47.633	46.138	43.547
57	111.835	96.857	87.889	86.769	84.015	79.178
62	171.950	157.057	146.865	144.973	140.265	131.790
67	217.482	207.912	199.330	196.227	189.081	176.597
72	256.760	246.367	235.578	231.196	221.502	205.297

1982 Disability Table

Female Net Annual Claim Costs per $100 Monthly Benefit
at 4.50 Percent Interest

(24-Month Maximum after Age 65)

Age	Elimination Period (Months)					
	.23	.46	1	2	3	6
6-Month Accident, 6-Month Sickness Maximums						
17	8.625	5.932	2.424	0.478	0.333	0.223
22	11.466	7.909	3.172	0.615	0.457	0.324
27	15.094	10.589	4.435	0.967	0.759	0.542
32	17.455	12.793	6.109	1.807	1.481	1.057
37	21.365	15.976	8.096	2.799	2.324	1.634
42	26.013	18.677	8.640	3.021	2.567	1.913
47	28.654	20.638	9.726	3.709	3.200	2.430
52	28.097	21.753	11.973	4.478	3.741	2.835
57	28.703	23.582	15.011	6.870	5.701	4.184
62	29.226	24.078	15.613	8.058	7.072	5.822
67	32.844	27.686	19.019	10.884	9.627	8.047
72	33.303	29.336	22.294	14.698	13.119	10.879
12-Month Accident, 12-Month Sickness Maximums						
17	9.301	6.456	2.750	0.681	0.529	0.404
22	12.470	8.656	3.620	0.909	0.741	0.583
27	16.981	11.983	5.239	1.450	1.220	0.953
32	20.651	15.267	7.639	2.730	2.356	1.822
37	25.950	19.554	10.347	4.206	3.648	2.780
42	30.300	22.065	10.966	4.705	4.166	3.323
47	33.981	24.844	12.632	5.868	5.259	4.270
52	34.599	27.134	15.731	7.056	6.228	5.128
57	36.949	30.740	20.396	10.635	9.325	7.517
62	38.384	32.271	22.317	13.536	12.427	10.908
67	43.893	37.850	27.803	18.511	17.108	15.206
72	46.816	42.090	33.777	24.936	23.137	20.428
18-Month Accident, 18-Month Sickness Maximums						
17	9.625	6.736	2.970	0.855	0.699	0.566
22	12.898	9.026	3.921	1.156	0.982	0.811
27	17.784	12.653	5.745	1.837	1.596	1.303
32	22.145	16.527	8.590	3.444	3.048	2.462
37	28.133	21.383	11.724	5.270	4.678	3.729
42	32.430	23.944	12.539	6.027	5.452	4.521
47	36.717	27.247	14.653	7.606	6.956	5.866
52	38.277	30.384	18.381	9.259	8.392	7.198
57	42.011	35.342	24.259	13.837	12.472	10.531
62	44.659	38.203	27.725	18.483	17.313	15.628
67	51.965	45.645	35.172	25.503	24.023	21.908
72	57.102	52.152	43.468	34.251	32.347	29.350
24-Month Accident, 24-Month Sickness Maximums						
17	9.861	6.951	3.155	1.012	0.855	0.716
22	13.204	9.310	4.172	1.376	1.199	1.018
27	18.320	13.133	6.150	2.172	1.925	1.615
32	23.142	17.416	9.331	4.055	3.647	3.029
37	29.582	22.665	12.795	6.177	5.567	4.571
42	33.966	25.375	13.831	7.180	6.585	5.603
47	38.722	29.111	16.347	9.150	8.476	7.326
52	41.040	32.933	20.630	11.277	10.388	9.131
57	45.955	39.034	27.555	16.778	15.380	13.348
62	49.962	43.339	32.600	23.105	21.888	20.071
67	59.060	52.615	41.946	32.073	30.530	28.231
72	66.295	61.252	52.406	42.996	41.006	37.759

Age	ELIMINATION PERIOD (MONTHS)					
	.46	1	2	3	6	12
60-Month Accident, 60-Month Sickness Maximums						
17	7.828	3.977	1.781	1.617	1.459	1.341
22	10.490	5.293	2.427	2.240	2.031	1.850
27	14.968	7.853	3.731	3.468	3.115	2.783
32	20.749	12.416	6.884	6.447	5.750	5.075
37	27.531	17.324	10.389	9.737	8.626	7.564
42	31.424	19.643	12.708	12.064	10.947	9.798
47	37.241	24.210	16.715	15.980	14.655	13.275
52	44.012	31.213	21.445	20.479	19.002	17.586
57	55.211	43.004	31.562	30.050	27.687	25.551
62	47.671	36.394	26.039	24.078	20.071	18.457
67	52.615	41.946	32.073	30.530	28.231	26.164
72	61.252	52.406	42.996	41.006	37.759	34.815
To Age 60 Accident, to Age 60 Sickness Maximums						
17	10.214	6.340	4.115	3.933	3.720	3.497
22	13.788	8.554	5.636	5.424	5.141	4.817
27	19.891	12.706	8.494	8.194	7.732	7.190
32	29.092	20.632	14.940	14.436	13.542	12.484
37	39.158	28.773	21.602	20.850	19.444	17.809
42	44.426	32.489	25.320	24.543	23.032	21.119
47	49.862	36.664	28.908	27.990	26.123	23.692
52	50.842	37.839	27.769	26.556	24.347	21.512
57	42.023	30.058	18.637	16.768	13.348	11.832
To Age 65 Accident, to Age 65 Sickness Maximums						
17	10.226	6.352	4.127	3.944	3.732	3.509
22	13.826	8.593	5.674	5.462	5.179	4.855
27	20.017	12.832	8.620	8.320	7.858	7.315
32	29.473	21.012	15.318	14.814	13.920	12.863
37	40.223	29.833	22.656	21.905	20.498	18.863
42	46.730	34.787	27.612	26.835	25.324	23.411
47	54.691	41.482	33.716	32.797	30.931	28.500
52	60.887	47.842	37.740	36.527	34.318	31.483
57	65.068	52.553	40.665	38.795	35.375	31.190
62	47.671	36.394	26.039	24.078	20.071	18.457
Lifetime Accident, Lifetime Sickness Maximums						
17	10.232	6.358	4.133	3.951	3.738	3.515
22	13.853	8.619	5.700	5.488	5.205	4.881
27	20.118	12.932	8.719	8.419	7.957	7.414
32	29.798	21.334	15.638	15.134	14.240	13.182
37	41.287	30.887	23.699	22.947	21.541	19.906
42	49.237	37.285	30.100	29.323	27.812	25.899
47	60.226	47.006	39.228	38.309	36.443	34.012
52	73.230	60.163	50.045	48.832	46.623	43.788
57	94.548	81.933	69.976	68.106	64.686	60.502
62	121.998	110.429	99.756	97.795	93.788	87.966
67	151.751	140.263	129.057	126.455	121.040	112.992
72	176.799	167.030	155.998	152.600	145.210	134.330

TABLE 3Cm

1982 DISABILITY TABLE
MALE NET ANNUAL CLAIM COSTS PER $100 MONTHLY
BENEFIT AT 3.00 PERCENT INTEREST

(24-Month Maximum after Age 65)

AGE	ELIMINATION PERIOD (MONTHS)		
	.23	1	3
24-Month Accident. 24-Month Sickness Maximums			
17	13.501	4.584	1.643
22	19.035	5.868	2.284
27	21.444	5.924	2.600
32	19.955	4.952	2.997
37	21.512	6.204	2.332
42	24.877	8.249	5.051
47	28.277	11.843	6.717
52	32.499	15.465	9.953
57	46.878	26.127	18.690
62	64.288	41.649	32.983
67	71.136	56.851	48.780
72	88.595	73.823	63.246
60-Month Accident. 60-Month Sickness Maximums			
17	17.018	6.465	3.060
22	23.120	7.918	3.900
27	26.040	8.097	4.429
32	24.054	8.104	5.856
37	27.230	9.392	4.868
42	31.479	13.522	9.955
47	39.536	20.294	14.045
52	47.062	27.718	21.360
57	72.394	48.974	40.525
62	71.905	47.922	36.654
67	71.136	56.851	48.780
72	88.595	73.823	63.246
To Age 65 Accident. to Age 65 Sickness Maximums			
17	23.369	11.043	7.370
22	30.352	12.727	8.413
27	34.532	13.743	9.826
32	33.715	17.167	14.695
37	38.095	18.043	13.055
42	46.489	27.444	23.433
47	59.889	38.554	31.456
52	67.956	46.816	39.477
57	87.989	63.286	53.538
62	71.905	47.922	36.654

TABLE 3Cf

1982 DISABILITY TABLE
FEMALE NET ANNUAL CLAIM COSTS PER $100
MONTHLY BENEFIT AT 3.00 PERCENT INTEREST
(24-Month Maximum after Age 65)

AGE	ELIMINATION PERIOD (MONTHS)		
	.23	1	3
	24-Month Accident. 24-Month Sickness Maximums		
17	9.889	3.172	0.867
22	13.240	4.193	1.216
27	18.371	6.178	1.949
32	23.193	9.366	3.687
37	29.606	12.815	5.615
42	33.988	13.856	6.650
47	38.748	16.384	8.568
52	41.205	20.775	10.542
57	46.250	27.812	15.624
62	50.407	33.001	22.282
67	59.668	42.517	31.104
72	67.090	53.177	41.792
	60-Month Accident. 60-Month Sickness Maximums		
17	10.846	4.036	1.671
22	14.516	5.371	2.313
27	20.386	7.968	3.575
32	26.864	12.607	6.637
37	34.969	17.574	10.008
42	40.496	19.964	12.422
47	47.482	24.646	16.471
52	53.189	31.890	21.168
57	63.683	44.028	31.065
62	55.159	36.920	24.547
67	59.668	42.517	31.104
72	67.090	53.177	41.792
	To Age 65 Accident. to Age 65 Sickness Maximums		
17	13.883	7.035	4.618
22	18.747	9.540	6.397
27	26.777	14.240	9.708
32	37.750	23.273	17.054
37	50.584	32.872	24.934
42	58.884	38.084	30.137
47	56.875	44.747	36.081
52	67.372	50.652	39.305
57	74.602	54.442	40.616
62	55.159	36.920	24.547

TABLE 4

FACTORS FOR MODIFICATION FROM MALE OCCUPATION GROUP I TO MALE OCCUPATION GROUP II

ATTAINED AGE	TSA Reports, INDIVIDUAL LOSS-OF-TIME (TABLE 5) RATIOS OF FIRST-YEAR ANNUAL CLAIM COSTS, MALE II/MALE I				RATIOS PRODUCED BY r^* AND s^* FACTORS SHOWN			
	1973	1975	1977	1979	1973	1975	1977	1979
	7-Day Elimination Period				7-Day: $r = 1.20$, $s = .35$			
20–29	170%	135%	124%	100%	155%	155%	155%	155%
30–39	182	175	143	130	155	159	153	162
40–49	150	155	150	136	143	146	150	154
50–59	132	137	149	137	135	137	141	146
60–69	137	130	143	129	131	131	134	137
	14-Day Elimination Period				14-Day: $r = 1.35$, $s = .65$			
20–29	215%	239%	167%	157%	200%	200%	200%	200%
30–39	203	212	195	199	188	183	195	198
40–49	218	180	194	207	171	163	183	189
50–59	165	171	169	180	154	152	165	172
60–69	164	163	141	146	147	145	153	154
	30-Day Elimination Period				30-Day: $r = 1.25$, $s = 1.70$			
20–29	293%	259%	252%	258%	295%	295%	295%	295%
30–39	310	256	300	353	283	260	277	316
40–49	215	210	254	259	199	198	214	234
50–59	185	164	181	214	165	159	166	183
60–69	136	124	142	183	144	143	147	156

$$* \ S^{II}_{x,y} \approx rS^{I}_{x-y} + sS^{I}_{20-29}.$$

IV. MODIFICATION FOR ACCIDENT

In the 1971 Modification Table, as in the 1964 Table, a uniform accident percentage factor is assigned to each age at disablement (in the 1971 Table, the factors do differ by sex). However, the *Reports* data used as a basis for the 1982 Tables clearly indicate that the total accident factor should vary by elimination period. In order to accomplish this, different accident factors have been assigned to each of the three functional elements, at each age, the values of these factors being empirically determined. Since the basic table *b* factors serve to vary the relative weight, or "dominance," of each of the three elements in accordance with varying elimination periods, the ratios of complete table accident to complete table all-cause (accident and sickness) disability will likewise vary. Empirical testing of the effect of this appears to produce fairly good results, as tested against the data, and accordingly the author adopted this method of recognizing varying accident ratios.

This same method, interestingly, also materially improves the test values of the Male Occupation Class II modifications, as mentioned above.

The accident factors are shown in the extreme right-hand column of each basic Table A1, in the Appendix. Further support for the values adopted, as well as for the method itself, is found through examination of the ratios of accident to total disability in the group LTD reports. The following exhibit shows the accident ratios obtained from the *1980 Reports* (Table 1-4, p. 137), compared to the third-element accident ratios in both Appendix Tables A1m and A1f. Comparison is made here against the third element, since this element tends toward greater predominance at longer durations of disability.

COMPARISON OF ACCIDENT TO TOTAL DISABILITY,
BY NUMBER OF CLAIMS

(1980 Group LTD Report, Table 1-4, versus 1982 Table
Accident Ratios for 3d Element)

ATTAINED AGE	MALES		FEMALES	
	1980 Table 1-4 (Accident %)	1982 Table Element 3 (Accident %)	1980 Table 1-4 (Accident %)	1982 Table Element 3 (Accident %)
Under 30.......	41%	33% (Age 27)	24%	24% (Age 27)
30–39	23	{34 (Age 32), 27 (Age 37)}	15	{17 (Age 32), 13 (Age 37)}
40–44	13	21	11	12
45–49	9	12	9	13
50–54	6	8	8	13
55–59	4	8	6	12
60–64	3	7	6	11

The 1982 Table ratios, determined for best fit with the individual reports data, would be expected to be at least somewhat higher than the group ratios because of the tendency toward greater accident antiselection under individual policies, both at issue and at time of claim, whenever accident benefits exceed sickness benefits. Complete 1982 ratios—that is, for the three elements combined—would of course be higher than for element 3 only.

Table 5 provides comparisons of the 1982 Table complete accident ratios against accident ratios derived from the individual loss-of-time reports, for each report year used.

V. RELATIVE DOMINANCE OF THE THREE ELEMENTS

Several references have been made in the preceding discussion to the relative dominance of each of the three functional elements underlying the 1982 Table values at a given age of disablement. Any one element is regarded as "dominant" in such an instance if it accounts for more than 50 percent of the σ, or total, Table value.

TABLE 5

ACCIDENT DISABILITY PERCENTAGES
TSA Reports. INDIVIDUAL LOSS-OF-TIME EXPERIENCE (TABLE 6)
RATIOS OF ACCIDENT DISABILITY TO TOTAL: FIRST YEAR

ATTAINED AGE	MALE I					MALE II					FEMALE I				
	1973	1975	1977	1979	1982 Table Ratio*	1973	1975	1977	1979	1982 Table Ratio*	1973	1975	1977	1979	1982 Table Ratio*
7-Day Elimination Period															
Under 30	47%	58%	56%	44%	50%	58%	58%	55%	53%	50%	35%	36%	25%	27%	32%
30–39.........	38	39	49	45	44	53	55	54	56	46	19	38	30	25	25
40–49.........	27	31	35	34	31	36	38	37	41	35	16	17	23	22	20
50–59.........	16	18	18	20	17	22	21	22	25	22	19	22	21	24	20
60–69.........	9	10	12	11	10	14	13	17	19	14	10	24	15	18	18
30-Day Elimination Period															
Under 30	52%	44%	45%	36%	45%	71%	66%	64%	59%	45%	15%†	27%	38%	35%	30%
30–39.........	31	35	41	40	38	48	54	54	62	42	29	17	23	24	22
40–49.........	23	25	21	26	24	40	31	39	43	34	14	15	21	19	18
50–59.........	14	10	14	14	14	22	19	22	22	24	18	13	16	23	18
60–69.........	6	9	11	8	9	11	12	12	14	15	23‡	18	17	9	17

* Age 27 used for "under 30"; age 62 used for "60–69." Remaining age groups used average of the 2 central ages. Basic accident percentage factors shown in Appendix. Tables A1m and A1f.

† 20–29: 7 claims.

‡ 60–69: 5 claims.

This can be important, not only because of the effect of factors varying by element and age on accident and on occupational class values, as discussed earlier, but also because the question of relative dominance can be important in modifying the Table values for endless other possible reasons. For example, one might conclude that a change in definition of total disability will affect long-term continuance relatively more than short-term, and wish to introduce a modification of gradually increasing effect. Some other change might be judged to affect short-term continuance in a similar manner, gradually reducing in weight with increasing duration. Or one may simply desire to introduce additional conservatism into the tabular values, weighted toward either short-term or long-term continuance.

In order to provide a means of measuring relative dominance, Tables 6A are included. These tables show, at zero interest and for the twelve-month period following each of a series of elimination periods, claim costs for the σ or total 1982 Table, and then show in turn what portion of that total cost is attributable to each element.

Tables 6B then show the effect of modifying each element through adjustment of its exponent a by a reduction of 1 percent of the value of a. This is a conservative adjustment, increasing the value in each case. By comparing Table 6B values against the corresponding Table 6A value, the degree of adjustment can readily be assessed for this 1 percent change. This is a sensitive change: the elemental claim costs tend, in general, to increase by 5–10 percent with a 1 percent reduction in a. While the effect is not linear, a 1 percent increase in a will, roughly, result in an approximately equal (5–10 percent) percentage reduction in value, and a 2 percent increase or decrease will (roughly) result in twice the amount of change caused by a 1 percent adjustment.

The functions can of course also be adjusted by changes in α or α', but adjustment of the exponent is generally a more controllable and predictable method. Also, since element 1 (except at the high ages) tends to be dominant for short-term continuance, while element 3 becomes dominant at the longer durations, considerable flexibility of adjustment can be achieved through adjustment of the a factors alone.

VI. COMPARISON OF POLICY MIDTERMINAL RESERVES

Tables 7A provide comparison of midterminal reserves calculated on the 1982 Table at 3 percent versus 1964 Table midterminals at 3 percent (as published by HIAA). These comparisons are included for the purpose of testing the conservatism or deficiency of the 1964 values against a table based on more recent experience.

1982 DISABILITY TABLE
RELATIVE DOMINANCE OF THE THREE ELEMENTS
MALE NET ANNUAL CLAIM COSTS PER $1,000 MONTHLY BENEFIT
AT 0.00 PERCENT INTEREST

(12-Month Accident, 12-Month Sickness Maximums)

AGE	ELIMINATION PERIOD (MONTHS)				
	1	12	24	60	120
Total Table Value					
17	34.338	7.383	6.000	4.567	3.506
22	45.552	9.834	7.303	4.867	3.604
27	45.665	11.188	8.250	5.553	4.236
32	34.330	14.443	12.139	9.135	7.199
37	45.498	11.184	10.100	8.663	7.139
42	57.703	23.452	20.099	16.289	13.039
47	79.766	32.967	29.631	24.569	20.136
52	103.450	49.401	45.713	38.100	29.388
57	168.683	93.366	87.171	72.830	54.313
62	258.824	166.421	156.110	128.947	91.040
67	342.818	245.068	228.958	184.124	119.328
72	449.937	314.281	290.706	225.653	132.886
First Element Only					
17	18.465	0.156	0.047	0.007	0.001
22	27.367	0.115	0.028	0.003	0.000
27	25.830	0.049	0.010	0.000	0.000
32	13.275	0.000	0.000	0.000	0.000
37	21.609	0.043	0.009	0.001	0.000
42	21.146	0.006	0.000	0.000	0.000
47	32.161	0.107	0.024	0.002	0.000
52	47.612	0.329	0.087	0.012	0.002
57	68.000	0.553	0.141	0.018	0.003
62	80.714	0.280	0.043	0.002	0.000
67	82.947	0.210	0.013	0.000	0.000
72	114.095	0.384	0.018	0.000	0.000
Second Element Only					
17	10.248	1.829	0.796	0.076	0.002
22	12.817	4.543	2.302	0.471	0.076
27	14.022	5.497	2.781	0.622	0.123
32	11.045	4.721	2.727	0.619	0.079
37	13.839	1.381	0.644	0.124	0.021
42	18.249	5.682	2.920	0.818	0.243
47	20.289	6.245	3.752	0.956	0.146
52	12.458	7.138	5.249	2.252	0.671
57	15.265	10.705	8.477	4.557	1.964
62	16.512	12.026	9.951	5.778	2.510
67	5.137	4.845	4.550	3.787	2.834
72	13.563	12.423	11.291	8.493	5.311
Third Element Only					
17	5.624	5.397	5.157	4.483	3.502
22	5.367	5.176	4.972	4.392	3.527
27	5.812	5.641	5.458	4.929	4.112
32	10.008	9.721	9.412	8.515	7.120
37	10.049	9.758	9.446	8.538	7.117
42	18.307	17.763	17.177	15.471	12.796
47	27.315	26.614	25.854	23.610	19.990
52	43.379	41.933	40.376	35.835	28.714
57	85.417	82.107	78.553	68.254	52.345
62	161.597	154.114	146.115	123.166	88.529
67	254.733	240.012	224.394	180.336	116.493
72	322.278	301.472	279.396	217.160	127.574

1982 DISABILITY TABLE
RELATIVE DOMINANCE OF THE THREE ELEMENTS
FEMALE NET ANNUAL CLAIM COSTS PER $1,000 MONTHLY BENEFIT
AT 0.00 PERCENT INTEREST

(12-Month Accident, 12-Month Sickness Maximums)

AGE	ELIMINATION PERIOD (MONTHS)				
	1	12	24	60	120
	Total Table Value				
17............	27.749	3.664	3.229	2.729	2.241
22............	36.471	5.192	4.460	3.698	3.070
27............	52.663	8.100	6.684	5.461	4.616
32............	76.387	14.943	12.138	9.901	8.300
37............	102.587	22.259	18.019	14.808	12.580
42............	108.627	27.762	23.274	19.719	16.837
47............	125.071	36.606	31.542	27.104	22.761
52............	158.481	46.598	41.932	36.565	30.181
57............	207.026	67.804	61.078	52.744	42.434
62............	228.114	104.971	96.303	81.414	62.513
67............	285.254	148.557	136.846	111.937	79.899
72............	347.676	198.141	181.647	142.968	91.679
	First Element Only				
17............	21.729	0.013	0.000	0.000	0.000
22............	27.855	0.006	0.000	0.000	0.000
27............	36.730	0.012	0.000	0.000	0.000
32............	44.110	0.044	0.001	0.000	0.000
37............	53.782	0.089	0.005	0.000	0.000
42............	50.615	0.007	0.000	0.000	0.000
47............	51.911	0.007	0.000	0.000	0.000
52............	86.324	0.349	0.035	0.000	0.000
57............	120.905	2.061	0.342	0.019	0.001
62............	105.775	0.747	0.063	0.001	0.000
67............	122.983	0.917	0.066	0.000	0.000
72............	135.308	1.753	0.110	0.000	0.000
	Second Element Only				
17............	2.810	0.540	0.224	0.029	0.002
22............	4.431	1.114	0.509	0.100	0.019
27............	9.907	2.201	0.949	0.170	0.030
32............	21.233	4.127	1.659	0.285	0.052
37............	32.663	6.379	2.604	0.526	0.123
42............	36.152	6.380	2.426	0.432	0.090
47............	42.284	6.505	2.296	0.363	0.068
52............	29.498	4.790	1.737	0.241	0.035
57............	23.420	4.992	2.095	0.316	0.041
62............	22.254	7.786	3.742	0.496	0.027
67............	17.892	9.616	5.604	0.746	0.000
72............	18.455	12.658	8.761	2.033	0.000
	Third Element Only				
17............	3.209	3.110	3.004	2.700	2.238
22............	4.184	4.071	3.950	3.598	3.051
27............	6.025	5.885	5.734	5.291	4.586
32............	11.043	10.771	10.477	9.615	8.248
37............	16.141	15.790	15.409	14.281	12.456
42............	21.859	21.374	20.848	19.287	16.747
47............	30.875	30.093	29.246	26.740	22.692
52............	42.658	41.458	40.159	36.323	30.146
57............	62.701	60.751	58.639	52.408	42.391
62............	100.084	96.438	92.497	80.917	62.485
67............	144.377	138.022	131.175	111.189	79.898
72............	193.912	183.729	172.775	140.934	91.679

TABLE 6Bm

1982 DISABILITY TABLE
EFFECT OF CHANGE IN FUNCTION EXPONENT a. ILLUSTRATED FOR REDUCTION
OF 1 PERCENT ($a' = 0.99a$)
MALE NET ANNUAL CLAIM COSTS PER $1,000 MONTHLY BENEFIT
AT 0.00 PERCENT INTEREST

(12-Month Accident, 12-Month Sickness Maximums)

AGE	ELIMINATION PERIOD (MONTHS)				
	1	12	24	60	120
First Element					
17.	19.621	0.185	0.056	0.009	0.002
22.	28.956	0.137	0.034	0.004	0.000
27.	27.345	0.059	0.012	0.001	0.000
32.	14.079	0.000	0.000	0.000	0.000
37.	22.871	0.052	0.012	0.001	0.000
42.	22.351	0.007	0.001	0.000	0.000
47.	33.937	0.128	0.029	0.003	0.000
52.	50.053	0.384	0.104	0.014	0.003
57.	71.247	0.639	0.166	0.022	0.004
62.	84.257	0.320	0.050	0.003	0.000
67.	86.340	0.235	0.016	0.000	0.000
72.	118.478	0.427	0.021	0.000	0.000
Second Element					
17.	10.995	2.003	0.879	0.086	0.002
22.	13.721	4.926	2.513	0.523	0.086
27.	14.997	5.944	3.029	0.688	0.139
32.	11.843	5.114	2.970	0.685	0.089
37.	14.803	1.535	0.722	0.141	0.025
42.	19.463	6.161	3.189	0.906	0.272
47.	21.624	6.761	4.084	1.056	0.164
52.	13.343	7.700	5.680	2.458	0.741
57.	16.317	11.495	9.124	4.937	2.145
62.	17.636	12.895	10.690	6.242	2.735
67. . , ...	5.551	5.239	4.923	4.105	3.081
72.	14.515	13.307	12.106	9.131	5.738
Third Element					
17.	6.072	5.830	5.573	4.851	3.799
22.	5.798	5.593	5.375	4.754	3.826
27.	6.273	6.090	5.895	5.329	4.453
32.	10.744	10.438	10.110	9.156	7.669
37.	10.786	10.478	10.146	9.180	7.666
42.	19.533	18.959	18.340	16.535	13.702
47.	29.029	28.291	27.491	25.128	21.310
52.	45.888	44.373	42.742	37.980	30.501
57.	89.748	86.303	82.604	71.875	55.269
62.	168.709	160.973	152.700	128.937	92.983
67.	264.737	249.587	233.503	188.067	122.019
72.	334.148	312.785	290.100	226.049	133.504

1982 DISABILITY TABLE

EFFECT OF CHANGE IN FUNCTION EXPONENT a. ILLUSTRATED FOR REDUCTION
OF 1 PERCENT ($a' = 0.99a$)

FEMALE NET ANNUAL CLAIM COSTS PER $1,000 MONTHLY BENEFIT
AT 0.00 PERCENT INTEREST

(12-Month Accident, 12-Month Sickness Maximums)

AGE	ELIMINATION PERIOD (MONTHS)				
	1	12	24	60	120
	First Element				
17.	22.892	0.015	0.000	0.000	0.000
22.	29.289	0.007	0.000	0.000	0.000
27.	38.565	0.014	0.000	0.000	0.000
32.	46.299	0.051	0.002	0.000	0.000
37.	56.397	0.102	0.006	0.000	0.000
42.	52.955	0.008	0.000	0.000	0.000
47.	54.323	0.009	0.000	0.000	0.000
52.	90.095	0.394	0.041	0.001	0.000
57.	125.969	2.272	0.386	0.022	0.002
62.	110.262	0.830	0.072	0.001	0.000
67.	127.997	1.015	0.076	0.000	0.000
72.	140.806	1.920	0.124	0.000	0.000
	Second Element				
17.	3.054	0.600	0.251	0.033	0.003
22.	4.794	1.228	0.566	0.113	0.021
27.	10.630	2.410	1.049	0.191	0.034
32.	22.604	4.491	1.823	0.320	0.060
37.	34.614	6.910	2.848	0.585	0.139
42.	38.266	6.908	2.655	0.481	0.102
47.	44.676	7.041	2.513	0.405	0.078
52.	31.297	5.206	1.909	0.270	0.040
57.	24.916	5.420	2.296	0.353	0.047
62.	23.693	8.389	4.062	0.550	0.031
67.	19.094	10.336	6.057	0.823	0.000
72.	19.689	13.565	9.423	2.219	0.000
	Third Element				
17.	3.484	3.378	3.264	2.937	2.438
22.	4.531	4.410	4.280	3.902	3.314
27.	6.501	6.351	6.190	5.716	4.961
32.	11.843	11.554	11.241	10.326	8.871
37.	17.245	16.873	16.470	15.276	13.342
42.	23.282	22.771	22.216	20.568	17.885
47.	32.772	31.950	31.059	28.424	24.160
52.	45.132	43.876	42.514	38.492	32.005
57.	66.084	64.048	61.844	55.335	44.853
62.	104.991	101.204	97.109	85.065	65.859
67.	150.902	144.325	137.235	116.518	84.004
72.	202.079	191.570	180.259	147.338	96.258

Table 7Am indicates modest to substantial conservatism of the 1964 Table, at most test points, when used to value male policy reserves. The main exceptions to this appear in some of the issue-age-50 examples shown.

Table 7Af, however, indicates excessive redundancy in the 1964 Table at almost all test points when used to value female policy reserves, in some cases to the point of absurdity, with the 1964 values ranging up to more than 300 percent of the 1982 Table test values, and in some cases producing *positive* values where 1982 values are substantially *negative*. When experience incurred loss ratios are obtained with incorporation of policy reserves, as in the A & H Policy Experience Exhibit, it is clear that distorted (overstated) values can result whenever a substantial fraction of female lives is involved. Another potential problem is that the extreme general redundancy in 1964 Table values, when used to value female policy reserves, may serve to discourage an insurer with limited ability to withstand surplus drain from underwriting female disability risks. The 1964 Table is merely obsolete for valuation of male policies. It is manifestly ridiculous for valuation of female policies, with unfair consequences to female policyholders, a fact that has been apparent at least since 1971, when the 1971 Modification was published. This adverse impact on female risks serves to underscore the urgency with which both insurers and regulators need the forthcoming report and recommendations of the Society's Committee to Recommend New Disability Tables for Valuation, which are expected to propose sex-distinct valuation standards.

VII. COMPARISON OF CLAIM RESERVES

Tables 7B provide similar comparisons of claim reserves. These comparisons indicate general deficiency of the 1964 Table values except in the range of perhaps six to twenty-four months duration since disablement. The deficiencies in the values tend to become greater, for female lives. Since the 1964 Table is a prescribed minimum standard only for claims beyond two years in duration, it would appear to be a generally deficient standard over the prescribed range. This conclusion depends, of course, on the reasonableness of the termination ratios chosen by the author to graduate the 1982 Table continuance beyond two years, and since these ratios are below 100 percent of the 1964 termination rates, it is obvious that tests will indicate deficiency. Nevertheless, many insurers have concluded that the 1964 Table is indeed a deficient standard for claim reserves. This again indicates the need for recommendations from the Society's committee at as early a date as possible. The 1964 Table is *seriously* obsolete.

Tables 8 provide additional claim reserve values for reference.

TABLE 7Am

COMPARISON OF MIDTERMINAL POLICY RESERVES PER $100 MONTHLY INCOME
1982 DISABILITY TABLE (MALES) VERSUS 1964 COMMISSIONERS DISABILITY TABLE AT
3 PERCENT (1958 CSO Mortality)

	ISSUE AGE								
	30			40			50		
	1982 (1)	1964 (2)	(1)/(2) (3)	1982 (4)	1964 (5)	(4)/(5) (6)	1982 (7)	1964 (8)	(7)/(8) (9)
	7-Day Elimination/24-Month Maximum								
Net premium....	28.79	22.81	127%	34.78	29.79	117%	44.37	40.98	108%
Duration (years):									
4.5	44	53	83	52	63	83	63	62	102
9.5	95	110	86	104	122	85	80	84	95
14.5	138	164	84	144	158	91	10	15	67
19.5	174	203	86	127	139	91	....	....	....
	1-Month Elimination/60-Month Maximum								
Net premium....	19.44	20.67	94%	27.23	29.00	94%	39.06	42.53	92%
Duration (years):									
4.5	56	62	90	70	77	91	59	66	89
9.5	123	132	93	129	148	87	42	59	71
14.5	182	197	92	160	181	88	5	10	50
19.5	220	245	90	100	125	80	....	....	....
	3-Month Elimination/To Age 65 Maximum								
Net premium....	25.59	21.16	121%	34.11	29.89	114%	42.49	41.17	103%
Duration (years):									
4.5	58	67	87	59	72	82	19	32	59
9.5	135	138	98	93	125	74	− 18	7	....
14.5	182	198	92	91	128	71	− 2	3	....
19.5	193	226	85	23	62	37	....	....	....

NOTE.—All values assume 24-month maximum passing age 65 for accident or sickness. on 60-month and age 65 maximums.

TABLE 7Af

COMPARISON OF MIDTERMINAL POLICY RESERVES PER $100 MONTHLY INCOME
1982 DISABILITY TABLE (FEMALES)VERSUS 1964 COMMISSIONERS DISABILITY TABLE AT
3 PERCENT (1958 CSO Mortality)

	ISSUE AGE								
	30			40			50		
	1982 (1)	1964 (2)	(1)/(2) (3)	1982 (4)	1964 (5)	(4)/(5) (6)	1982 (7)	1964 (8)	(7)/(8) (9)
	7-Day Elimination-24-Month Maximum								
Net premium....	33.82	22.81	148%	39.71	29.79	133%	44.30	40.98	108%
Duration (years):									
4.5	55	53	104	32	63	51	20	62	32
9.5	95	110	86	51	122	42	23	84	27
14.5	117	164	71	59	158	37	4	15	27
19.5	119	203	59	46	139	33	. . . . . .	. . . . . .	. . . . . .
	1-Month Elimination-60-Month Maximum								
Net premium....	22.81	20.67	110%	28.78	29.00	99%	36.31	42.53	85%
Duration (years):									
4.5	52	62	84	45	77	58	26	66	39
9.5	95	132	72	83	148	56	5	59	8
14.5	132	197	67	90	181	50	0	10	0
19.5	152	245	62	42	125	34	. . . . . .	. . . . . .	. . . . . .
	3-Month Elimination To Age 65 Maximum								
Net premium....	28.01	21.16	132%	33.65	29.84	113%	35.20	41.17	85%
Duration (years):									
4.5	57	67	85	21	72	29	- 17	32	. . . . . .
9.5	92	138	67	19	125	15	- 43	7	. . . . . .
14.5	102	198	52	- 3	128	. . . . . .	- 5	3	. . . . . .
19.5	85	226	38	-35	62	. . . . . .	. . . . . .	. . . . . .	. . . . . .

NOTE.—All values assume 24-month maximum passing age 65 for accident or sickness, on 60-month and age 65 maximums.

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COMPARISON OF CLAIM RESERVES PER $100 MONTHLY INCOME
1982 DISABILITY TABLE (MALES)VERSUS 1964 COMMISSIONERS DISABILITY TABLE AT
3 PERCENT

DURATION SINCE DISABLEMENT (MONTHS)	60-MONTH MAXIMUM			TO AGE 65 MAXIMUM			LIFETIME MAXIMUM		
	1982 (1)	1964 (2)	(1)/(2) (3)	1982 (4)	1964 (5)	(4)/(5) (6)	1982 (7)	1964 (8)	(7)/(8) (9)
Age at Disablement: 27									
4	1,287	824	156%	2,535	1,631	155%	2,570	1,665	154%
9	1,980	2,499	79	4,580	5,579	82	4,653	5,714	81
18	2,442	2,712	90	7,216	7,654	94	7,350	7,863	93
42	1,649	1,559	106	11,301	10,099	112	11,572	10,460	111
66	....	....	....	12,800	11,439	112	13,173	11,948	110
Age at Disablement: 37									
4	1,721	903	191%	3,814	1,908	200%	4,021	2,023	199%
9	2,545	2,735	93	6,433	6,433	100	6,819	6,873	99
18	2,861	2,885	99	8,911	8,490	105	9,512	9,127	104
42	1,710	1,598	107	11,638	10,529	111	12,623	11,542	109
66	....	....	....	12,151	11,251	108	13,408	12,599	106
Age at Disablement: 47									
4	2,340	1,173	199%	4,880	2,301	212%	5,919	2,673	122%
9	3,130	3,016	104	7,187	6,303	114	8,847	7,452	119
18	3,165	3,051	104	8,596	7,834	110	10,817	9,463	114
42	1,730	1,623	107	9,567	8,705	110	12,773	11,117	115
66	....	....	....	9,270	8,496	109	13,270	11,600	114
Age at Disablement: 57									
4	2,799	1,702	164%	3,756	2,330	161%	6,783	3,682	184%
9	3,667	3,363	109	5,122	4,312	119	9,727	7,596	128
18	3,519	3,212	110	5,303	4,482	118	10,954	8,889	123
42	1,765	1,628	108	4,017	3,384	119	11,148	9,479	118
66	....	....	....	2,197	1,651	133	10,768	9,527	113

NOTE 1.—1982 Table claim reserves are based on 1-month elimination period continuance.

NOTE 2.—1982 Table claim reserves are based on total continuance, that is, on accident and sickness combined. This will generally be appropriate when accident and sickness maximum periods and amounts are the same. For accident only, the appropriate reserves will differ from these total continuance values. Also, if the accident maximum and/or amount of benefits differs substantially from those for sickness, it may become appropriate to construct separate accident and sickness claim reserve values.

TABLE 7Bf

COMPARISON OF CLAIM RESERVES PER $100 MONTHLY INCOME
1982 DISABILITY TABLE (FEMALES) VERSUS 1964 COMMISSIONERS DISABILITY TABLE AT
3 PERCENT

DURATION SINCE DISABLEMENT (MONTHS)	60-MONTH MAXIMUM			TO AGE 65 MAXIMUM			LIFETIME MAXIMUM		
	1982 (1)	1964 (2)	(1)/(2) (3)	1982 (4)	1964 (5)	(4)/(5) (6)	1982 (7)	1964 (8)	(7)/(8) (9)
				Age at Disablement: 27					
4	910	824	110%	2,194	1,631	135%	2,244	1,665	135%
9	2,214	2,499	89	6,564	5,579	118	6,733	5,714	118
18	2,912	2,712	107	10,920	7,654	143	11,232	7,863	143
42	1,741	1,559	112	14,557	10,099	144	15,055	10,460	144
66	......	......	......	15,133	11,439	132	15,742	11,948	132
				Age at Disablement: 37					
4	1,103	903	122%	2,535	1,908	133%	2,725	2,023	135%
9	2,116	2,735	77	5,887	6,433	92	6,386	6,873	93
18	2,887	2,885	100	10,174	8,490	120	11,138	9,127	122
42	1,752	1,598	110	13,506	10,529	128	15,062	11,542	130
66	......	......	....	13,634	11,251	121	15,505	12,599	123
				Age at Disablement: 47					
4	1,440	1,173	123%	3,084	2,301	134%	3,782	2,673	141%
9	2,680	3,016	89	6,577	6,303	104	8,230	7,452	110
18	3,237	3,051	106	9,547	7,834	122	12,224	9,463	129
42	1,780	1,623	110	10,601	8,705	122	14,344	11,117	129
66	......	......	......	9,790	8,496	115	14,160	11,600	122
				Age at Disablement: 57					
4	1,623	1,702	95%	2,126	2,330	91%	3,929	3,682	107%
9	2,804	3,363	83	3,892	4,312	90	7,791	7,596	103
18	3,291	3,212	102	4,988	4,482	111	11,068	8,889	125
42	1,776	1,628	109	4,099	3,384	121	12,426	9,479	131
66	......	......	......	2,228	1,651	135	12,037	9,527	126

NOTE 1.—1982 Table claim reserves are based on 1-month elimination period continuance.

NOTE 2.—1982 Table claim reserves are based on total continuance, that is, on accident and sickness combined. This will generally be appropriate when accident and sickness maximum periods and amounts are the same. For accident only, the appropriate reserves will differ from these total continuance values. Also, if the accident maximum and/or amount of benefits differs substantially from those for sickness, it may become appropriate to construct separate accident and sickness claim reserve values.

1982 DISABILITY TABLE
MALE DISABLED LIFE RESERVES PER $100 MONTHLY INCOME
AT 4.50 PERCENT INTEREST
1-MONTH ELIMINATION PERIOD VALUES

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)							
	1.50	4	9	18	30	42	54	66
60-Month Maximum								
17	808	1,432	2,063	2,405	2,245	1,621	666	. . . .
22	671	1,230	1,899	2,332	2,218	1,609	664	. . . .
27	703	1,258	1,933	2,390	2,269	1,632	667	. . . .
32	895	2,171	2,949	2,963	2,479	1,688	673	. . . .
37	773	1,676	2,477	2,796	2,461	1,692	674	. . . .
42	928	2,008	2,852	3,078	2,589	1,730	678	. . . .
47	1,189	2,279	3,050	3,096	2,552	1,712	676	. . . .
52	1,190	2,451	3,376	3,345	2,655	1,739	678	. . . .
57	1,433	2,725	3,574	3,442	2,689	1,747	679	. . . .
62	1,613	3,128	3,877	3,542	2,709	1,748	678	. . . .
67	1,769	3,464	4,053	3,562	2,698	1,740	676	. . . .
72	1,757	3,267	3,964	3,510	2,666	1,725	674	. . . .
24-Month Maximum								
17	563	887	1,023	606	. . . . .	. . . . .	. . . . .	. . . . . .
22	487	791	969	600	. . . . .	. . . . .	. . . . .	. . . . . .
27	505	799	971	601	. . . . .	. . . . .	. . . . .	. . . . . .
32	531	1,127	1,239	644	. . . . .	. . . . .	. . . . .	. . . . . .
37	497	940	1,101	628	. . . . .	. . . . .	. . . . .	. . . . . .
42	552	1,041	1,175	643	. . . . .	. . . . .	. . . . .	. . . . . .
47	680	1,152	1,242	649	. . . . .	. . . . .	. . . . .	. . . . . .
52	649	1,170	1,292	662	. . . . .	. . . . .	. . . . .	. . . . . .
57	750	1,260	1,334	668	. . . . .	. . . . .	. . . . .	. . . . . .
62	807	1,391	1,407	675	. . . . .	. . . . .	. . . . .	. . . . . .
67	863	1,512	1,458	678	. . . . .	. . . . .	. . . . .	. . . . . .
72	872	1,447	1,444	676	. . . . .	. . . . .	. . . . .	. . . . . .
12-Month Maximum								
17	402	532	345	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
22	363	492	337	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
27	374	496	337	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
32	345	596	367	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
37	347	539	351	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
42	369	571	358	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
47	434	607	366	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
52	409	602	369	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
57	457	632	374	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
62	472	669	381	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
67	489	706	387	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .
72	500	683	386	. . . . .	. . . . .	. . . . .	. . . . .	. . . . . .

Age	Duration from Date of Disablement (Months)									
	1.50	4	9	18	42	66	90	114	138	162
	To Age 65 Maximum									
17	1,317	2,559	4,214	6,129	9,330	10,570	10,817	10,712	10,490	10,224
22	1,037	2,106	3,753	5,784	9,041	10,385	10,785	10,782	10,602	10,337
27	1,139	2,269	4,050	6,323	9,813	11,078	11,371	11,270	10,993	10,628
32	1,786	4,727	7,136	8,638	10,603	11,279	11,290	10,997	10,563	10,050
37	1,421	3,406	5,711	7,892	10,296	10,765	10,581	10,139	9,564	8,894
42	1,804	4,262	6,764	8,757	10,198	10,084	9,553	8,838	7,996	7,028
47	2,182	4,478	6,583	7,873	8,797	8,578	7,830	6,779	5,496	3,976
52	1,977	4,313	6,402	7,243	6,971	6,007	4,705	3,096	1,138	......
57	1,845	3,608	4,925	5,115	3,915	2,167	......	......	......	......
62	935	1,667	1,799	1,130	......	......	......	......	......	......
	Lifetime Maximum									
17	1,319	2,564	4,223	6,145	9,363	10,618	10,878	10,788	10,583	10,339
22	1,039	2,112	3,765	5,807	9,090	10,456	10,878	10,898	10,745	10,512
27	1,146	2,284	4,082	6,384	9,939	11,258	11,599	11,548	11,331	11,035
32	1,813	4,805	7,264	8,811	10,875	11,639	11,735	11,535	11,208	10,825
37	1,463	3,517	5,919	8,219	10,848	11,489	11,471	11,214	10,857	10,455
42	1,921	4,562	7,284	9,511	11,323	11,492	11,255	10,883	10,455	10,003
47	2,488	5,156	7,672	9,346	10,982	11,380	11,254	10,895	10,431	9,916
52	2,494	5,534	8,388	9,801	10,405	10,285	9,950	9,513	9,023	8,504
57	2,981	6,044	8,650	9,729	9,892	9,552	9,093	8,581	8,043	7,491
62	3,254	6,662	8,904	9,377	9,040	8,523	7,966	7,389	6,800	6,203
67	3,363	6,899	8,620	8,639	8,037	7,413	6,789	6,168	5,551	4,939
72	3,092	6,010	7,764	7,784	7,117	6,430	5,741	5,053	4,368	3,690

Age	Duration from Date of Disablement (Months)								
	186	210	234	258	282	306	330	354	378
	To Age 65 Maximum								
17	9,941	9,650	9,353	9,052	8,746	8,435	8,114	7,780	7,425
22	10,027	9,688	9,328	8,949	8,549	8,123	7,665	7,160	6,591
27	10,209	9,750	9,253	8,716	8,130	7,481	6,749	5,901	4,892
32	9,482	8,861	8,180	7,424	6,568	5,578	4,399	2,953	1,118
37	8,137	7,281	6,301	5,158	3,793	2,118	......	......	......
42	5,911	4,604	3,043	1,130	......	......	......	......	......
47	2,173	......	......	......	......	......	......	......	......
52	......	......	......	......	......	......	......	......	......
57	......	......	......	......	......	......	......	......	......
62	......	......	......	......	......	......	......	......	......
	Lifetime Maximum								
17	10,083	9,825	9,572	9,327	9,095	8,879	8,685	8,520	8,394
22	10,242	9,953	9,656	9,358	9,063	8,775	8,498	8,236	7,995
27	10,701	10,348	9,983	9,614	9,244	8,876	8,511	8,153	7,804
32	10,416	9,995	9,567	9,136	8,704	8,270	7,836	7,401	6,966
37	10,030	9,592	9,149	8,703	8,257	7,811	7,369	6,931	6,500
42	9,538	9,067	8,594	8,122	7,652	7,188	6,730	6,285	5,855
47	9,377	8,826	8,269	7,708	7,145	6,582	6,020	5,460	4,902
52	7,968	7,423	6,873	6,322	5,770	5,222	4,680	4,147	3,633
57	6,931	6,370	5,810	5,255	4,712	4,188	3,696	3,262	2,930
62	5,603	5,001	4,400	3,804	3,216	2,647	2,121	1,703	1,460
67	4,338	3,752	3,196	2,694	2,301	2,042	1,106	......	......
72	3,026	2,389	1,815	1,349	......	......	......	......	......

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TABLE 8Af

1982 DISABILITY TABLE
FEMALE DISABLED LIFE RESERVES PER $100 MONTHLY INCOME
AT 4.50 PERCENT INTEREST
1-MONTH ELIMINATION PERIOD VALUES

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)							
	1.50	4	9	18	30	42	54	66
60-Month Maximum								
17	275	905	2,474	3,052	2,597	1,737	679	. . . .
22	303	867	2,447	3,053	2,595	1,736	679	. . . .
27	367	888	2,150	2,844	2,532	1,723	678	. . . .
32	504	1,027	2,069	2,784	2,527	1,724	678	. . . .
37	577	1,071	2,051	2,819	2,558	1,734	679	. . . .
42	555	1,255	2,442	3,047	2,634	1,753	681	. . . .
47	646	1,391	2,595	3,162	2,674	1,762	682	. . . .
52	704	1,454	2,677	3,220	2,689	1,763	682	. . . .
57	852	1,580	2,729	3,217	2,675	1,757	681	. . . .
62	1,143	2,093	3,296	3,412	2,701	1,756	680	. . . .
67	1,292	2,317	3,503	3,465	2,690	1,745	678	. . . .
72	1,558	2,463	3,521	3,457	2,668	1,730	675	. . . .
24-Month Maximum								
17	205	519	1,040	639	. . . .	. . . .	. . . .	. . . .
22	225	502	1,030	639	. . . .	. . . .	. . . .	. . . .
27	274	539	962	624	. . . .	. . . .	. . . .	. . . .
32	365	625	944	618	. . . .	. . . .	. . . .	. . . .
37	411	649	931	618	. . . .	. . . .	. . . .	. . . .
42	373	702	1,032	634	. . . .	. . . .	. . . .	. . . .
47	417	752	1,064	641	. . . .	. . . .	. . . .	. . . .
52	446	773	1,081	645	. . . .	. . . .	. . . .	. . . .
57	526	831	1,100	646	. . . .	. . . .	. . . .	. . . .
62	638	1,008	1,249	663	. . . .	. . . .	. . . .	. . . .
67	696	1,086	1,304	669	. . . .	. . . .	. . . .	. . . .
72	826	1,151	1,313	671	. . . .	. . . .	. . . .	. . . .
12-Month Maximum								
17	170	329	334	. . . .	. . . .	. . . .	. . . .	. . . .
22	187	322	332	. . . .	. . . .	. . . .	. . . .	. . . .
27	225	353	326	. . . .	. . . .	. . . .	. . . .	. . . .
32	288	404	327	. . . .	. . . .	. . . .	. . . .	. . . .
37	321	421	325	. . . .	. . . .	. . . .	. . . .	. . . .
42	283	430	337	. . . .	. . . .	. . . .	. . . .	. . . .
47	309	450	341	. . . .	. . . .	. . . .	. . . .	. . . .
52	326	458	342	. . . .	. . . .	. . . .	. . . .	. . . .
57	374	484	345	. . . .	. . . .	. . . .	. . . .	. . . .
62	419	538	362	. . . .	. . . .	. . . .	. . . .	. . . .
67	443	562	367	. . . .	. . . .	. . . .	. . . .	. . . .
72	513	589	368	. . . .	. . . .	. . . .	. . . .	. . . .

Age	Duration from Date of Disablement (Months)									
	1.50	4	9	18	42	66	90	114	138	162
To Age 65 Maximum										
17	477	2.017	6.614	10.022	12.239	12.488	12.307	12.010	11.675	11.324
22	530	1.941	6.617	10.154	12.434	12.740	12.577	12.268	11.901	11.504
27	638	1.908	5.624	9.333	12.418	12.910	12.756	12.400	11.962	11.481
32	894	2.148	5.204	8.819	11.931	12.285	12.032	11.591	11.069	10.495
37	1.034	2.236	5.144	8.897	11.836	11.984	11.567	10.963	10.261	9.480
42	1.028	2.694	6.115	9.334	11.230	10.954	10.262	9.411	8.446	7.364
47	1.148	2.795	5.959	8.699	9.724	9.047	8.048	6.877	5.537	3.992
52	1.110	2.523	5.185	7.266	7.448	6.310	4.856	3.151	1.145	......
57	1.054	2.043	3.736	4.806	3.993	2.197	......	......	......	......
62	718	1.182	1.576	1.103	......	......	......	......	......	......
Lifetime Maximum										
17	478	2.020	4.625	10.041	12.268	12.523	12.350	12.061	11.736	11.396
22	532	1.950	6.650	10.211	12.519	12.845	12.702	12.416	12.075	11.712
27	643	1.928	5.694	9.464	12.633	13.180	13.077	12.778	12.406	12.003
32	909	2.190	5.321	9.046	12.313	12.765	12.604	12.267	11.866	11.439
37	1.073	2.335	5.405	9.409	12.687	13.036	12.812	12.424	11.974	11.498
42	1.106	2.932	6.721	10.371	12.792	12.844	12.482	12.009	11.497	10.968
47	1.309	3.244	7.035	10.469	12.271	12.103	11.647	11.120	10.569	10.008
52	1.410	3.316	7.043	10.263	11.661	11.362	10.839	10.263	9.671	9.072
57	1.675	3.467	6.835	9.694	10.871	10.526	9.962	9.345	8.711	8.071
62	2.294	4.566	7.961	9.677	9.962	9.478	8.849	8.182	7.505	6.824
67	2.459	4.733	7.818	8.951	8.790	8.234	7.562	6.849	6.129	5.408
72	2.753	4.605	7.124	8.002	7.575	6.931	6.218	5.457	4.678	3.898

Age	Duration from Date of Disablement (Months)								
	186	210	234	258	282	306	330	354	378
To Age 65 Maximum									
17	10.964	10.599	10.227	9.848	9.462	9.065	8.654	8.225	7.771
22	11.089	10.659	10.214	9.751	9.268	8.756	8.209	7.613	6.950
27	10.968	10.425	9.851	9.238	8.577	7.851	7.041	6.116	5.032
32	9.874	9.204	8.474	7.667	6.758	5.714	4.482	2.989	1.123
37	8.617	7.658	6.578	5.339	3.888	2.146	......	......	......
42	6.142	4.740	3.100	1.138	......	......	......	......	......
47	2.177	......	......	......	......	......	......	......	......
52	......	......	......	......	......	......	......	......	......
57	......	......	......	......	......	......	......	......	......
62	......	......	......	......	......	......	......	......	......
Lifetime Maximum									
17	11.051	10.703	10.354	10.004	9.654	9.303	8.952	8.602	8.251
22	11.337	10.956	10.571	10.185	9.798	9.411	9.023	8.635	8.248
27	11.585	11.160	10.731	10.299	9.866	9.432	8.998	8.564	8.130
32	10.999	10.552	10.102	9.649	9.196	8.742	8.289	7.836	7.383
37	11.009	10.514	10.014	9.513	9.011	8.510	8.009	7.510	7.014
42	10.432	9.891	9.348	8.804	8.260	7.716	7.172	6.629	6.088
47	9.442	8.875	8.306	7.736	7.167	6.597	6.028	5.460	4.894
52	8.470	7.867	7.264	6.660	6.056	5.452	4.848	4.244	3.642
57	7.428	6.784	6.139	5.494	4.849	4.204	3.559	2.915	2.273
62	6.142	5.460	4.778	4.095	3.412	2.730	2.047	1.365	682
67	4.687	3.966	3.245	2.523	1.802	1.081	360	......	......
72	3.118	2.339	1.559	779	......	......	......	......	......

TABLE 8Bm

1982 DISABILITY TABLE
MALE DISABLED LIFE RESERVES PER $100 MONTHLY INCOME
AT 3.00 PERCENT INTEREST
1-MONTH ELIMINATION PERIOD VALUES

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)							
	1.50	4	9	18	30	42	54	66
	60-Month Maximum							
17	825	1,462	2,107	2,454	2,280	1,638	669	. . . .
22	684	1,256	1,942	2,381	2,253	1,626	667	. . . .
27	717	1,287	1,980	2,442	2,305	1,649	670	. . . .
32	918	2,230	3,028	3,030	2,520	1,706	676	. . . .
37	791	1,721	2,545	2,861	2,502	1,710	677	. . . .
42	954	2,073	2,939	3,152	2,633	1,748	681	. . . .
47	1,220	2,340	3,130	3,165	2,594	1,730	678	. . . .
52	1,223	2,517	3,464	3,421	2,700	1,757	681	. . . .
57	1,474	2,799	3,667	3,519	2,734	1,765	681	. . . .
62	1,660	3,215	3,978	3,621	2,753	1,766	681	. . . .
67	1,820	3,558	4,154	3,638	2,741	1,757	679	. . . .
72	1,807	3,352	4,058	3,582	2,707	1,742	677	. . . .
	24-Month Maximum							
17	568	895	1,031	609	. . . .	. . . .	. . . .	. . . .
22	492	798	977	602	. . . .	. . . .	. . . .	. . . .
27	509	806	979	604	. . . .	. . . .	. . . .	. . . .
32	536	1,139	1,250	647	. . . .	. . . .	. . . .	. . . .
37	502	950	1,112	630	. . . .	. . . .	. . . .	. . . .
42	558	1,056	1,188	646	. . . .	. . . .	. . . .	. . . .
47	688	1,164	1,252	652	. . . .	. . . .	. . . .	. . . .
52	656	1,181	1,303	665	. . . .	. . . .	. . . .	. . . .
57	759	1,273	1,345	670	. . . .	. . . .	. . . .	. . . .
62	817	1,405	1,418	677	. . . .	. . . .	. . . .	. . . .
67	873	1,527	1,470	680	. . . .	. . . .	. . . .	. . . .
72	883	1,462	1,455	679	. . . .	. . . .	. . . .	. . . .
	12-Month Maximum							
17	404	534	345	. . . .	. . . .	. . . .	. . . .	. . . .
22	364	494	338	. . . .	. . . .	. . . .	. . . .	. . . .
27	376	498	338	. . . .	. . . .	. . . .	. . . .	. . . .
32	347	598	368	. . . .	. . . .	. . . .	. . . .	. . . .
37	348	542	352	. . . .	. . . .	. . . .	. . . .	. . . .
42	370	575	360	. . . .	. . . .	. . . .	. . . .	. . . .
47	436	610	367	. . . .	. . . .	. . . .	. . . .	. . . .
52	411	604	370	. . . .	. . . .	. . . .	. . . .	. . . .
57	460	635	374	. . . .	. . . .	. . . .	. . . .	. . . .
62	475	672	382	. . . .	. . . .	. . . .	. . . .	. . . .
67	492	709	388	. . . .	. . . .	. . . .	. . . .	. . . .
72	503	687	386	. . . .	. . . .	. . . .	. . . .	. . . .

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)									
	1.50	4	9	18	42	66	90	114	138	162
To Age 65 Maximum										
17	1,450	2,842	4,727	6,944	10,691	12,152	12,442	12,316	12,047	11,726
22	1,134	2,332	4,206	6,550	10,357	11,951	12,430	12,426	12,207	11,883
27	1,258	2,535	4,580	7,216	11,301	12,800	13,143	13,011	12,664	12,208
32	2,015	5,366	8,138	9,881	12,169	12,948	12,938	12,566	12,023	11,385
37	1,577	3,814	6,433	8,911	11,638	12,151	11,905	11,354	10,647	9,833
42	1,999	4,759	7,561	9,766	11,333	11,158	10,510	9,656	8,662	7,538
47	2,372	4,880	7,187	8,596	9,567	9,270	8,393	7,195	5,765	4,115
52	2,107	4,599	6,831	7,716	7,372	6,294	4,877	3,169	1,148	......
57	1,922	3,756	5,122	5,303	4,017	2,197	......	......	......	......
62	948	1,688	1,818	1,137	......	......	......	......	......	......
Lifetime Maximum										
17	1,453	2,850	4,742	6,970	10,743	12,225	12,533	12,425	12,178	11,881
22	1,139	2,344	4,231	6,597	10,454	12,089	12,605	12,638	12,461	12,185
27	1,273	2,570	4,653	7,350	11,572	13,173	13,604	13,558	13,306	12,958
32	2,073	5,532	8,408	10,243	12,723	13,660	13,794	13,569	13,189	12,741
37	1,654	4,021	6,819	9,512	12,623	13,408	13,407	13,115	12,700	12,229
42	2,195	5,262	8,428	11,006	13,130	13,346	13,080	12,651	12,154	11,625
47	2,842	5,919	8,847	10,817	12,773	13,270	13,142	12,732	12,193	11,593
52	2,816	6,269	9,533	11,162	11,877	11,753	11,379	10,885	10,326	9,732
57	3,340	6,783	9,727	10,954	11,148	10,768	10,252	9,675	9,066	8,439
62	3,609	7,395	9,890	10,420	10,048	9,474	8,856	8,215	7,560	6,895
67	3,682	7,550	9,433	9,454	8,794	8,110	7,427	6,745	6,066	5,392
72	3,342	6,493	8,384	8,405	7,684	6,941	6,196	5,451	4,709	3,971

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)								
	186	210	234	258	282	306	330	354	378
To Age 65 Maximum									
17	11,381	11,023	10,655	10,278	9,891	9,492	9,077	8,640	8,175
22	11,502	11,083	10,636	10,162	9,661	9,126	8,549	7,919	7,216
27	11,684	11,108	10,486	9,814	9,085	8,284	7,393	6,382	5,211
32	10,680	9,913	9,078	8,161	7,140	5,983	4,644	3,059	1,132
37	8,921	7,904	6,762	5,460	3,951	2,165	......	......	......
42	6,267	4,816	3,132	1,142	......	......	......	......	......
47	2,214	......	......	......	......	......	......	......	......
52	......	......	......	......	......	......	......	......	......
57	......	......	......	......	......	......	......	......	......
62	......	......	......	......	......	......	......	......	......
Lifetime Maximum									
17	11,566	11,245	10,923	10,603	10,288	9,980	9,681	9,395	9,124
22	11,860	11,510	11,147	10,777	10,405	10,034	9,666	9,303	8,947
27	12,561	12,138	11,700	11,254	10,803	10,350	9,897	9,445	8,996
32	12,261	11,765	11,262	10,755	10,246	9,735	9,224	8,712	8,200
37	11,730	11,214	10,690	10,160	9,629	9,096	8,563	8,031	7,501
42	11,079	10,524	9,965	9,403	8,842	8,281	7,723	7,170	6,622
47	10,963	10,318	9,664	9,006	8,345	7,683	7,021	6,358	5,697
52	9,117	8,489	7,855	7,217	6,577	5,937	5,298	4,663	4,033
57	7,801	7,158	6,514	5,871	5,232	4,603	3,989	3,402	2,865
62	6,225	5,553	4,880	4,208	3,541	2,884	2,250	1,673	1,234
67	4,725	4,070	3,436	2,838	2,313	1,895	1,069	......	......
72	3,244	2,536	1,871	1,287	......	......	......	......	......

TABLE 8Bf

1982 DISABILITY TABLE
FEMALE DISABLED LIFE RESERVES PER $100 MONTHLY INCOME
AT 3.00 PERCENT INTEREST
1-MONTH ELIMINATION PERIOD VALUES

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)							
	1.50	4	9	18	30	42	54	66
				60-Month Maximum				
17	279	927	2,545	3,125	2,642	1,756	682	. . . .
22	308	889	2,520	3,126	2,640	1,754	682	. . . .
27	373	910	2,214	2,912	2,575	1,741	681	. . . .
32	514	1,055	2,131	2,851	2,570	1,742	681	. . . .
37	590	1,103	2,116	2,887	2,602	1,752	682	. . . .
42	568	1,297	2,522	3,121	2,679	1,772	684	. . . .
47	663	1,440	2,680	3,237	2,719	1,780	685	. . . .
52	721	1,497	2,756	3,296	2,734	1,782	685	. . . .
57	873	1,623	2,804	3,291	2,720	1,776	684	. . . .
62	1,174	2,152	3,383	3,488	2,745	1,774	683	. . . .
67	1,327	2,381	3,592	3,539	2,733	1,763	681	. . . .
72	1,601	2,528	3,606	3,527	2,709	1,747	678	. . . .
				24-Month Maximum				
17	206	524	1,051	642	. . . .	. . . .	. . . .	. . . .
22	227	506	1,041	642	. . . .	. . . .	. . . .	. . . .
27	276	544	973	627	. . . .	. . . .	. . . .	. . . .
32	367	632	955	621	. . . .	. . . .	. . . .	. . . .
37	414	657	942	621	. . . .	. . . .	. . . .	. . . .
42	376	713	1,046	637	. . . .	. . . .	. . . .	. . . .
47	421	764	1,078	644	. . . .	. . . .	. . . .	. . . .
52	450	782	1,092	648	. . . .	. . . .	. . . .	. . . .
57	530	840	1,110	649	. . . .	. . . .	. . . .	. . . .
62	645	1,019	1,259	666	. . . .	. . . .	. . . .	. . . .
67	704	1,098	1,315	672	. . . .	. . . .	. . . .	. . . .
72	836	1,163	1,323	673	. . . .	. . . .	. . . .	. . . .
				12-Month Maximum				
17	170	330	335	. . . .	. . . .	. . . .	. . . .	. . . .
22	188	323	333	. . . .	. . . .	. . . .	. . . .	. . . .
27	225	354	327	. . . .	. . . .	. . . .	. . . .	. . . .
32	289	406	328	. . . .	. . . .	. . . .	. . . .	. . . .
37	322	423	326	. . . .	. . . .	. . . .	. . . .	. . . .
42	284	433	339	. . . .	. . . .	. . . .	. . . .	. . . .
47	310	454	342	. . . .	. . . .	. . . .	. . . .	. . . .
52	327	460	343	. . . .	. . . .	. . . .	. . . .	. . . .
57	376	487	346	. . . .	. . . .	. . . .	. . . .	. . . .
62	421	541	362	. . . .	. . . .	. . . .	. . . .	. . . .
67	445	564	368	. . . .	. . . .	. . . .	. . . .	. . . .
72	516	592	369	. . . .	. . . .	. . . .	. . . .	. . . .

TABLE 8Bf—Continued

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)									
	1.50	4	9	18	42	66	90	114	138	162
To Age 65 Maximum										
17	534	2,328	7,729	11,742	14,373	14,674	14,459	14,103	13,698	13,272
22	594	2,244	7,752	11,913	14,613	14,980	14,780	14,400	13,946	13,455
27	714	2,194	6,564	10,920	14,557	15,133	14,931	14,481	13,928	13,319
32	999	2,448	6,003	10,190	13,791	14,184	13,855	13,300	12,645	11,926
37	1,152	2,535	5,887	10,174	13,506	13,634	13,101	12,347	11,479	10,522
42	1,137	3,030	6,902	10,489	12,561	12,189	11,344	10,321	9,178	7,918
47	1,252	3,084	6,577	9,547	10,601	9,790	8,633	7,301	5,809	4,131
52	1,179	2,702	5,563	7,765	7,891	6,620	5,037	3,226	1,154	......
57	1,093	2,126	3,892	4,988	4,099	2,228	......	......	......	......
62	728	1,198	1,593	1,110	......	......				
Lifetime Maximum										
17	536	2,338	7,765	11,801	14,459	14,778	14,579	14,241	13,858	13,458
22	599	2,267	7,841	12,063	14,833	15,245	15,087	14,753	14,351	13,920
27	728	2,244	6,733	11,232	15,055	15,742	15,635	15,284	14,843	14,362
32	1,030	2,538	6,255	10,666	14,573	15,139	14,961	14,567	14,094	13,587
37	1,227	2,725	6,386	11,138	15,062	15,505	15,252	14,795	14,263	13,696
42	1,273	3,442	7,943	12,240	15,126	15,207	14,787	14,231	13,625	12,999
47	1,502	3,782	8,230	12,224	14,344	14,160	13,631	13,017	12,372	11,716
52	1,599	3,807	8,135	11,857	13,485	13,147	12,544	11,879	11,194	10,501
57	1,880	3,929	7,791	11,068	12,426	12,037	11,394	10,689	9,964	9,232
62	2,560	5,121	8,949	10,885	11,215	10,674	9,967	9,217	8,454	7,687
67	2,707	5,225	8,640	9,898	9,726	9,114	8,371	7,583	6,785	5,987
72	2,985	5,001	7,740	8,695	8,236	7,538	6,763	5,936	5,088	4,240

AGE	DURATION FROM DATE OF DISABLEMENT (MONTHS)								
	186	210	234	258	282	306	330	354	378
To Age 65 Maximum									
17	12,835	12,388	11,932	11,466	10,987	10,493	9,979	9,440	8,867
22	12,938	12,400	11,841	11,258	10,647	10,001	9,309	8,561	7,736
27	12,669	11,983	11,256	10,483	9,653	8,752	7,760	6,650	5,385
32	11,152	10,321	9,421	8,440	7,353	6,132	4,733	3,097	1,137
37	9,478	8,335	7,072	5,659	4,053	2,195	......	......	......
42	6,523	4,963	3,193	1,150	......	......			
47	2,217	......							
52	......								
57	......								
62	......								
Lifetime Maximum									
17	13,050	12,639	12,227	11,814	11,400	10,986	10,572	10,157	9,743
22	13,474	13,021	12,564	12,105	11,643	11,181	10,719	10,256	9,793
27	13,863	13,354	12,840	12,323	11,803	11,283	10,761	10,240	9,718
32	13,065	12,534	11,998	11,459	10,919	10,378	9,836	9,294	8,752
37	13,112	12,519	11,922	11,321	10,718	10,115	9,511	8,908	8,305
42	12,363	11,721	11,076	10,430	9,782	9,134	8,486	7,838	7,191
47	11,053	10,388	9,721	9,054	8,386	7,717	7,049	6,381	5,713
52	9,804	9,106	8,407	7,708	7,008	6,308	5,608	4,909	4,209
57	8,497	7,760	7,022	6,284	5,545	4,807	4,068	3,330	2,592
62	6,919	6,151	5,382	4,613	3,844	3,075	2,306	1,537	768
67	5,189	4,390	3,592	2,794	1,995	1,197	399	......	......
72	3,392	2,544	1,696	848	......	......			

APPENDIX

This Appendix provides reference details concerning the construction and calculation of values using the 1982 Disability Tables in their basic functional form. It also shows several of the basic tables in traditional continuance table form.

I. COMPUTATION OF VALUES

A three-element exponential graduation is employed, following the general methodology developed in the paper "Continuance Functions" in *TSA*, XI, 649. This general technique provides the most powerful, flexible, and at the same time concise method of operating with continuance data of which the author is aware. The two basic types of exponential functions developed in that paper have in this paper been combined into a single general function, by introducing a constant, y, indicating sign, which always takes on either the value $+1$ or -1. The value $y = +1$ is the equivalent of the lambda function, and $y = -1$ is the equivalent of the alpha function. The alpha notation is then used in the generalized formulas, and in the tables the function constants are always identified by the sequence $(\alpha, \alpha', a, b, y)$. The values r and p are not separately defined, being intrinsically incorporated in the above five function constants.

From any single element, continuance values are then obtained by the following formulas.

The elemental probability that an active life entering age x will become disabled during the year of age x and remain disabled for at least t months is given by

$$^{a}p'_x = \left(\frac{\alpha' - yt}{\alpha}\right)^{ya}_x \qquad [p'_x = 0 \text{ if } (\alpha' - yt) \leq 0] \,. \qquad (A1)$$

Then the total probability of continuance of disability to duration t, for a three-element function, is the sum

$$^{\sigma}p'_x = {}^{a_1}p'_x + {}^{a_2}p'_x + {}^{a_3}p'_x \,. \qquad (A1a)$$

The present value at date of disablement of a benefit paying an income of \$1 monthly during total disability following an elimination period of t months and to a maximum period of T months is given, for one element, by

$$^{a}S_x^{t/T} = \left\{\frac{\alpha}{a + y}\left[\left(\frac{\alpha' - yt}{\alpha}\right)^{y(a+v)} - \left(\frac{\alpha' - yt - yT}{\alpha}\right)^{y(a+v)}\right]\right\} \,, \qquad (A2)$$

in which, again, the terms in parentheses take on the value zero if the numerators are zero or negative.

Then the total annual claim cost, for a three-element function, is the sum

$$^aS_x^{t/T} = {}^{d_1}S_x^{t/T} + {}^{d_2}S_x^{t/T} + {}^{d_3}S_x^{t/T} . \tag{A2a}$$

Thus the value of $^aS_{37}^{1/60}$, from Table A1m of this Appendix, rounding values, is

$$
\frac{0.19442}{1.961-1}\left[\left(\frac{0.19442}{0.713+1}\right)^{1.961-1} - \left(\frac{0.19442}{0.713+61}\right)^{1.961-1}\right]
$$

$$
+ \frac{4.89194}{3.11307-1}\left[\left(\frac{4.89194}{36.54804+1}\right)^{3.11307-1} - \left(\frac{4.89194}{36.54804+61}\right)^{3.11307-1}\right]
$$

$$
+ \frac{32,904.63}{1.83675+1}\left[\left(\frac{702-1}{32,904.63}\right)^{1.83675+1} - \left(\frac{702-61}{32,904.63}\right)^{1.83675+1}\right]
$$

$$
= 0.02420 + 0.02706 + 0.04713 ,
$$

or $0.09839 per $1 monthly.

The disabled life reserve, representing the present value at duration t, per each $1 of monthly benefit, of future benefits to be expected under a continuing claim with a benefit period expiring as of duration T (from the date of disablement) is given for a three-element function by

$$
\frac{^aS_x^{t/(T-t)}}{^ap_x^t} = \frac{^{d_1}S_x^{t/(T-t)} + {}^{d_2}S_x^{t/(T-t)} + {}^{d_3}S_x^{t/(T-t)}}{^{d_1}p_x^t + {}^{d_2}p_x^t + {}^{d_3}p_x^t} . \tag{A3}
$$

Note that this formula as stated does not take into account the elimination period or maximum period directly; t is the duration since date of disablement, as of the date of valuation, and T is the date of expiration of the benefit period as measured from the date of disablement.

For two of the three elements, an additional constant, b, is introduced, to provide the adjustment in the basic function required to fit the continuance to various elimination periods. The necessity for this is described in the paper.

The basic function in each case is constructed to fit the continuance for a 1-month accident and sickness elimination period, and the constant b is then employed to alter the exponent to fit any other elimination period. The constant b is always a positive fraction equal to or less than 1.

The constant b is then used to alter the exponent a to an ^{e}a for any desired elimination period:

$$^{e}a = a^{1+b(e - 1)} \text{ for } e < 2 , \tag{A4}$$

$$^{e}a = a^{1 + b} \qquad \text{for } e \geq 2 ,$$

where e is the elimination period in months.

Adjustment of the exponent a for elimination period precedes adjustment for interest discount. Also, if the accident and sickness elimination periods differ, separate adjustment and discounting must be carried out for the accident and sickness components.

Thus the 1982 Disability Tables are actually an entire array of continuance tables, varying for all elimination periods from zero up to 2 months. The introduction of the constant b into the functions greatly expands their flexibility and generality and makes it practical to value claim costs and disabled life reserves when the basic continuance itself varies by elimination period.

It also becomes possible to allow for variation in the ratio of accident to all-cause disability. This is done by assigning to each of the three functional elements, within each age, a different accident factor which expresses the ratio of accident to all-cause disability for that element alone. The "sickness factor" is the complement, for that element, of each accident factor.

Thus, representing the accident factor by f, formula (A2a) in the preceding discussion becomes, for an accident-only benefit,

$$\text{Acc. } ^{n}S_{x}^{t/T} = {}^{d_1}S_{x}^{t/T}f_1 + {}^{d_2}S_{x}^{t/T}f_2 + {}^{d_3}S_{x}^{t/T}f_3 . \tag{A5a}$$

The corresponding formula to value a sickness-only benefit is

$$\text{Sick. } ^{n}S_{x}^{t/T} = {}^{d_1}S_{x}^{t/T}(1 - f_1) + {}^{d_2}S_{x}^{t/T}(1 - f_2) + {}^{d_3}S_{x}^{t/T}(1 - f_3) . \tag{A5b}$$

II. CONSTRUCTION OF THE FUNCTIONAL TABLES

These 1982 functional tables were constructed by a computer technique of successive trial-and-error solution, in which progressively more accurate trial constants were tested against selected values of p' and/or $S^{t/T}$, until what was deemed a satisfactory overall pattern of fit was achieved.

Under this process, each element was solved for in turn, in reverse order. The third function was first fitted to the long-term continuance, in general beyond about seven years of disablement. This function was in-

variably required to be a lambda function ($y = +1$), and α' was always set so that the function vanishes at age 96. Hence 96 is the limiting age for both sexes and for every age at disablement, and termination rates always increase under this element.

Next, the second function was solved for against the residue continuance after subtracting out all values produced by the third function alone. This was fitted, in general, to the residue continuance over about years 3–7 of disablement. Finally the first function was then fitted to the remaining residue continuance, its range falling almost entirely within the first two years of disablement.

No limitations were placed on the first two functions, as to type or limiting age. Interestingly, every one of these solved out as an alpha ($y = -1$) function, except for females at ages 67 and 72, where function 2 ended up as lambda, or $y = +1$.

III. INTEREST DISCOUNT

To obtain interest-discounted modifications of Tables A1, modified values of α and a, $^{(i)}\alpha$ and $^{(i)}a$, are obtained by solving the following equations at durations u and v, holding α' constant:

$$^{(i)}p_x^u = \left(\frac{\alpha' - uy}{^{(i)}\alpha}\right)^{v^{(i)}a} = \left(\frac{1}{1+i}\right)^{u/12}\left(\frac{\alpha' - uy}{\alpha}\right)^{va} ; \qquad \text{(A6)}$$

$$^{(i)}p_x^v = \left(\frac{\alpha' - vy}{^{(i)}\alpha}\right)^{v^{(i)}a} = \left(\frac{1}{1+i}\right)^{v/12}\left(\frac{\alpha' - vy}{\alpha}\right)^{va} . \qquad \text{(A7)}$$

These modified parameters are then substituted for their corresponding zero-interest parameters in formulas (A2), (A2a), or (A3).

The values used for (u) and (v) (in months), in each of the three functions, are as follows:

Function	Male		Female	
	u	v	u	v
1	1	12	0.233	1.000
2	24	60	24.000	60.000
3	24	120	24.000	120.000

All values in the paper involving interest discount were obtained following these specifications and are, of course, approximate rather than exact values.

IV. APPENDIX TABLES

The following tables are included in this Appendix:

The latter two tables are shown only to thirty-two months of disablement.

1982 DISABILITY TABLE—MALES
(Units in Months)

Age	Func-tion*	α	α'	a	b	y	Accident Factor
17	1	0.14349	1.29800	1.74000	0.520	− 1	0.59
	2	259.54004	347.75215	22.69094	0.040	− 1	0.44
	3	8,466.01237	942.00000	3.47918	0.000	+ 1	0.40
22	1	0.26056	1.58100	1.92000	0.530	− 1	0.55
	2	13.75961	58.38417	4.41144	0.030	− 1	0.40
	3	12,832.80353	882.00000	2.87178	0.000	+ 1	0.36
27	1	0.30864	1.82200	2.02000	0.575	− 1	0.52
	2	6.84937	40.45660	3.51016	0.020	− 1	0.36
	3	26,524.37743	822.00000	2.19166	0.000	+ 1	0.33
32	1	0.47245	1.31800	2.84000	0.490	− 1	0.51
	2	91.89507	188.61256	9.27287	0.020	− 1	0.38
	3	26,831.61730	762.00000	1.98542	0.000	+ 1	0.34
37	1	0.19442	0.71300	1.96100	0.520	− 1	0.43
	2	4.89194	36.54804	3.11307	0.170	− 1	0.31
	3	32,904.63285	702.00000	1.83675	0.000	+ 1	0.27
42	1	0.34309	0.96300	2.37500	0.505	− 1	0.39
	2	1.13139	17.49272	2.13255	0.060	− 1	0.25
	3	27,207.03729	642.00000	1.72593	0.000	+ 1	0.21
47	1	0.28384	1.16800	1.99200	0.495	− 1	0.31
	2	79.53760	176.33128	7.65734	0.050	− 1	0.15
	3	52,771.95777	582.00000	1.34647	0.000	+ 1	0.12
52	1	0.26582	0.91800	1.84900	0.490	− 1	0.24
	2	86.30188	240.71847	6.52009	0.020	− 1	0.11
	3	18,490.13450	522.00000	1.57022	0.000	+ 1	0.08
57	1	0.39090	1.21700	1.93500	0.450	− 1	0.16
	2	24.97694	160.20575	3.50842	0.015	− 1	0.10
	3	9,719.44449	462.00000	1.61521	0.000	+ 1	0.08
62	1	0.98096	1.96000	2.71500	0.290	− 1	0.13
	2	226.36093	502.20332	8.12895	0.010	− 1	0.08
	3	5,139.85443	402.00000	1.67879	0.000	+ 1	0.07
67	1	2.98608	4.32637	4.84600	0.100	− 1	0.12
	2	139.05724	810.94761	4.37737	0.000	− 1	0.08
	3	2,906.74658	342.00000	1.78302	0.000	+ 1	0.06
72	1	5.52057	7.39133	6.27200	0.070	− 1	0.10
	2	3,364.76271	4,125.42460	33.01936	0.000	− 1	0.08
	3	2,513.05065	282.00000	1.63496	0.000	+ 1	0.06

NOTE.—Basic elimination period: 1.000 month; elimination limit: 2.000 months.

* Function 1: $u = 1.000$, $v = 12.000$; function 2: $u = 24.000$, $v = 60.000$; function 3: $u = 24.000$, $v = 120.000$.

1982 DISABILITY TABLE—FEMALES
(Units in Months)

Age	Function*	α	α'	a	b	y	Accident Factor
17	1	2.10448	3.71000	4.96000	0.1310	−1	0.400
	2	13.79191	57.71874	5.43966	0.0481	−1	0.340
	3	20,905.00000	942.00000	2.64758	0.0000	+1	0.300
22	1	4.60695	7.04000	6.96000	0.1360	−1	0.360
	2	3.00124	29.16052	3.20071	0.0481	−1	0.300
	3	34,850.00000	882.00000	2.16070	0.0000	+1	0.270
27	1	4.64096	7.32000	6.39000	0.1570	−1	0.330
	2	3.60326	26.44261	3.21970	0.0573	−1	0.260
	3	65,820.00000	822.00000	1.72984	0.0000	+1	0.240
32	1	4.03123	7.00000	5.40000	0.1670	−1	0.300
	2	2.89302	18.98305	2.93492	0.0664	−1	0.190
	3	45,918.91935	762.00000	1.70179	0.0000	+1	0.170
37	1	3.45676	6.50000	4.66000	0.1920	−1	0.240
	2	1.41875	11.24148	2.37251	0.0664	−1	0.150
	3	83,698.87724	702.00000	1.37991	0.0000	+1	0.130
42	1	4.72027	7.00000	6.39000	0.1900	−1	0.210
	2	1.77361	11.32334	2.55970	0.0619	−1	0.140
	3	86,460.00000	642.00000	1.28373	0.0000	+1	0.120
47	1	4.20543	6.50000	5.85000	0.2130	−1	0.230
	2	2.02425	10.74438	2.69472	0.0619	−1	0.150
	3	51,244.49237	582.00000	1.32800	0.0000	+1	0.130
52	1	2.46246	4.56000	3.80000	0.1860	−1	0.220
	2	4.23966	20.08729	3.30396	0.0709	−1	0.150
	3	36,766.00000	522.00000	1.32128	0.0000	+1	0.130
57	1	2.39606	4.90000	3.30000	0.1490	−1	0.220
	2	9.73930	38.69416	4.07486	0.0619	−1	0.140
	3	26,630.00000	462.00000	1.29113	0.0000	+1	0.120
62	1	4.85211	8.06000	4.89000	0.1270	−1	0.210
	2	169.73355	247.18651	15.63549	0.0196	−1	0.140
	3	15,084.00000	402.00000	1.31411	0.0000	+1	0.110
67	1	6.34478	9.69000	5.58000	0.1070	−1	0.190
	2	463.26192	150.14886	5.54801	0.0148	+1	0.130
	3	8,888.00000	342.00000	1.34832	0.0000	+1	0.090
72	1	12.16424	16.96000	7.61000	0.0690	−1	0.180
	2	953.85412	126.94285	3.12518	0.0099	+1	0.120
	3	6,238.00000	282.00000	1.32151	0.0000	+1	0.090

NOTE.—Basic elimination period: 1.000 month; elimination limit: 2.000 months.

* Function 1: $u = 0.233$, $v = 1.000$; function 2: $u = 24,000$, $v = 60.000$; function 3: $u = 24,000$, $v = 120.000$.

TABLE A2m—1982 DISABILITY TABLE—MALES
NUMBER DISABLED PER 1,000,000 LIVES EXPOSED AT EACH AGE
(Elimination Period = .233 Month [7 Days])

DURATION (MONTHS)	AGE AT DISABLEMENT											
	17	22	27	32	37	42	47	52	57	62	67	72
1	9,725	14,280	13,736	12,979	16,630	20,017	21,886	30,781	43,514	65,187	82,893	101,357
2	5,903	8,451	8,348	5,942	8,158	9,830	12,552	16,767	25,589	37,867	48,534	64,542
3	4,250	5,887	5,893	3,808	5,417	6,613	9,014	11,718	18,629	27,438	35,032	47,593
4	3,358	4,508	4,547	2,920	4,154	5,168	7,276	9,306	15,189	22,536	28,949	39,131
5	2,806	3,665	3,714	2,469	3,445	4,371	6,275	7,950	13,223	19,893	25,895	34,598
6	2,432	3,101	3,152	2,204	2,993	3,866	5,633	7,102	11,984	18,318	24,217	32,010
7	2,160	2,700	2,749	2,031	2,678	3,516	5,188	6,530	11,144	17,305	23,218	30,440
8	1,952	2,399	2,445	1,907	2,444	3,256	4,859	6,121	10,543	16,610	22,577	29,427
9	1,788	2,164	2,208	1,812	2,262	3,053	4,605	5,814	10,093	16,109	22,135	28,733
10	1,653	1,976	2,017	1,736	2,116	2,890	4,401	5,576	9,744	15,730	21,811	28,229
11	1,540	1,821	1,860	1,672	1,994	2,754	4,232	5,385	9,465	15,432	21,557	27,840
12	1,444	1,691	1,728	1,617	1,891	2,640	4,089	5,228	9,235	15,189	21,347	27,525
13	1,360	1,580	1,615	1,568	1,802	2,541	3,964	5,096	9,042	14,986	21,167	27,256
14	1,287	1,485	1,518	1,525	1,725	2,455	3,855	4,983	8,877	14,811	21,006	27,019
15	1,222	1,401	1,433	1,485	1,656	2,379	3,757	4,884	8,733	14,657	20,858	26,802
16	1,164	1,327	1,358	1,448	1,595	2,311	3,669	4,797	8,606	14,519	20,720	26,601
17	1,111	1,261	1,291	1,414	1,541	2,251	3,588	4,719	8,492	14,393	20,588	26,409
18	1,064	1,202	1,232	1,383	1,491	2,196	3,514	4,649	8,389	14,277	20,462	26,225
19	1,021	1,148	1,178	1,353	1,446	2,147	3,446	4,584	8,295	14,168	20,338	26,047
20	981	1,100	1,130	1,325	1,405	2,102	3,382	4,525	8,207	14,065	20,218	25,872
21	944	1,056	1,086	1,299	1,368	2,061	3,323	4,470	8,126	13,968	20,100	25,701
22	911	1,016	1,046	1,274	1,333	2,023	3,267	4,419	8,050	13,874	19,983	25,531
23	880	979	1,009	1,251	1,301	1,987	3,215	4,371	7,979	13,784	19,868	25,364
24	851	945	976	1,228	1,272	1,955	3,165	4,325	7,911	13,696	19,753	25,199
25	824	914	945	1,207	1,244	1,925	3,118	4,283	7,847	13,611	19,640	25,035
26	799	885	916	1,187	1,219	1,896	3,074	4,242	7,785	13,528	19,528	24,871
27	776	858	889	1,167	1,195	1,870	3,032	4,203	7,726	13,447	19,416	24,709
28	754	833	865	1,149	1,172	1,845	2,992	4,166	7,669	13,368	19,305	24,548
29	734	809	842	1,131	1,151	1,822	2,953	4,130	7,614	13,290	19,194	24,387
30	715	788	820	1,115	1,132	1,800	2,917	4,095	7,561	13,213	19,084	24,228
31	697	767	800	1,098	1,113	1,779	2,882	4,062	7,509	13,137	18,975	24,068
32	681	748	782	1,083	1,096	1,760	2,848	4,030	7,459	13,063	18,865	23,910

DURATION (YEARS)	17	22	27	32	37	42	47	52	57	62	67	72
					AGE AT DISABLEMENT							
3	623	682	718	1,027	1,035	1,691	2,726	3,912	7,271	12,772	18,432	23,281
4	509	552	593	904	909	1,541	2,451	3,619	6,785	11,958	17,165	21,440
5	444	477	521	821	830	1,439	2,260	3,383	6,367	11,200	15,939	19,665
6	402	427	474	762	773	1,359	2,116	3,182	5,990	10,483	14,755	17,955
7	372	391	439	716	728	1,291	2,001	3,004	5,641	9,800	13,613	16,309
8	348	363	412	678	691	1,231	1,905	2,842	5,315	9,147	12,512	14,729
9	327	340	390	646	658	1,176	1,820	2,692	5,006	8,520	11,452	13,215
10	309	321	370	618	628	1,125	1,743	2,551	4,711	7,919	10,435	11,769
11	292	303	353	592	601	1,076	1,672	2,418	4,428	7,342	9,460	10,391
12	276	287	337	567	575	1,029	1,605	2,292	4,157	6,786	8,529	9,083
13	262	272	322	544	550	984	1,541	2,170	3,895	6,252	7,640	7,847
14	248	258	308	522	527	940	1,479	2,053	3,643	5,739	6,796	6,684
15	234	245	295	500	504	898	1,419	1,939	3,399	5,246	5,996	5,598
16	221	232	282	479	482	857	1,360	1,829	3,163	4,774	5,241	4,590
17	209	220	270	459	461	817	1,302	1,723	2,935	4,321	4,533	3,665
18	197	209	258	439	440	778	1,246	1,619	2,715	3,887	3,871	2,826
19	186	198	246	420	420	740	1,190	1,519	2,502	3,474	3,256	2,078
20	175	187	235	401	400	703	1,135	1,421	2,297	3,080	2,690	1,428
21	165	177	224	383	381	666	1,082	1,326	2,099	2,707	2,174	886
22	155	167	214	365	362	631	1,029	1,234	1,908	2,354	1,708	465
23	146	158	204	348	344	597	976	1,144	1,725	2,022	1,295	192
24	137	149	194	331	326	563	925	1,057	1,549	1,711	937	....
25	128	141	184	315	309	530	874	973	1,381	1,421	636	....
26	120	132	175	299	292	499	824	891	1,221	1,155	394	....
27	112	124	166	283	276	468	775	813	1,069	911	218	....
28	105	117	157	268	260	438	727	736	925	692	114	....
29	98	110	149	253	244	408	680	663	789	498	....	....
30	91	103	141	239	229	380	633	593	661	332	....	....
31	85	96	133	225	215	353	587	525	543	195	....	....
32	79	90	125	211	200	326	543	461	434	91	....	....
33	73	84	118	198	187	300	499	400	335	26	....	....
34	68	78	111	185	174	276	456	342	246	....	....	....
35	63	72	104	173	161	252	414	287	169	....	....	....

DURATION (YEARS)	AGE AT DISABLEMENT											
	17	22	27	32	37	42	47	52	57	62	67	72
36	58	67	97	161	148	229	373	236	104			
37	53	62	91	150	137	207	334	189	54			
38	49	57	84	139	125	186	295	146	21			
39	45	53	79	128	114	166	258	107				
40	41	49	73	118	104	147	222	73				
41	38	45	67	108	94	129	188	43				
42	34	41	62	99	84	112	155	20				
43	31	37	57	90	75	96	124	5				
44	28	34	52	82	66	81	95					
45	25	31	48	73	58	67	67					
46	23	28	43	66	51	54	43					
47	21	25	39	58	43	43	22					
48	18	22	35	52	37	32	5					
49	16	20	32	45	31	23						
50	15	18	28	39	25	16						
51	13	16	25	34	20	9						
52	11	14	22	29	15	5						
53	10	12	19	24	11	2						
54	9	10	17	20	8							
55	8	9	14	16	5							
56	7	8	12	12	3							
57	6	7	10	9	1							
58	5	6	8	7	0							
59	4	5	7	4								
60	4	4	5	3								
61	3	3	4	1								
62	2	2	3	1								
63	2	2	2	0								
64	2	2	1									
65	1	1	1									
66	1	1	1									

TABLE A2f—1982 DISABILITY TABLE—FEMALES
NUMBER DISABLED PER 1,000,000 LIVES EXPOSED AT EACH AGE
(Elimination Period = 1 Month)

DURATION (MONTHS)	AGE AT DISABLEMENT											
	17	22	27	32	37	42	47	52	57	62	67	72
1	19,042	21,712	25,948	29,073	34,445	43,191	45,265	53,882	59,689	58,327	68,605	69,962
2	7,694	10,083	13,415	16,988	21,459	23,755	25,930	32,036	38,736	39,230	47,108	52,422
3	3,764	5,276	7,718	10,932	14,554	14,853	16,833	21,378	27,461	28,564	34,851	41,252
4	2,154	3,091	4,897	7,633	10,574	10,329	12,070	15,584	20,857	22,256	27,526	33,960
5	1,405	2,015	3,392	5,704	8,121	7,812	9,341	12,158	16,724	18,337	22,963	29,090
6	1,019	1,445	2,534	4,504	6,522	6,296	7,654	9,991	13,994	15,796	20,014	25,763
7	803	1,124	2,016	3,716	5,431	5,319	6,542	8,542	12,110	14,083	18,042	23,442
8	672	931	1,683	3,172	4,655	4,650	5,768	7,528	10,761	12,887	16,681	21,787
9	588	808	1,460	2,782	4,084	4,169	5,206	6,791	9,762	12,023	15,713	20,582
10	531	726	1,302	2,491	3,652	3,809	4,782	6,237	9,003	11,382	15,003	19,686
11	490	668	1,185	2,268	3,316	3,529	4,453	5,810	8,411	10,890	14,469	19,004
12	459	625	1,097	2,091	3,050	3,307	4,191	5,472	7,941	10,505	14,055	18,473
13	435	592	1,026	1,949	2,834	3,126	3,978	5,200	7,560	10,194	13,725	18,051
14	415	565	969	1,831	2,657	2,976	3,802	4,976	7,246	9,939	13,456	17,706
15	399	543	922	1,733	2,510	2,849	3,654	4,790	6,984	9,724	13,231	17,419
16	386	525	882	1,649	2,385	2,741	3,528	4,633	6,762	9,540	13,038	17,173
17	374	509	847	1,578	2,279	2,647	3,420	4,499	6,572	9,380	12,870	16,960
18	363	495	817	1,515	2,566	2,566	3,326	4,384	6,408	9,239	12,720	16,770
19	354	483	790	1,461	2,108	2,494	3,244	4,283	6,264	9,113	12,585	16,599
20	346	472	767	1,412	2,038	2,431	3,172	4,194	6,137	8,999	12,461	16,441
21	339	462	746	1,369	1,976	2,375	3,108	4,116	6,025	8,895	12,346	16,295
22	332	453	726	1,331	1,922	2,324	3,051	4,046	5,924	8,799	12,238	16,157
23	326	445	709	1,296	1,873	2,279	2,999	3,984	5,833	8,710	12,136	16,026
24	320	437	693	1,265	1,829	2,238	2,953	3,927	5,751	8,627	12,039	15,900
25	315	430	679	1,237	1,789	2,200	2,911	3,876	5,676	8,550	11,947	15,780
26	310	423	666	1,211	1,753	2,166	2,872	3,829	5,607	8,476	11,857	15,662
27	306	417	653	1,187	1,721	2,135	2,837	3,786	5,544	8,407	11,711	15,548
28	302	412	642	1,166	1,691	2,106	2,805	3,747	5,486	8,341	11,687	15,437
29	298	406	631	1,146	1,664	2,080	2,775	3,710	5,431	8,278	11,606	15,328
30	294	401	622	1,127	1,638	2,055	2,747	3,677	5,381	8,217	11,527	15,220
31	291	397	613	1,110	1,615	2,033	2,721	3,645	5,333	8,160	11,450	15,114
32	287	392	604	1,094	1,594	2,012	2,697	3,615	5,288	8,104	11,374	15,010

DURATION (YEARS)	AGE AT DISABLEMENT											
	17	22	27	32	37	42	47	52	57	62	67	72
3	276	377	575	1,040	1,521	1,940	2,615	3,514	5,133	7,900	11,086	14,606
4	253	345	518	936	1,382	1,797	2,447	3,298	4,797	7,403	10,321	13,472
5	238	324	483	874	1,299	1,707	2,332	3,144	4,551	6,998	9,653	12,426
6	226	308	459	830	1,239	1,638	2,240	3,015	4,343	6,638	9,047	11,499
7	216	295	439	794	1,190	1,580	2,157	2,897	4,152	6,302	8,481	10,530
8	207	283	423	764	1,148	1,528	2,081	2,785	3,972	5,980	7,941	9,660
9	199	272	408	736	1,110	1,479	2,008	2,677	3,798	5,668	7,418	8,830
10	191	262	394	710	1,075	1,433	1,937	2,572	3,628	5,362	6,909	8,030
11	184	253	382	685	1,041	1,388	1,868	2,469	3,461	5,062	6,410	7,253
12	176	244	369	662	1,008	1,344	1,801	2,368	3,298	4,768	5,921	6,496
13	169	235	357	639	976	1,301	1,734	2,268	3,137	4,478	5,442	5,761
14	162	226	346	617	945	1,259	1,669	2,170	2,978	4,192	4,974	5,047
15	156	218	335	595	915	1,217	1,604	2,073	2,821	3,912	4,517	4,357
16	149	210	323	574	885	1,176	1,541	1,977	2,667	3,636	4,072	3,693
17	143	202	313	553	856	1,135	1,477	1,882	2,514	3,366	3,639	3,057
18	137	194	302	533	827	1,095	1,415	1,789	2,364	3,100	3,219	2,451
19	131	187	292	513	798	1,055	1,354	1,696	2,216	2,840	2,813	1,880
20	125	179	281	493	770	1,016	1,293	1,605	2,070	2,585	2,421	1,349
21	120	172	271	474	743	977	1,233	1,516	1,927	2,337	2,045	865
22	114	165	261	455	715	938	1,173	1,427	1,786	2,094	1,686	440
23	109	158	252	436	688	900	1,115	1,340	1,647	1,858	1,346	103
24	104	151	242	418	661	862	1,057	1,254	1,511	1,629	1,027	....
25	99	145	233	400	635	825	1,000	1,170	1,378	1,403	732	....
26	94	138	224	382	609	788	944	1,087	1,248	1,194	465	....
27	89	132	215	365	583	751	889	1,006	1,120	989	233	....
28	85	126	206	348	557	715	834	926	996	794	53	....
29	80	120	197	332	532	679	781	848	875	610	....	....
30	76	114	188	315	507	644	728	772	758	439	....	....
31	72	109	180	300	483	609	676	697	645	282	....	....
32	68	103	172	284	459	574	625	624	536	144	....	....
33	64	98	164	269	435	540	575	554	432	34	....	....
34	61	93	156	254	412	507	527	485	334	....	....	....
35	57	88	148	240	389	473	479	419	241	....	....	....

TABLE A2f—*Continued*

DURATION (YEARS)	AGE AT DISABLEMENT											
	17	22	27	32	37	42	47	52	57	62	67	72
36	54	83	140	225	366	441	432	355	156			
37	50	78	133	212	344	409	387	294	81			
38	47	74	126	198	322	377	343	236	20			
39	44	69	119	185	300	346	300	181				
40	41	65	112	172	279	316	259	130				
41	39	61	105	160	259	286	220	83				
42	36	57	99	148	239	257	182	42				
43	33	53	92	137	219	229	146	10				
44	31	49	86	126	200	201	112					
45	29	46	80	115	181	175	80					
46	26	42	74	104	163	149	51					
47	24	39	69	95	145	124	26					
48	22	36	63	85	128	100	6					
49	20	33	58	76	112	77						
50	19	30	53	67	96	56						
51	17	28	48	59	81	37						
52	15	25	43	51	66	19						
53	14	23	39	44	53	5						
54	13	20	35	37	40							
55	11	18	31	31	28							
56	10	16	27	25	18							
57	9	14	23	19	9							
58	8	12	20	15	2							
59	7	11	17	10								
60	6	9	14	7								
61	5	8	11	4								
62	4	6	9	2								
63	4	5	7	0								
64	3	4	5									
65	3	3	3									
66	2	3	2									

TABLE A3m—1982 Disability Table—Males
Number Disabled per 1,000,000 Lives Exposed at Each Age
(Elimination Period = .233 Month [7 Days])

Duration (Days)	17	22	27	32	37	42	47	52	57	62	67	72
0	49,190	72,842	74,760	142,154	147,936	178,308	120,140	167,402	182,724	237,622	226,007	219,599
1	47,575	70,710	72,844	135,615	138,487	168,565	115,310	159,128	175,634	229,626	219,405	214,785
2	46,055	68,684	71,011	129,529	130,035	159,663	110,807	151,539	169,009	222,042	213,065	210,114
3	44,620	66,757	69,257	123,857	122,440	151,505	106,601	144,559	162,806	214,845	206,974	205,580
4	43,265	64,922	67,576	118,561	115,584	144,008	102,666	138,121	156,990	208,007	201,121	201,178
5	41,983	63,172	65,965	113,608	109,369	137,100	98,978	132,167	151,527	201,507	195,496	196,905
6	40,769	61,503	64,419	108,969	103,716	130,721	95,516	126,648	146,389	195,321	190,086	192,756
7	39,618	59,910	62,935	104,618	98,555	124,816	92,262	121,520	141,549	189,432	184,883	188,726
8	38,525	58,386	61,510	100,531	93,828	119,338	89,197	116,747	136,983	183,819	179,878	184,813
9	37,486	56,930	60,139	96,688	89,485	114,245	86,307	112,293	132,670	178,467	175,061	181,011
10	36,498	55,535	58,821	93,068	85,485	109,502	83,578	108,130	128,592	173,360	170,424	177,318
11	35,556	54,199	57,552	89,656	81,790	105,076	80,999	104,232	124,730	168,483	165,960	173,730
12	34,659	52,918	56,330	86,435	78,369	100,939	78,557	100,575	121,070	163,823	161,660	170,243
13	33,802	51,689	55,152	83,391	75,194	97,065	76,243	97,140	117,596	159,366	157,517	166,854
14	32,984	50,510	54,016	80,512	72,241	93,433	74,048	93,908	114,295	155,103	153,525	163,560
15	32,202	49,376	52,921	77,785	69,489	90,021	71,963	90,862	111,157	151,021	149,677	160,358
16	31,454	48,287	51,864	75,200	66,918	86,812	69,981	87,987	108,170	147,111	145,967	157,245
17	30,737	47,239	50,843	72,747	64,513	83,790	68,094	85,271	105,323	143,363	142,390	154,218
18	30,050	46,230	49,857	70,418	62,260	80,939	66,297	82,701	102,609	139,769	138,939	151,275
19	29,392	45,258	48,903	68,204	60,144	78,248	64,584	80,267	100,018	136,320	135,609	148,412
20	28,760	44,322	47,981	66,097	58,154	75,703	62,949	77,958	97,543	133,009	132,395	145,628
21	28,152	43,420	47,089	64,091	56,281	73,295	61,387	75,766	95,176	129,829	129,293	142,919
22	27,569	42,549	46,226	62,179	54,514	71,012	59,894	73,683	92,912	126,772	126,298	140,284
23	27,008	41,708	45,390	60,356	52,846	68,847	58,466	71,701	90,744	123,834	123,405	137,720
24	26,468	40,897	44,580	58,616	51,268	66,792	57,098	69,813	88,667	121,007	120,611	135,225
25	25,948	40,113	43,795	56,954	49,774	64,838	55,788	68,013	86,675	118,286	117,911	132,796
26	25,447	39,355	43,034	55,365	48,359	62,978	54,532	66,296	84,763	115,666	115,302	130,432
27	24,963	38,622	42,296	53,845	47,015	61,208	53,327	64,656	82,927	113,142	112,780	128,132
28	24,497	37,913	41,580	52,390	45,739	59,521	52,169	63,089	81,164	110,710	110,341	125,891
29	24,048	37,226	40,885	50,997	44,525	57,911	51,057	61,590	79,468	108,365	107,983	123,710

DURATION (MONTHS)	17	22	27	32	37	42	47	52	57	62	67	72
					AGE AT DISABLEMENT							
1	23,613	36,561	40,210	49,662	43,370	56,374	49,988	60,154	77,837	106,104	105,702	121,587
2	15,218	23,361	26,407	26,062	23,998	30,054	30,330	34,813	47,666	63,531	62,052	77,658
3	11,200	16,823	19,258	16,563	16,519	19,767	21,701	24,332	34,352	44,818	43,323	56,135
4	8,878	13,007	14,975	11,774	12,669	14,548	17,010	18,816	27,134	35,024	34,244	44,790
5	7,373	10,538	12,158	9,006	10,344	11,474	14,113	15,485	22,709	29,277	29,408	38,425
6	6,320	8,823	10,180	7,250	8,791	9,477	12,163	13,285	19,761	25,621	26,628	34,653
7	5,540	7,568	8,723	6,058	7,678	8,088	10,767	11,736	17,678	23,146	24,921	32,301
8	4,938	6,613	7,610	5,207	6,838	7,072	9,720	10,594	16,138	21,390	23,811	30,762
9	4,457	5,863	6,733	4,573	6,179	6,299	8,905	9,720	14,958	20,092	23,049	29,708
10	4,064	5,260	6,027	4,086	5,647	5,694	8,252	9,030	14,028	19,103	22,501	28,952
11	3,735	4,764	5,446	3,702	5,206	5,207	7,715	8,473	13,277	18,326	22,087	28,384
12	3,455	4,350	4,962	3,391	4,835	4,808	7,266	8,014	12,658	17,702	21,761	27,939
13	3,213	3,999	4,552	3,134	4,517	4,476	6,883	7,628	12,140	17,189	21,494	27,576
14	3,002	3,698	4,200	2,919	4,240	4,194	6,552	7,300	11,699	16,760	21,268	27,268
15	2,817	3,437	3,896	2,737	3,998	3,954	6,262	7,018	11,319	16,395	21,070	26,999
16	2,651	3,209	3,631	2,580	3,783	3,745	6,006	6,771	10,988	16,079	20,893	26,757
17	2,503	3,007	3,398	2,443	3,592	3,564	5,777	6,552	10,696	15,803	20,731	26,535
18	2,370	2,828	3,191	2,322	3,420	3,404	5,571	6,360	10,437	15,558	20,580	26,327
19	2,249	2,669	3,007	2,216	3,264	3,262	5,384	6,187	10,204	15,338	20,438	26,129
20	2,138	2,525	2,842	2,121	3,123	3,136	5,214	6,031	9,994	15,139	20,302	25,940
21	2,037	2,396	2,693	2,035	2,994	3,022	5,058	5,889	9,804	14,957	20,171	25,757
22	1,945	2,278	2,559	1,957	2,876	2,920	4,915	5,759	9,629	14,789	20,044	25,578
23	1,859	2,171	2,437	1,887	2,767	2,827	4,782	5,640	9,469	14,633	19,920	25,403
24	1,781	2,073	2,325	1,823	2,667	2,743	4,658	5,530	9,320	14,488	19,799	25,232
25	1,708	1,984	2,224	1,764	2,574	2,666	4,543	5,428	9,182	14,351	19,680	25,062
26	1,640	1,901	2,130	1,709	2,488	2,595	4,436	5,333	9,054	14,221	19,562	24,895
27	1,577	1,825	2,044	1,659	2,408	2,530	4,335	5,245	8,933	14,099	19,446	24,729
28	1,518	1,754	1,965	1,612	2,333	2,470	4,240	5,162	8,820	13,981	19,331	24,565
29	1,463	1,689	1,891	1,569	2,263	2,414	4,151	5,084	8,713	13,869	19,218	24,402
30	1,412	1,628	1,823	1,528	2,198	2,362	4,067	5,010	8,611	13,761	19,105	24,240
31	1,363	1,572	1,760	1,491	2,137	2,314	3,987	4,940	8,515	13,657	18,993	24,079
32	1,318	1,519	1,700	1,455	2,079	2,269	3,911	4,874	8,424	13,556	18,882	23,919

TABLE A3f—1982 DISABILITY TABLE—FEMALES
NUMBER DISABLED PER 1,000,000 LIVES EXPOSED AT EACH AGE
(Elimination Period = .233 Month [7 Days])

DURATION (DAYS)	17	22	27	32	37	42	47	52	57	62	67	72
0	92,188	91,055	100,154	96,933	106,227	158,915	164,576	156,088	138,020	131,386	143,028	121,779
1	88,803	88,674	97,910	95,053	104,363	155,486	161,180	152,781	135,538	129,333	140,903	120,400
2	85,573	86,366	95,727	93,220	102,543	152,150	157,874	149,571	133,120	127,323	138,821	119,041
3	82,488	84,129	93,603	91,431	100,765	148,904	154,655	146,454	130,763	125,355	136,780	117,704
4	79,540	81,961	91,537	89,687	99,028	145,745	151,521	143,428	128,467	123,429	134,778	116,387
5	76,723	79,859	89,526	87,985	97,331	142,670	148,469	140,488	126,228	121,542	132,816	115,089
6	74,030	77,821	87,568	86,325	95,673	139,677	145,496	137,632	124,046	119,695	130,893	113,811
7	71,454	75,845	85,663	84,704	94,052	136,763	142,601	134,856	121,917	117,886	129,006	112,553
8	68,989	73,928	83,809	83,123	92,468	133,926	139,779	132,159	119,841	116,114	127,157	111,313
9	66,630	72,069	82,003	81,580	90,920	131,163	137,031	129,536	117,817	114,378	125,343	110,092
10	64,370	70,265	80,245	80,073	89,406	128,471	134,352	126,987	115,841	112,678	123,564	108,889
11	62,206	68,515	78,533	78,602	87,925	125,850	131,741	124,507	113,914	111,012	121,819	107,704
12	60,133	66,817	76,865	77,166	86,478	123,296	129,196	122,095	112,033	109,380	120,108	106,537
13	58,145	65,169	75,241	75,764	85,062	120,808	126,715	119,749	110,196	107,781	118,429	105,388
14	56,239	63,569	73,658	74,395	83,678	118,384	124,296	117,465	108,404	106,214	116,783	104,255
15	54,410	62,016	72,117	73,057	82,323	116,021	121,937	115,243	106,654	104,678	115,167	103,139
16	52,656	60,507	70,614	71,751	80,998	113,718	119,636	113,080	104,945	103,173	113,582	102,039
17	50,972	59,043	69,150	70,474	79,702	111,473	117,392	110,974	103,275	101,698	112,027	100,956
18	49,356	57,621	67,724	69,227	78,433	109,284	115,203	108,923	101,645	100,252	110,501	99,889
19	47,803	56,239	66,333	68,009	77,192	107,150	113,067	106,925	100,052	98,834	109,003	98,838
20	46,311	54,898	64,977	66,818	75,977	105,069	110,983	104,979	98,496	97,444	107,534	97,801
21	44,877	53,594	63,656	65,654	74,787	103,040	108,949	103,083	96,975	96,081	106,092	96,781
22	43,499	52,327	62,367	64,517	73,623	101,061	106,964	101,236	95,488	94,745	104,676	95,775
23	42,173	51,096	61,110	63,405	72,483	99,130	105,026	99,435	94,035	93,435	103,287	94,783
24	40,899	49,899	59,885	62,318	71,367	97,246	103,135	97,680	92,614	92,150	101,923	93,806
25	39,672	48,736	58,689	61,255	70,274	95,408	101,288	95,968	91,225	90,889	100,584	92,844
26	38,491	47,606	57,523	60,216	69,204	93,614	99,484	94,299	89,867	89,653	99,270	91,895
27	37,355	46,506	56,386	59,200	68,155	91,864	97,723	92,672	88,538	88,441	97,980	90,960
28	36,260	45,437	55,276	58,206	67,128	90,156	96,003	91,084	87,238	87,251	96,713	90,039
29	35,206	44,398	54,193	57,233	66,122	88,488	94,323	89,536	85,967	86,084	95,469	89,130

DURATION (MONTHS)	AGE AT DISABLEMENT											
	17	22	27	32	37	42	47	52	57	62	67	72
1	34,190	43,387	53,136	56,282	65,137	86,860	92,682	88,024	84,723	84,939	94,248	88,235
2	15,603	22,783	30,647	35,363	42,983	51,996	57,175	55,704	57,179	58,765	66,052	66,532
3	8,257	12,979	18,960	23,702	30,060	33,560	37,959	38,356	41,428	43,108	48,946	52,147
4	4,899	7,939	12,461	16,767	22,037	23,083	26,775	28,168	31,713	33,270	38,132	42,401
5	3,188	5,176	8,637	12,415	16,798	16,764	19,869	21,757	25,358	26,824	31,047	35,662
6	2,239	3,577	6,276	9,558	13,231	12,753	15,390	17,496	21,000	22,445	26,257	30,912
7	1,676	2,607	4,756	7,607	10,716	10,096	12,363	14,536	17,894	19,375	22,927	27,503
8	1,321	1,993	3,740	6,230	8,890	8,267	10,242	12,403	15,606	17,160	20,551	25,013
9	1,087	1,590	3,037	5,228	7,528	6,967	8,711	10,819	13,875	15,522	18,815	23,164
10	925	1,316	2,537	4,480	6,491	6,015	7,576	9,611	12,533	14,282	17,519	21,767
11	809	1,123	2,171	3,909	5,685	5,300	6,714	8,670	11,472	13,322	16,531	20,693
12	723	984	1,897	3,463	5,048	4,750	6,047	7,922	10,618	12,565	15,762	19,855
13	657	881	1,687	3,110	4,536	4,320	5,521	7,318	9,920	11,957	15,152	19,189
14	606	802	1,522	2,824	4,120	3,976	5,099	6,823	9,340	11,460	14,660	18,650
15	564	741	1,390	2,591	3,777	3,698	4,756	6,412	8,854	11,048	14,255	18,207
16	530	693	1,284	2,397	3,492	3,469	4,474	6,067	8,441	10,702	13,916	17,837
17	502	653	1,196	2,234	3,251	3,278	4,238	5,774	8,087	10,406	13,629	17,522
18	478	620	1,122	2,096	3,047	3,117	4,040	5,524	7,780	10,150	13,381	17,249
19	457	593	1,060	1,978	2,873	2,980	3,871	5,307	7,513	9,927	13,164	17,010
20	439	569	1,007	1,876	2,722	2,862	3,726	5,119	7,279	9,730	12,971	16,796
21	424	549	961	1,787	2,591	2,760	3,601	4,954	7,071	9,555	12,799	16,604
22	410	532	921	1,709	2,477	2,671	3,492	4,809	6,886	9,398	12,642	16,427
23	397	516	886	1,641	2,376	2,592	3,396	4,680	6,720	9,255	12,498	16,264
24	386	503	855	1,580	2,287	2,523	3,311	4,565	6,571	9,125	12,366	16,111
25	376	490	827	1,525	2,208	2,460	3,236	4,461	6,436	9,006	12,242	15,967
26	367	479	802	1,477	2,137	2,405	3,169	4,368	6,314	8,896	12,126	15,830
27	358	469	779	1,433	2,074	2,355	3,108	4,284	6,202	8,794	12,016	15,700
28	351	460	759	1,393	2,016	2,309	3,054	4,208	6,099	8,698	11,912	15,574
29	344	451	540	1,357	1,965	2,268	3,004	4,138	6,005	8,609	11,812	15,452
30	337	444	723	1,324	1,917	2,230	2,959	4,074	5,917	8,525	11,717	15,334
31	331	436	708	1,293	1,875	2,196	2,918	4,016	5,837	8,446	11,625	15,219
32	325	430	693	1,266	1,835	2,164	2,880	3,961	5,761	8,371	11,536	15,106

DISCUSSION OF PRECEDING PAPER

R. GARTH HUTCHISON:

This discussion presents some transformations that may be made to the formulas presented by Mr. Barnhart in this and previous papers. These alternate formulas lend some insight into the import of the various factors used to represent disability functions. Some very natural extensions to the methodology are presented which can be used to load, to graduate, or to interpolate these or similar disability continuance functions.

My first and very pleasant obligation is to express my thanks to Mr. Barnhart for his extensive efforts in this field. I am sure that I am not alone when I say that over the years I have benefited considerably from both the methodology and the extensive data that he has published pertaining to disability income experience.

The Transformed Formulas

If we apply to the expression

$$^d p_x^t = \left(\frac{\alpha' - y'}{\alpha} \right)_x^{ya}$$

the transformation

$$r = \left(\frac{\alpha'}{\alpha} \right)^{ya},$$

$$s = \frac{-y}{\alpha'},$$

$$c = \frac{1}{ya},$$

then we find that

$$^d p_x^t = r (1 + st)^{1/c},$$

remembering that the value of this function and of its integral with respect to t is defined as zero when $1 + st \leq 0$.

Moreover, if the value c corresponds to an elimination period of one month, as in Mr. Barnhart's current paper, then the value corresponding to another elimination period e (limited to a maximum of three months) is

$$^eC = \text{Signum } (c).\ c^{1+b(e-1)}.$$

Accompanying this discussion are tabulated values for r, s and c corresponding to tables A1m and A1f.

As pointed out by Mr. Barnhart, the total probability of someone being disabled at age x, and remaining disabled for a duration of t months is the sum of the elemental probabilities formed by the three functions. (I was somewhat pleased to see that the author had moved from two to three functions since I had had some difficulty in fitting recent Society experience to just two functions!) An examination of the curves produced by these three functions reveals that, in general, they respectively represent short, medium and long term disabilities. This distinction becomes less clear with advancing age, but nonetheless exists. Moreover, by considering the function for the elemental probability, it will be seen that:

1. The value of r represents the probability of incidence of disability, as is shown by setting $t = 0$.

2. The value of s affects the time-scale of continuance. In our discussion we are assuming t to be in months, but by adjusting s, another scale could be used.

3. The value of c affects the curvature of the continuance function. The reciprocal is used in the exponent in order that the value of c may be clearly perceived as being continuous with changing age, although, of course, a value of $c = 0$ is not permitted.

Interest discounted modifications of these functions may be made in a manner similar to that described in the paper. It may be more natural with the transformed formulas rather to hold r constant. In addition, I have tended to use a somewhat lower value for u_2 and u_3.

Methods for Loading, Graduating and Interpolating Disability Tables

While the tables produced by evaluating intercompany experience are valuable as an industry yardstick, there are times when they are unsuitable. It is my contention that, particularly for the short term element, a company's underwriting practices and marketing thrust can cause sharply differing experience. These differences can be measured by performing actual versus expected studies for both the incidence and the continuance of disability. Credible results may be achieved by even a moderately sized company. In addition to this, other reasons exist for wishing to produce more appropriate

TABLE A1M

TRANSFORMED FUNCTIONS
1982 DISABILITY TABLE, FEMALES

Age	r_1	s_1	c_1	r_2	s_2	c_2	r_3	s_3	c_3
17	0.060076	0.269542	−0.201613	0.000415	0.017325	−0.183835	0.000273	−0.001062	0.377703
22	0.052270	0.142045	−0.143678	0.000691	0.034293	−0.312431	0.000355	−0.001134	0.462813
27	0.054375	0.136612	−0.156495	0.001633	0.037818	−0.310588	0.000510	−0.001217	0.578088
32	0.050796	0.142857	−0.185185	0.004001	0.052679	−0.340725	0.000935	−0.001312	0.587617
37	0.052726	0.153846	−0.214592	0.007367	0.088956	−0.421495	0.001364	−0.001425	0.724685
42	0.080625	0.142857	−0.156495	0.008692	0.088313	−0.390671	0.001847	−0.001558	0.778980
47	0.078297	0.153846	−0.170940	0.011131	0.093072	−0.371096	0.002615	−0.001718	0.753012
52	0.096191	0.219298	−0.263158	0.005860	0.049783	−0.302667	0.003619	−0.001916	0.756842
57	0.094340	0.204082	−0.303030	0.003620	0.025844	−0.245407	0.005329	−0.002165	0.774515
62	0.083603	0.124069	−0.204499	0.002802	0.004046	−0.063957	0.008535	−0.002488	0.760971
67	0.094145	0.103199	−0.179211	0.001929	−0.006660	0.180245	0.012372	−0.002924	0.741664
72	0.079720	0.058962	−0.131406	0.001831	−0.007878	0.319982	0.016705	−0.003546	0.756710

TABLE A1F

TRANSFORMED FUNCTIONS
1982 DISABILITY TABLE, MALES

Age	r_1	s_1	c_1	r_2	s_2	c_2	r_3	s_3	c_3
17.......	0.021666	0.770416	-0.574713	0.001308	0.002876	-0.044070	0.000481	-0.001062	0.287424
22.......	0.031376	0.632511	-0.520833	0.001702	0.017128	-0.226683	0.000458	-0.001134	0.348216
27.......	0.027694	0.548847	-0.495050	0.001961	0.024718	-0.284887	0.000493	-0.001217	0.456275
32.......	0.054276	0.758725	-0.352113	0.001271	0.005302	-0.107841	0.000850	-0.001312	0.503672
37.......	0.078219	1.402525	-0.509944	0.001910	0.027361	-0.321226	0.000853	-0.001425	0.544440
42.......	0.086195	1.038422	-0.421053	0.002910	0.057167	-0.468922	0.001555	-0.001558	0.579398
47.......	0.059728	0.856164	-0.502008	0.002251	0.005671	-0.130594	0.002314	-0.001718	0.742683
52.......	0.101104	1.089325	-0.540833	0.001246	0.004154	-0.153372	0.003692	-0.001916	0.636853
57.......	0.111073	0.821693	-0.516796	0.001473	0.006242	-0.285029	0.007296	-0.002165	0.619115
62.......	0.152707	0.510204	-0.368324	0.001537	0.001991	-0.123017	0.013869	-0.002488	0.595667
67.......	0.165839	0.231141	-0.206356	0.000444	0.001233	-0.228448	0.022024	-0.002924	0.560846
72.......	0.160360	0.135294	-0.159439	0.001195	0.000242	-0.030285	0.027981	-0.003546	0.611636

tables for premium setting, profit testing and valuation. These include that only quinquennial values exist here, no explicit loading margins are incorporated, and values do not necessarily progress smoothly from age to age.

This section deals with a single method that provides for the creation of such tables. First, let us note that a margin for incidence may be obtained by simply increasing the r values, but this does not provide any margin on continuance. Secondly, there are a number of ways of adjusting the tabular values to have the results more closely represent a company's experience:

1. Adjust a set of r's by the same factor to reflect a difference in incidence;

2. Adjust the r's in a set, keeping the total probability at a given duration (the elimination period, say) constant, but varying the composition; and,

3. Adjust the time-scale factors, s, to reflect perceived or anticipated differences from the standard.

The direct interpolation or graduation of the values of r, s and c will produce quite unsuitable results. Seeing this, we will rather work with derived values of the elemental probability functions. In order to do this we first choose some keypoint durations of disability which are appropriate to the table being operated upon. These correspond to the values of u and v given in the paper, although in this connection I would suggest that the following set might give better results:

Function	u	v
1	1*	36
2	4	60
3	8	96

*For example, the elimination period.

Then we let w be the minimum of
1. a monthly period such as 180 or 240;
2. $-1/s$, if $s < 0$; and
3. 12 (96 - age).

The derived functions that we use are as those that follow:

1. $z_1 = {}^d p_x^u$

the probability of disability occurring and continuing to the first keypoint duration;

2. $z_2 = \dfrac{{}^d p_x^v}{{}^d p_x^u}$

the ratio of such probabilities at the second to first keypoints; and

$$3. \; z_3 = \frac{\displaystyle\int_v {}^d p_z^t \, dt}{\displaystyle\int_u^w {}^d p_x^t \, dt}$$

the ratio of expected costs, those for the shorter period over those for the longer period.

Loadings may now be applied to these three derived values. Those applied to z_1 are direct loadings on the incidence of claims, if z_2 and z_3 are left unchanged. Loadings applied to z_2 and z_3, usually in a somewhat parallel way, affect the continuance of claims. In this latter case, however, some testing may be necessary in order to develop appropriate values. Usually, a further adjustment to z_1 will be needed if $u > 0$.

Assuming that it is necessary, the next step is to graduate the values z_1, z_2 and z_3 by age for each function (1, 2 and 3) separately. Either a type A or type B Whittaker-Henderson may be appropriate. My preference is type B using claims weighting. In addition, the value of s may be graduated, not that it is valuable in itself, but for its use as a first estimate in the solution for the r', s' and c' resulting from the graduation.

Before deriving r, s and c from the values z_1, z_2 and z_3, it will probably be desirable to interpolate for the values for intermediate ages. Again, the values of s should also be interpolated for the reason stated before. The method which I have adopted for this interpolation is the same as that used in preparing the 1964 Commissioners Disability Table values. For the youngest age group, an ordinary advancing difference formula is used; for the oldest age group it is used in a reverse form.

$$
\begin{aligned}
z_{x+1} &= z_x & - \; 0.28 z_x & + \; 0.36 z_{x+5} & - \; 0.08 z_{x+10} \\
z_{x+2} &= z_{x+1} & - \; 0.24 z_x & + \; 0.28 z_{x+5} & - \; 0.04 z_{x+10} \\
z_{x+3} &= z_{x+2} & - \; 0.20 z_x & + \; 0.20 z_{x+5} & + \; 0.00 z_{x+10} \\
z_{x+4} &= z_{x+3} & - \; 0.16 z_x & + \; 0.12 z_{x+5} & + \; 0.04 z_{x+10} \\
z_{x+5} &= z_{x+4} & - \; 0.12 z_x & + \; 0.04 z_{x+5} & + \; 0.08 z_{x+10}
\end{aligned}
$$

All other intermediate values are determined using a modified osculatory interpolation formula:

$$
\begin{aligned}
z_{x+1} &= z_x & - \; 0.064 z_{x-5} & - \; 0.088 z_x & + \; 0.168 z_{x+5} & - \; 0.016 z_{x+10} \\
z_{x+2} &= z_{x+1} & - \; 0.008 z_{x-5} & - \; 0.216 z_x & + \; 0.256 z_{x+5} & - \; 0.032 z_{x+10} \\
z_{x+3} &= z_{x+2} & + \; 0.024 z_{x-5} & - \; 0.272 z_x & + \; 0.272 z_{x+5} & - \; 0.024 z_{x+10} \\
z_{x+4} &= z_{x+3} & + \; 0.032 z_{x-5} & - \; 0.256 z_x & + \; 0.216 z_{x+5} & - \; 0.008 z_{x+10} \\
z_{x+5} &= z_{x+4} & + \; 0.016 z_{x-5} & - \; 0.168 z_x & + \; 0.088 z_{x+5} & - \; 0.064 z_{x+10}
\end{aligned}
$$

These formulas are self checking in that z_{x+5} is reproduced exactly. (These are to be found in *Mathematics for Actuarial Students, Part II* by Harry

Freeman, published for the Institute of Actuaries at the University of Cambridge, 1948, pp. 28 and 151). When interpolating raw data with these formulas , it may be necessary to apply limits to prevent values from straying too far from the corridor defined by the high and low values on an interval. Note that these same formulas may be used for interpolating the accident factors directly.

The final step is to derive r', s', and c' from the resultant values for z_1, z_2 and z_3 for each age. This is done by successive approximation using the graduated f interpolated values of s as a starting point. Using the definitions given above, the expressions for z_1, z_2 and z_3 may be simplified to the following:

$$z_1 = r(1 + su)^{1/c}$$

$$z_2 = \left(\frac{1 + sv}{1 + su}\right)^{1/c}$$

$$z_3 = \frac{(1 + sw)^{1 + 1/c} - (1 + sv)^{1 + 1/c}}{(1 + sw)^{1 + 1/c} - (1 + su)^{1 + 1/c}}$$

Using the first trial value of s, a trial value for c may be derived from the expression for z_2. This value is then substituted in the expression for z_3 and by standard techniques of successive approximation, values for s and c are determined. Using the expression for z_1, the value of r is obtained. Note that it is possible for no solution to be possible if inappropriate loadings or keypoints are chosen.

The result of this exercise is a full set of r, s and c by age which may be used by an actuary for the particular purposes for which the table was derived.

KENNETH S. AVNER:

Today, it seems that continuance tables and the expected claims amounts they allow one to compute are no longer enough. In addition to the usual actuarial calculations, there is interest in stochastic fluctuations about the mean.

The stochastic analysis of disability income coverages is unusual as compared to life or group life coverages in a number of ways. First, disability income is multinomial rather than binomial. That is, disability income has

many possible outcomes for a single exposed individual as contrasted with life insurance where he either dies or survives. Hence, exact computation of the aggregate claims distribution is much more complicated.

Second, for typical coverages, there is a nontrivial probability that the disability will persist for a number of years. The present value at the time of incurrence of future disability payments for such cases exceeds the amount of most death claims. This coupling of low probability events with large losses on incurrence (the so-called "long tail") is the situation in which risk theory is most useful.

Finally, disability payments are spread out over time. For insurance carriers this relieves the immediate cash drain even though statutory claim reserves must be established. For self-insured benefit programs funded on pay-as-you-go, it is not immediately clear how funding levels may fluctuate from year to year.

As a sample of the kinds of risk analyses being done, I have prepared some data using a portfolio of 1,000 active male lives, age 42, and the 1982 Disability Table (Table A2m). I assume that disability is incurred uniformly throughout the year of exposure and that the individual is exactly age 42 at disablement. The benefits are $1,000 per month until age 65.

Figure 1 shows the cumulative probabilities for the present value (at the beginning of the year) of claims incurred by the portfolio over a single year of exposure. Interest is 7.5 percent per annum. Along with an empirical distribution determined by the Monte Carlo technique (400 replicates), a normal distribution model is also graphed. As is typical in these analyses, the normal model overweighs low values and underweighs high values since it cannot reflect the skewing inherent in the underlying distribution.

The difference between the two models is statistically significant. For business uses, one example of their differences is that the empirical model puts the probability of claims below the mean at about 0.57 whereas the normal model assumes this probability is 0.5.

To examine the claims runoff, Figure 2 gives the cash flow resulting from a single year's exposure. The average cash flow and the five percentiles given are derived from 400 replicates. Timing represents the time during the year that the cash-flow might be assumed to occur for interest purposes. The actual timing curve given is the average timing over the replicates.

Of more interest to the nonfunded, self-insured long term disability employer would be Figure 3. Here, in a format similar to that used for Figure 2, twenty-five years of experience are shown. In the early years cash payments are low, they increase until plan maturity in year twenty-four. Theoretically, years twenty-four and twenty-five have the same distribution.

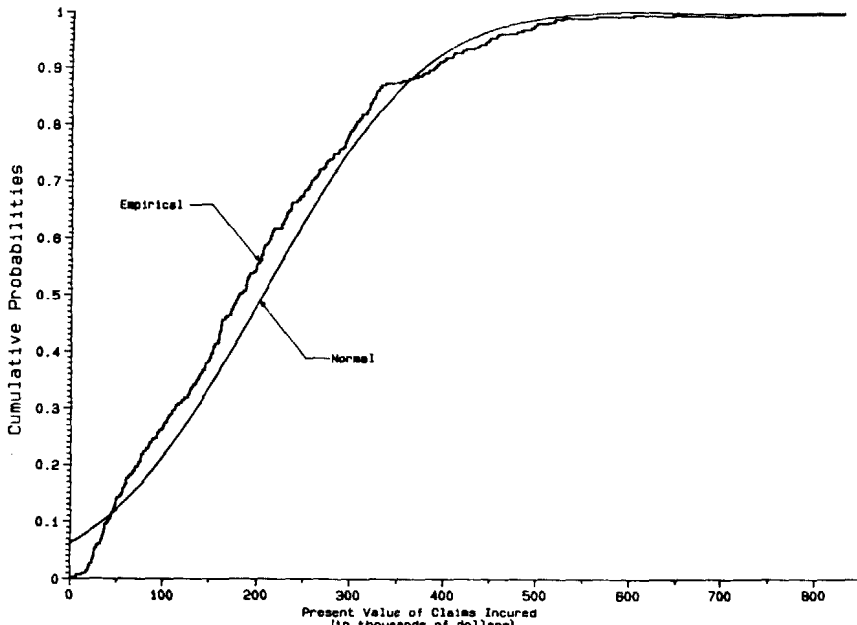Of course, while in any year, 5 percent of the plans will be at or below

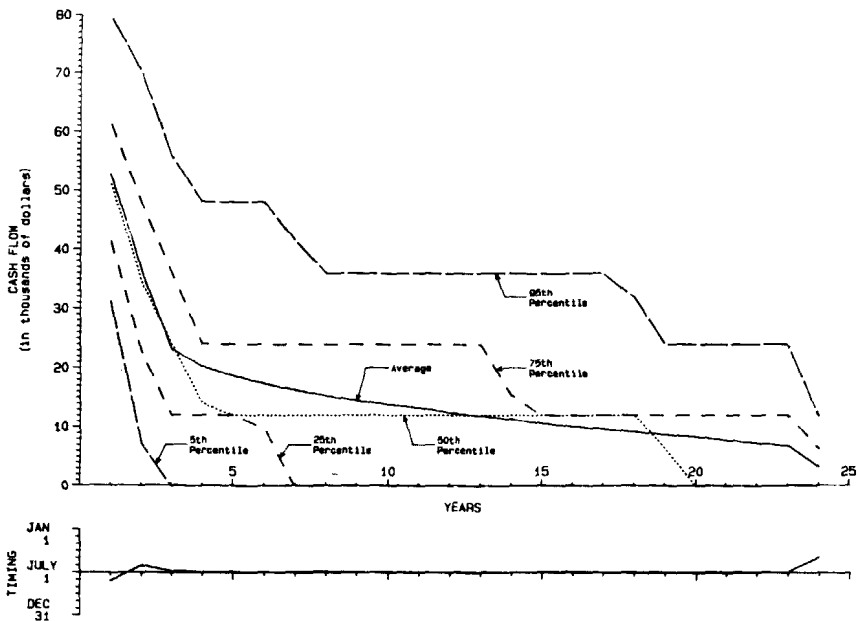FIG. 1.—Comparison of cumulative distribution functions

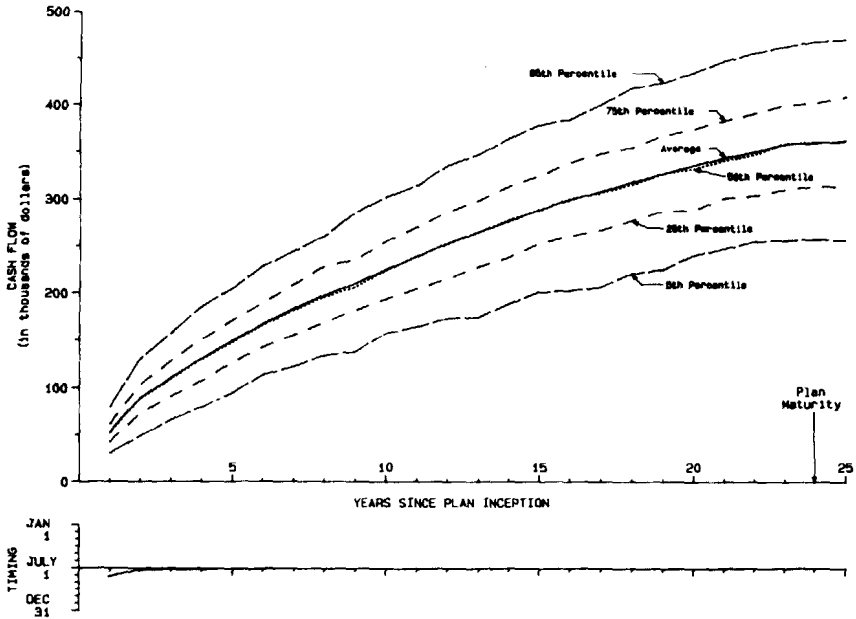FIG. 2.—Single year's claims runoff

FIG. 3.—Cash flow for an ongoing plan

the 5th percentile and 5 percent of the plans will be above the 95th percentile the same plan will not likely jump from one group to the other in a single year. This is due to the strong correlation between successive cash-flows. The correlation coefficient is 0.4 between years one and two (measured from plan inception), 0.6 between years two and three, 0.7 between years three and four, reaches 0.8 between years six and seven, and settles at the matured plan value of about 0.9 between years seventeen and eighteen.

ROBERT G. MEILANDER:

Once again, Mr. Barnhart has made a valuable contribution to the actuarial profession. The need for appropriate morbidity tables for pricing and related work is great. Few companies are capable of producing morbidity tables on their own. The availability of up-to-date values in a relatively simple format will be quite useful to all who price disability insurance.

While the 1982 table is valuable as a framework for pricing, I have some reservations about the graduation by age in the table. The progression of

values from one age to the next is not very smooth and sometimes follows an illogical pattern. The table illustrates this point.

It appears that this rather odd pattern of values by age occurred as a result of problems encountered in attempting to obtain quinquennial values from the decennial values given in the *Reports*. As evidence of this, note that when first differences are determined over ten year age intervals a more

TABLE

1982

Annual Rates of Disablement Entering the First and Twenty-Fourth Months of Disability

(30 Day Table), and Their First Differences by Age.

Age	First Month	First Difference	24th Month	First Difference
17..............	9,725	....	851	....
22..............	14,280	4,555	945	94
27..............	13,736	−544	976	31
32..............	12,979	−757	1,228	252
37..............	16,630	3,651	1,272	44
42..............	20,017	3,387	1,955	683
47..............	21,886	1,869	3,165	1,210
52..............	30,781	8,895	4,325	1,160
57..............	43,514	12,733	7,911	3,586
62..............	65,187	21,673	13,696	5,785
67..............	82,893	17,706	19,753	6,057
72..............	101,357	18,464	25,199	5,446

reasonable pattern emerges. This assumption would also explain why the table values and decennial ages shown in Table 2C match those from the actual experience so well. (Those values are, for the most part, averages of successive quinquennial values.)

It is debatable how significant a problem this might be in computing rates for long term products. Over the long term, the ups and downs of the table will tend to cancel one another out. However, if a high rate of interest or substantial lapses are used in the rate making process, the fact that the 1982 table is not very smooth by age may generate an odd pattern of rates by age. Also, this same problem may make the table unsuitable for pricing short term products.

One of the features of the 1982 Table is that it can be used to obtain values for both Occupation Group I and Occupation Group II. Unfortunately, most companies have occupational classification systems that are more detailed than this simple white collar/blue collar breakdown. A typical occupational classification system might have five classes: professional, clerical white collar, supervisory blue collar, light blue collar, and heavy blue collar. Some indication of how the 1982 Table could be modified to reflect these finer occupational groupings would be most helpful.

E. PAUL BARNHART:

I greatly appreciate the discussions contributed by Garth Hutchinson, Robert Meilander and Kenneth Avner. All three contribute very useful additional information and comment, as well as valuable and appropriate criticism.

Garth Hutchinson discusses some interesting and useful transformation formulas which lead to sets of r, s and c values. They have some highly practical interpretational value and also lend themselves quite well to modification of the 1982 Table functions the purpose of which might be the construction of experience and/or pricing tables suitable to the needs of a particular company. It was my hope that other actuaries would find it useful to construct various modifications for their own needs. This was the objective behind the discussion in the paper concerning the several Tables 6A, which display the relative dominance of each of the 3 functions at various ages and durations of disablement. Tables 6B in the paper incorporate the further purpose of indicating the effect of changing the factor a in the function specifications.

However, the r, s and c factors in Mr. Hutchinson's transformed formulas provide, in some respects, more immediate control over the several kinds of adjustment or loading of the functions that may be desired, as compared to the α, α' and a factors used in the paper. Thus, his factor r is the tabular rate of disablement itself. It must be carefully kept in mind, however, that this is not the tabular rate of claim, under any elimination period other than zero.

Mr. Hutchinson's method of applying adjustments or loadings to derived functions for modification purposes appears to be a sound and practical one which serves to overcome some of the difficulties that arise from direct manipulation of the function values themselves (whether these are expressed by his transformed r, s and c values, or by the α, α' and a values used in the paper). Graduation or interpolation by age is a particularly troublesome task when working directly with the basic function values, because it rarely appears possible to construct these values so that they exhibit any sort of observable smoothness by advancing age. I have always tried to start out with values that exhibit smooth relationships by age, but they invariably stray off in all directions in the process of achieving what appears to be "best fit" of the functions to any given multidimensional body of data. As observed by both Mr. Hutchinson and Mr. Meilander, some of the tables in the paper also reveal, with embarrassing clarity, how difficult it becomes even to maintain final values such as numbers disabled, claim rates and claim costs which exhibit relationships by age that remain reasonably smooth.

In preparing this reply to discussion, I have undertaken one more effort at this, and the results are displayed in some additional tables appearing as an addendum to the paper and entitled the "1983 Disability Tables." I believe that these additional tables do achieve a better job of maintaining reasonable relationships by age. Whether I have sufficiently succeeded at this must be left to the ultimate judgment of readers and users of the tables.

Kenneth Avner has contributed another most interesting discussion and one involving stochastic analysis the kind of which we need to see much more. Even actuaries tend to view morbidity and mortality tables too much in the vein of precise "expected" yardsticks. Too often we do not make the effort really to examine the potential distributional effects and extremes to which actual experience within a given population is prone; especially a relatively small population such as the 1,000 life group examined by Mr. Avner.

Bob Meilander is indeed justified in holding some reservations about the age graduation present in the 1982 Tables. Even a casual glance at the first row of "numbers disabled" in each of Tables A2 and A3 makes it painfully obvious that the values are "erratic." The worst examples are in the two 7-day tables, A3m and A3f, which are modified from the basic 30-day tables by means of the "b" factors and represent yet one more dimensional departure from the starting point of table construction.

Mr. Meilander is correct that my working from the decennial data in the *Reports*, and attempting to keep the 1982 Table combined results, for each successive pair of quinquennial values, close to the target values I adopted from the *Reports* led to less than satisfactory results. Thus, while I started out with what appeared to be reasonably graduated target values, the results quickly began to stray in the effort to fit the tables to the various dimensions of test data summarized in Tables 2 of the paper. The final results almost cease to qualify as "age-graduated."

One of the most tenacious difficulties involved in construction of multi-dimensional morbidity tables such as the 1982 Tables is that one must either give first priority to the dimension of age graduation, or else give priority to "best fit" with respect to various other dimensions such as variant elimination period claim rate and claim cost values. I gave priority to the latter, in constructing the 1982 Tables. I suspect that it is possible to achieve fairly high success with both, but I don't seem to have found the ideal combination, so far.

The 1983 Tables appended to the paper give first priority to age graduation. Good fit is maintained with respect to the 30-day values, but readers will readily discern that somewhat lesser fit is achieved with respect to values

associated with other elimination periods, as compared with the 1982 Table values. The results are uneven: the 1983 Tables fit better at some points, but overall the fit appears to me to be a little inferior to that exhibited by the 1982 Tables.

There are troublesome problems as to just what to do about all of this. First, the 10-year age-grouped data appearing in the *Reports* tend to mask some dips that I am convinced exist in the underlying data by advancing age. I believe there is clear evidence, derivable directly from the *Reports* data, that a dip in claim incidence occurs for males in the lower 30s, as well as for women in the 50s.

For males, this may be due to a rapid decrease, during the early 30s, in accident disability incidence, sufficient, temporarily, to overcome increasing sickness incidence. Higher stability of employment after 30 may also be a factor.

For women, a dip, or at least a distinct change, in the generally upward slope of the disability curve in the decade of the 50s is really to be expected. Such a dip consistently occurs during the 50s in hospital confinement and surgical data, so it would hardly be surprising to observe a similar phenomenon in disability data. Unfortunately, the 10-year age-grouping in the *Reports* tends to mask these probable dips, both as to their attained age low point and their magnitude. It is my hope that the Individual Morbidity Committee will start publishing the disability reports on the basis of 5-year age-grouping.

Second is the problem that I've already mentioned: the fact that one is dealing here with multidimensional considerations. Just what does one graduate against? At times, I was persuaded that success in graduating on one parameter or progression of values almost assured failure with respect to others.

Nevertheless, Bob Meilander's discussion challenged me to make yet one more effort, and the results of this are included herein. I am glad I tried, and I am glad Bob prodded me with his discussion, because I think the resulting tables are a distinct improvement in spite of poorer fit of some of the values other than 30-day. The 1981 *Reports* came out in the interim since my paper was submitted, so I have also incorporated the additional individual disability data published in this latest *Reports* issue. Because of the additional data used, I have labeled the additional tables "The 1983 Disability Tables." That was not easy to do; it implies that the 1982 Tables have already been rendered more or less obsolete—and after all that work! However, I think that is only true in part.

The procedure I followed, in constructing the 1983 Tables, was to add the two additional report years (1978 and 1979) to the eight years already

utilized in constructing the 1982 Tables, so that an entire decade of reported individual disability experience (1970-79) forms the data base for the 1983 Tables.

I then derived the actual composite 1970-79 reported rates and costs, for each 10-year age-group (wherever such values were reported over the entire period), and from these composite values derived new target values for each 5-year sub-division, assuming these to be appropriate approximations of central age values. As with the 1982 Tables, I assumed the 20-29 age data to apply at central age 27, and the 60-69 data to apply at age 62. Further, I retained the convenient assumption that the 10-year values are simple averages of the two "inherent" 5-year values. Obviously, these are rather crude assumptions, but I concluded that attempts at more refined assumptions were not justifiable.

Tables R1, appended to the paper, show the resulting 1983 Table values, compared against the actual composited 10-year values derived from the 1973-81 individual disability reports. The 1982 Table functions were used as starting trial functions. Functions 2 and 3 were first modified to improve their own inherent age-graduation, and then Function 1 was freely modified to produce approximate agreement of the total values with the 10-year composites, using the 30-day incidence rates and claim costs. Finally new b-factors were derived against the 7-day rates and costs. Comparison is also made, in Tables R1, against new data that appear for the first time in the 1981 Report, but no modification was made in the 1983 functional parameters as a result of these comparisons. This new data consist of data on 90-day elimination periods, and data on benefits of the second year for females in Occupational Class I.

Two revisions were also made in the specifications of the 1983 Tables: 1) the limiting value of e, for adjustment to changing elimination periods, is three months, rather than two months as in the 1982 Tables, and 2) the values of u and v for female function 1 were changed to one month and twelve months, respectively, to agree with the male parameters.

It is my opinion that these revisions improve the 1983 Tables.

Several comments are in order, by way of comparison between the 1982 and 1983 Tables:

1. For males, the 1982 Tables are more conservative, in general. This is because the 1983 Tables were constructed to fit the actual 10-year composite values derived from the 1973-81 individual disability *Reports*, whereas the 1982 Tables were constructed to fit the "1982 Table" values shown in Tables 2 of the paper. These latter values are not actual composites of the 1973-79 *Reports* data. Because of the trends that appeared to be in evidence, I chose target values on the high side of the composites, in most cases. As

a result, the 1982 Table values are generally more conservative, for males, than are the 1983 Table values.

2. For females, the same general relative conservatism does not prevail. The 1982 Tables are less conservative at about as many points as they are more conservative, compared to the 1983 Tables. This is because the female data, over the report years 1971-78, exhibit less of a worsening trend than do the male data. Further, inclusion of the 1981 *Reports* data results in a little improvement of the male experience, but in a little worsening of the female experience.

3. The 1983 Tables are not loaded for any measure of conservatism. Instead, they are intended to produce a reasonable overall fit directly to the composite individual experience of the decade of the 1970s.

4. Finally, as already mentioned, the 1983 Tables are, in my opinion, much better age-graduated than the 1982 Tables. As to fit, the comparative results are rather mixed but are somewhat better for the 1982 Tables, given the conservative target values used.

5. The several 1983 Tables are less extensive than the 1982 Table values. The reasons are as follows:

   a. I considered it unnecessary to prepare 1983 equivalents of the 1982 Tables 6 in the paper. The relative dominance pattern shown in Tables 6A does not change substantially nor does the adjustment effect illustrated in Tables 6B.

   b. Tables 7 and 8 were included in the paper for the purpose of testing 1964 Commissioners Disability Table reserve values. While both active life and, to a much lesser extent, disabled life values will obviously change for the 1983 Tables, I do not believe that comparisons with 1964 CDT values would change enough to affect the general conclusions expressed in the paper concerning the 1964 CD Table.

   c. Finally, I have included 1983 claim cost tables considerably more abbreviated than those included in the paper for the 1982 Table. I believe that Tables R4 and R5 in the Addendum provide a sufficient array of values for comparison and illustration.

By way of closing comment, I want to express my appreciation to the Individual Morbidity Committee for adding the new categories of data to the 1981 *Reports*. While the new data is limited in volume in this one report, it should grow rapidly and add a new dimension of value to the *Reports*. I extend to the committee my request that they publish all the data in 5-year age-groups.

V. ADDENDUM

The following 1983 Disability Tables are an updated version of comparable 1982 tables included heretofore. They reflect two more years' individual disability experience as shown in the 1981 *Reports*. These 1983 tables reflect an entire decade of reported experience (1970-1979).

Table

R1m	1983 Disability Table:	Males: Comparisons with *TSA Reports* Data
R1f	1983 Disability Table:	Females: Comparisons with *TSA Reports* Data
R2m	1983 Disability Table:	Males (Functional (Values)
R2f	1983 Disability Table:	Females (Functional Values)
R3m	1983 Disability Continuance Table, 1 Month: Males (Number Disabled per 1,000,000 Lives Exposed at Each Age)	
R3f	1983 Disability Continuance Table, 1 Month: Females (Number Disabled per 1,000,000 Lives Exposed at Each Age)	
R4m	1983 Disability Table:	Male Claim Costs (7.5%)
R4f	1983 Disability Table:	Female Claim Costs (7.5%)
R5m	1983 Disability Table:	Male Claim Costs (4.5%)
R5f	1983 Disability Table:	Female Claim Costs (4.5%)

1983 Table: Comparisons With *TSA Reports* Data*

Male Occupation Group I

A. Annual Rates of Disablement Entering Various Durations									
8 Days					31 Days				
1983 Table		Individual Loss of Time: Combined 1973-81 Data			1983 Table		Individual Loss of Time: Combined 1973-81 Data		
Attained Age	Rate	Age Group	Number of Claims	Rate	Attained Age	Rate	Age Group	Number of Claims	Rate
27	0.0865	20-29	4,898	0.0887	27	0.0134	20-29	2,390	0.0134
32	0.0881	30-39	11,316	0.0855	32	0.0121	30-39	6,445	0.0131
37	0.1165				37	0.0147			
42	0.1397	40-49	17,707	0.0918	42	0.0188	40-49	9,661	0.0207
47	0.1029				47	0.0229			
52	0.1049	50-59	29,128	0.1131	52	0.0291	50-59	10,826	0.0349
57	0.1508				57	0.0410			
62	0.1763	60-69	14,360	0.1443	62	0.0572	60-69	4,607	0.0584
91 Days					181 Days				
1983 Table		Individual Loss of Time: 1981 *Reports* Data only			1983 Table		Group Long Term Disability: Rates for Years		
Attained Age	Rate	Age Group	Number of Claims	Rate	Attained Age	Rate	Age Group	69-73	74-78
27	0.0010	<30	13	0.001	27	0.0008			
32	0.0009	30-39	122	0.002	32	0.0009	<40	0.00084	0.00087
37	0.0014				37	0.0013			
42	0.0023	40-49	234	0.004	42	0.0021	40-44	0.00222	0.00175
47	0.0027				47	0.0026	45-49	0.00338	0.00350
52	0.0043	50-59	353	0.008	52	0.0041	50-54	0.00654	0.00642
57	0.0082				57	0.0079	55-59	0.01133	0.01145
62	0.0148	60-69	116	0.014	62	0.0143	60-64	0.01631	0.01567

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B. Annual Claim Costs per $100 Monthly Benefit (0% Interest)									
7 Day/12 Month					30 Day/12 Month				
1983 Table		Individual Loss of Time: Combined 1973-81 Data			1983 Table		Individual Loss of Time: Combined 1973-81 Data		
Attained Age	Cost	Age Group	Number of Claims	Cost	Attained Age	Cost	Age Group	Number of Claims	Cost
27..........	15.35	20-29.........	4,898	16.23	27..........	3.58	20-29.........	2,390	3.58
32..........	14.83	30-39.........	11,316	15.70	32..........	3.20	30-39.........	6,445	3.66
37..........	15.39				37..........	4.13			
42..........	18.63	40-49.........	17,707	20.44	42..........	5.26	40-49.........	9,661	6.42
47..........	21.11				47..........	7.63			
52..........	23.55	50-59.........	29,128	29.89	52..........	10.29	50-59.........	10,826	12.78
57..........	30.99				57..........	15.28			
62..........	40.55	60-69.........	14,360	42.23	62..........	23.73	60-69.........	4,607	23.66

Second Year of Benefit Period 1983 Table: 7/7 Elimination Reports: 0/7 Elimination					90 Day/12 Month				
1983 Table		Individual Loss of Time: Combined 1973-81 Data			1983 Table		Individual Loss of Time: 1981 *Reports* Data only		
Attained Age	Cost	Age Group	Number of Claims	Cost	Attained Age	Cost	Age Group	Number of Claims	Cost
27..........	2.69	20-29.........	73	1.58	27..........	0.97	<30..........	13	0.60
32..........	2.64	30-39.........	292	2.04	32..........	1.03	30-39.........	122	1.00
37..........	3.12				37..........	1.48			
42..........	3.69	40-49.........	619	3.71	42..........	2.40	40-49.........	234	1.80
47..........	6.22				47..........	3.11			
52..........	7.64	50-59.........	1,245	7.72	52..........	4.86	50-59.........	353	5.40
57..........	11.47				57..........	9.38			
62..........	18.08	60-69.........	833	15.81	62..........	16.96	60-69.........	116	9.90

*Individual Loss of Time: Data from 1973-81 *Reports* Group Long Term Disability: 1975 Table 1 (Yrs. 69-73); 1980 Table I-1 (Yrs. 74-78)

TABLE R1F

1983 TABLE: COMPARISONS WITH *TSA REPORTS* DATA*
Female Occupation Group I

A. Annual Rates of Disablement Entering Various Durations

8 Days / **31 Days**

1983 Table		Individual Loss of Time: Combined 1973-81 Data			1983 Table		Individual Loss of Time: Combined 1973-81 Data		
Attained Age	Rate	Age Group	Number of Claims	Rate	Attained Age	Rate	Age Group	Number of Claims	Rate
27	0.0835	20-29	2,540	0.113	27	0.0134	20-29	731	0.021
32	0.1012	30-39	5,077	0.129	32	0.0229	30-39	1,654	0.028
37	0.1116				37	0.0293			
42	0.1430	40-49	7,641	0.147	42	0.0413	40-49	2,198	0.043
47	0.1383				47	0.0438			
52	0.1210	50-59	9,387	0.146	52	0.0435	50-59	2,176	0.047
57	0.1190				57	0.0505			
62	0.1392	60-69	2,112	0.154	62	0.0578	60-69	515	0.058

91 Days / **181 Days**

1983 Table		Individual Loss of Time: 1981 *Reports* Data only			1983 Table		Group Long Term Disability: Rates for Years		
Attained Age	Rate	Age Group	Number of Claims	Rate	Attained Age	Rate	Age Group	69-73	74-78
27	0.0016	<30	3	0.003	27	0.0013			
32	0.0026	30-39	15	0.003	32	0.0020	<40	0.00102	0.00115
37	0.0045				37	0.0032			
42	0.0061	40-49	17	0.005	42	0.0044	40-44	0.00379	0.00303
47	0.0083				47	0.0059	45-49	0.00468	0.00439
52	0.0089	50-59	29	0.014	52	0.0071	50-54	0.00610	0.00672
57	0.0100				57	0.0084	55-59	0.00885	0.01020
62	0.0145	60-69	8	0.018	62	0.0131	60-64	0.00995	0.01314

B. Annual Claim Costs per $100 Monthly Benefit (0% Interest)									
7 Day/12 Month					30 Day/12 Month				
1983 Table		Individual Loss of Time: Combined 1973-81 Data			1983 Table		Individual Loss of Time: Combined 1973-81 Data		
Attained Age	Cost	Age Group	Number of Claims	Cost	Attained Age	Cost	Age Group	Number of Claims	Cost
27	19.51	20-29	2,540	16.10	27	4.78	20-29	731	4.80
32	22.71	30-39	5,077	24.00	32	5.93	30-39	1,654	7.60
37	27.00				37	8.33			
42	31.44	40-49	7,641	29.70	42	10.50	40-49	2,198	11.50
47	33.86				47	12.53			
52	35.82	50-59	9,387	32.90	52	15.25	50-59	2,176	16.60
57	36.90				57	18.79			
62	37.92	60-69	2,112	33.60	62	22.33	60-69	515	21.20

Second Year of Benefit Period 1983 Table: 7/7 Elimination Reports: 0/7 Elimination					90 Day/12 Month				
1983 Table		Individual Loss of Time: 1981 *Reports* Data only			1983 Table		Individual Loss of Time: 1981 *Reports* Data only		
Attained Age	Cost	Age Group	Number of Claims	Cost	Attained Age	Cost	Age Group	Number of Claims	Cost
27	1.56	<30	3	0.79	27	1.42	<30	3	1.50
32	2.44	30-39	35	4.43	32	2.19	30-39	15	1.30
37	3.46				37	3.40			
42	3.69	40-49	51	7.76	42	4.57	40-49	17	3.20
47	7.27				47	6.12			
52	7.45	50-59	116	12.17	52	7.62	50-59	29	9.80
57	9.57				57	9.36			
62	13.32	60-69	21	11.42	62	15.06	60-69	8	16.90

*Individual Loss of Time: Data from 1973-81 *Reports*, Group Long Term Disability: 1975 Table 1 (Yrs. 69-73); 1980 Table I-1 (Yrs. 74-78)

1983 DISABILITY TABLE

Males

Age	Func-tion*	α	α'	a	b	y	Accident Factor
	1	0.14349	0.62000	1.90000	0.5200	-1	0.590
17..........	2	259.54004	347.75215	22.34000	0.0400	-1	0.440
	3	8,466.01237	942.00000	3.47918	0.0000	$+1$	0.400
	1	0.26056	1.08000	2.20000	0.5100	-1	0.550
22..........	2	13.75961	58.38417	4.41144	0.0600	-1	0.400
	3	12,832.80353	882.00000	2.84700	0.0000	$+1$	0.360
	1	0.30864	1.09200	2.35000	0.4900	-1	0.520
27..........	2	6.84937	40.45660	3.51016	0.0600	-1	0.360
	3	26,524.37743	822.00000	2.19166	0.0000	$+1$	0.330
	1	0.45500	1.35000	2.78500	0.4400	-1	0.510
32..........	2	91.89507	188.61256	9.27287	0.0400	-1	0.380
	3	26,831.61730	762.00000	2.05310	0.0000	$+1$	0.340
	1	0.19442	0.53200	2.14900	0.5100	-1	0.430
37..........	2	4.89194	36.54804	3.02400	0.0700	-1	0.310
	3	32,904.63285	702.00000	1.83675	0.0000	$+1$	0.270
	1	0.33500	0.76200	2.54200	0.4500	-1	0.390
42..........	2	1.13139	17.49272	2.13255	0.0900	-1	0.250
	3	27,207.03729	642.00000	1.72593	0.0000	$+1$	0.210
	1	0.28384	1.00000	2.03300	0.4600	-1	0.310
47..........	2	79.53760	190.60000	7.19600	0.0500	-1	0.150
	3	52,771.95777	582.00000	1.34647	0.0000	$+1$	0.120
	1	0.26582	1.01900	1.83400	0.4500	-1	0.240
52..........	2	86.30188	240.71847	6.52009	0.0300	-1	0.110
	3	18,490.13450	522.00000	1.57022	0.0000	$+1$	0.080
	1	0.39090	1.00800	2.09700	0.3800	-1	0.160
57..........	2	24.97694	160.20575	3.50842	0.0300	-1	0.100
	3	9,719.44449	462.00000	1.61521	0.0000	$+1$	0.080
	1	0.95000	1.81800	2.91600	0.2500	-1	0.130
62..........	2	226.36093	502.20332	8.12895	0.0200	-1	0.080
	3	5,139.85443	402.00000	1.67879	0.0000	$+1$	0.070
	1	2.80000	4.04000	4.78100	0.1100	-1	0.120
67..........	2	139.05724	705.70000	4.52000	0.0200	-1	0.080
	3	2,906.74658	342.00000	1.78302	0.0000	$+1$	0.060
	1	5.52057	7.39133	6.27200	0.0800	-1	0.100
72..........	2	3,364.76271	4,125.42462	33.01936	0.0000	-1	0.080
	3	2,513.05065	282.00000	1.63496	0.0000	$+1$	0.060

Note.—Basic elimination period: 1.000 month; elimination limit: 3.000 months.
*Function 1: $u = 1.000$, $v = 12.000$; function 2: $u = 24.000$, $v = 60.000$; function 3: $u = 24.000$, $v = 120.000$ (all in months).

1983 Disability Table
Females

Age	Function*	α	α'	a	b	y	Accident Factor
	1	2.10448	4.50000	4.31000	0.2300	− 1	0.400
17..........	2	13.79192	57.71874	4.90000	0.0200	− 1	0.340
	3	20,905.00000	942.00000	2.64758	0.0000	+ 1	0.300
	1	4.60695	7.90000	6.17000	0.2000	− 1	0.360
22..........	2	3.00124	24.07000	3.20071	0.0200	− 1	0.300
	3	34,850.00000	882.00000	2.16070	0.0000	+ 1	0.270
	1	4.64096	7.83000	6.17000	0.2200	− 1	0.330
27..........	2	3.60326	26.44261	3.21970	0.0000	− 1	0.260
	3	65,820.00000	822.00000	1.72984	0.0000	+ 1	0.240
	1	4.03123	6.65000	6.22000	0.2500	− 1	0.300
32..........	2	2.89302	18.98305	2.93492	0.0300	− 1	0.190
	3	45,918.91935	762.00000	1.70179	0.0000	+ 1	0.170
	1	3.45676	5.99800	5.41200	0.2600	− 1	0.240
37..........	2	1.41875	11.24148	2.37251	0.0300	− 1	0.150
	3	83,698.87724	702.00000	1.37991	0.0000	+ 1	0.130
	1	4.72027	6.99400	6.50200	0.2200	− 1	0.210
42..........	2	1.77361	11.32334	2.55970	0.0100	− 1	0.140
	3	86,460.00000	642.00000	1.28373	0.0000	+ 1	0.120
	1	4.20543	6.66000	5.71600	0.2300	− 1	0.230
47..........	2	2.02425	10.74438	2.69472	0.0000	− 1	0.150
	3	51,244.49237	582.00000	1.32800	0.0000	+ 1	0.130
	1	2.46246	5.00900	3.82100	0.2600	− 1	0.220
52..........	2	4.23966	20.08729	3.10000	0.0000	− 1	0.150
	3	36,766.00000	522.00000	1.32128	0.0000	+ 1	0.130
	1	2.39606	4.95000	3.52500	0.2100	− 1	0.220
57..........	2	9.73930	38.69416	3.80000	0.0000	− 1	0.140
	3	26,630.00000	462.00000	1.29113	0.0000	+ 1	0.120
	1	4.85211	7.10100	6.12700	0.1400	− 1	0.210
62..........	2	162.20000	247.18651	12.00000	0.0000	− 1	0.140
	3	15,084.00000	402.00000	1.31411	0.0000	+ 1	0.110
	1	6.34478	8.37000	7.50600	0.0800	− 1	0.190
67..........	2	463.26192	168.00000	5.40000	0.0000	+ 1	0.130
	3	8,888.00000	342.00000	1.34832	0.0000	+ 1	0.090
	1	12.16424	14.72000	10.96000	0.0600	− 1	0.180
72..........	2	953.85412	144.00000	3.12518	0.0000	+ 1	0.120
	3	6,238.00000	282.00000	1.32151	0.0000	+ 1	0.090

Note.—Basic elimination period: 1.000 month; elimination limit: 3.000 months.
*Function 1: $u = 1.000$, $v = 12.000$; function 2: $u = 24.000$, $v = 60.000$; function 3: $u = 24.000$, $v = 120.000$ (all in months).

1983 DISABILITY TABLE—MALES
Number Disabled per 1,000,000 Lives Exposed at Each Age
(Elimination Period = 1 Month)

Duration (months)	Age at Disablement											
	17	22	27	32	37	42	47	52	57	62	67	72
1.......	11,837	12,425	13,433	12,207	14,798	18,835	22,981	29,165	41,047	57,301	82,745	101,357
2.......	5,764	6,320	6,594	5,666	6,816	8,545	12,307	16,455	22,511	32,556	47,769	64,542
3.......	3,842	4,202	4,318	3,620	4,613	5,756	8,571	11,675	16,190	23,946	34,495	47,593
4.......	2,962	3,206	3,274	2,752	3,664	4,588	6,823	9,335	13,302	20,149	28,652	39,131
5.......	2,467	2,644	2,693	2,304	3,142	3,959	5,852	8,000	11,739	18,191	25,765	34,598
6.......	2,149	2,285	2,325	2,039	2,807	3,563	5,246	7,156	10,790	17,061	24,194	32,010
7.......	1,925	2,034	2,068	1,864	2,569	3,284	4,836	6,583	10,164	16,347	23,263	30,440
8.......	1,757	1,847	1,877	1,739	2,387	3,074	4,540	6,170	9,723	15,863	22,665	29,427
9.......	1,623	1,701	1,727	1,643	2,240	2,907	4,314	5,859	9,397	15,513	22,252	28,733
10.......	1,514	1,582	1,605	1,566	2,118	2,770	4,136	5,617	9,146	15,246	21,945	28,229
11.......	1,422	1,483	1,503	1,501	2,014	2,655	3,989	5,423	8,944	15,033	21,704	27,840
12.......	1,342	1,398	1,415	1,446	1,924	2,556	3,866	5,262	8,778	14,857	21,502	27,525
13.......	1,272	1,324	1,340	1,397	1,844	2,469	3,761	5,127	8,638	14,705	21,328	27,256
14.......	1,210	1,259	1,273	1,353	1,773	2,393	3,668	5,012	8,516	14,571	21,170	27,019
15.......	1,154	1,202	1,214	1,313	1,709	2,325	3,586	4,911	8,409	14,451	21,025	26,802
16.......	1,104	1,150	1,161	1,276	1,651	2,265	3,512	4,822	8,313	14,340	20,887	26,601
17.......	1,058	1,103	1,114	1,242	1,598	2,210	3,444	4,742	8,226	14,237	20,756	26,409
18.......	1,016	1,060	1,071	1,211	1,550	2,160	3,382	4,670	8,146	14,139	20,630	26,225
19.......	977	1,021	1,031	1,181	1,505	2,114	3,325	4,604	8,072	14,046	20,506	26,047
20.......	942	986	995	1,154	1,464	2,072	3,271	4,543	8,003	13,957	20,385	25,872
21.......	909	953	962	1,128	1,426	2,034	3,221	4,487	7,937	13,870	20,266	25,701
22.......	878	922	932	1,103	1,391	1,998	3,174	4,435	7,875	13,787	20,149	25,531
23.......	850	894	903	1,080	1,358	1,965	3,130	4,386	7,816	13,705	20,032	25,364
24.......	823	868	877	1,058	1,327	1,935	3,088	4,340	7,759	13,625	19,917	25,199
25.......	798	844	853	1,037	1,299	1,906	3,048	4,296	7,705	13,546	19,803	25,035
26.......	775	821	830	1,017	1,272	1,879	3,010	4,254	7,652	13,469	19,689	24,871
27.......	753	800	809	998	1,246	1,854	2,974	4,215	7,601	13,393	19,577	24,709
28.......	733	780	790	980	1,223	1,831	2,940	4,177	7,552	13,318	19,464	24,548
29.......	714	761	771	962	1,200	1,808	2,907	4,141	7,503	13,244	19,352	24,387
30.......	696	743	754	946	1,179	1,788	2,875	4,106	7,457	13,171	19,241	24,228
31.......	679	727	738	930	1,160	1,768	2,844	4,072	7,411	13,098	19,130	24,068
32.......	663	711	723	915	1,141	1,749	2,815	4,039	7,366	13,026	19,020	23,910

Duration (years)	Age at Disablement											
	17	22	27	32	37	42	47	52	57	62	67	72
3	607	657	670	861	1,075	1,682	2,708	3,919	7,195	12,745	18,582	23,281
4	497	548	565	742	937	1,537	2,458	3,624	6,738	11,945	17,300	21,440
5	434	482	503	663	849	1,436	2,276	3,387	6,335	11,192	16,062	19,665
6	394	437	461	609	787	1,357	2,134	3,185	5,967	10,478	14,867	17,955
7	365	404	429	567	739	1,290	2,019	3,006	5,624	9,796	13,714	16,309
8	341	378	405	535	699	1,230	1,921	2,843	5,301	9,144	12,603	14,729
9	322	356	384	507	665	1,175	1,834	2,693	4,995	8,519	11,535	13,215
10	304	336	366	483	634	1,124	1,755	2,552	4,702	7,918	10,511	11,769
11	288	319	349	461	605	1,075	1,682	2,419	4,421	7,341	9,529	10,391
12	273	302	334	441	578	1,029	1,613	2,292	4,150	6,786	8,591	9,083
13	258	287	319	422	553	984	1,548	2,171	3,889	6,252	7,697	7,847
14	245	273	306	404	529	940	1,485	2,053	3,638	5,739	6,848	6,684
15	231	259	293	386	506	898	1,423	1,940	3,394	5,246	6,043	5,598
16	219	246	280	370	484	857	1,364	1,830	3,159	4,773	5,284	4,590
17	207	234	268	354	462	817	1,305	1,723	2,931	4,320	4,572	3,665
18	195	222	256	338	441	778	1,248	1,620	2,712	3,887	3,906	2,826
19	184	211	245	323	421	740	1,192	1,519	2,499	3,474	3,289	2,078
20	174	200	234	308	401	702	1,137	1,422	2,294	3,080	2,720	1,428
21	164	189	223	293	382	666	1,083	1,327	2,096	2,707	2,201	886
22	154	179	213	279	363	631	1,030	1,234	1,906	2,354	1,733	465
23	145	169	203	265	344	597	977	1,145	1,723	2,022	1,318	192
24	136	160	193	252	327	563	926	1,058	1,548	1,711	957	. . . .
25	127	150	184	239	309	530	875	973	1,380	1,421	654	. . . .
26	119	142	174	227	292	499	825	892	1,220	1,155	411	. . . .
27	111	133	165	214	276	468	776	813	1,067	911	233	. . . .
28	104	125	157	202	260	438	727	737	923	692	128	. . . .
29	97	118	148	191	245	408	680	663	787	498	. . . .	. . . .
30	90	110	140	180	229	380	633	593	660	332	. . . .	. . . .
31	84	103	132	169	215	353	588	526	542	195	. . . .	. . . .
32	78	96	125	158	201	326	543	461	433	91	. . . .	. . . .
33	72	90	117	148	187	300	499	400	334	26	. . . .	. . . .
34	67	84	110	138	174	276	456	342	245	. . . .	. . . .	. . . .

Duration (years)	Age at Disablement										
	17	22	27	32	37	42	47	52	57	62	67	72
35	62	78	103	129	161	252	414	287	168			
36	57	72	97	120	149	229	373	236	104			
37	53	67	90	111	137	207	334	189	53			
38	48	62	84	103	125	186	295	146	20			
39	44	57	78	94	114	166	258	107				
40	41	52	72	87	104	147	222	73				
41	37	48	67	79	94	129	188	44				
42	34	44	62	72	84	112	155	20				
43	31	40	57	66	75	96	124	5				
44	28	36	52	59	66	81	95					
45	25	33	48	53	58	67	67					
46	23	30	43	47	51	54	43					
47	20	27	39	42	44	43	22					
48	18	24	35	37	37	32	5					
49	16	22	32	32	31	23						
50	14	19	28	28	25	16						
51	13	17	25	24	20	9						
52	11	15	22	20	15	5						
53	10	13	19	17	11	2						
54	8	11	17	14	8							
55	7	10	14	11	5							
56	6	8	12	8	3							
57	5	7	10	6	1							
58	5	6	8	4	0							
59	4	5	7	3								
60	3	4	5	2								
61	3	3	4	1								
62	2	3	3	0								
63	2	2	2	0								
64	1	1	1									
65	1	1	1									
66	1	1	0									

TABLE R3f

1983 DISABILITY TABLE—FEMALES
Number Disabled per 1,000,000 Lives Exposed at Each Age
(Elimination Period = 1 Month)

Duration (months)	Age at Disablement											
	17	22	27	32	37	42	47	52	57	62	67	72
1	17,013	18,674	20,855	22,971	29,373	41,379	43,834	43,617	50,624	57,838	69,958	79,458
2	8,778	10,258	11,547	12,574	17,028	22,692	25,731	27,970	33,094	35,466	41,225	49,757
3	5,152	6,153	7,024	7,915	11,201	14,217	16,951	19,856	23,853	25,158	28,561	35,207
4	3,355	3,997	4,652	5,584	8,121	9,938	12,245	15,206	18,515	19,957	22,509	27,752
5	2,377	2,790	3,324	4,298	6,332	7,564	9,501	12,323	15,201	17,107	19,396	23,762
6	1,802	2,074	2,535	3,523	5,207	6,135	7,784	10,416	13,016	15,422	17,678	21,531
7	1,443	1,628	2,040	3,020	4,452	5,211	6,643	9,088	11,504	14,348	16,659	20,223
8	1,205	1,337	1,714	2,670	3,917	4,576	5,846	8,122	10,412	13,613	16,008	19,415
9	1,040	1,138	1,489	2,414	3,520	4,117	5,266	7,394	9,594	13,077	15,561	18,886
10	920	997	1,328	2,217	3,216	3,772	4,828	6,829	8,963	12,661	15,230	18,516
11	830	893	1,207	2,061	2,975	3,503	4,489	6,379	8,463	12,323	14,968	18,240
12	760	814	1,115	1,933	2,779	3,288	4,219	6,014	8,057	12,036	14,749	18,020
13	704	753	1,041	1,826	2,618	3,111	4,000	5,712	7,722	11,784	14,558	17,835
14	658	703	981	1,735	2,482	2,965	3,819	5,459	7,440	11,559	14,385	17,672
15	619	663	932	1,657	2,367	2,840	3,667	5,244	7,199	11,354	14,224	17,552
16	587	630	890	1,589	2,268	2,734	3,539	5,059	6,991	11,164	14,073	17,382
17	558	601	854	1,529	2,182	2,642	3,429	4,898	6,809	10,987	13,930	17,248
18	534	577	822	1,475	2,106	2,562	3,333	4,758	6,649	10,820	13,791	17,119
19	512	555	795	1,428	2,040	2,491	3,250	4,634	6,506	10,663	13,657	16,993
20	492	537	771	1,386	1,980	2,428	3,177	4,524	6,378	10,513	13,527	16,869
21	475	520	749	1,347	1,928	2,373	3,112	4,426	6,262	10,371	13,401	16,747
22	459	505	729	1,312	1,880	2,323	3,054	4,337	6,157	10,234	13,277	16,627
23	445	492	711	1,281	1,837	2,277	3,002	4,257	6,061	10,104	13,157	16,509
24	432	480	695	1,252	1,798	2,237	2,955	4,185	5,973	9,979	13,039	16,391
25	420	469	680	1,226	1,763	2,199	2,913	4,119	5,892	9,859	12,923	16,275
26	409	459	667	1,201	1,730	2,166	2,874	4,058	5,816	9,744	12,810	16,159
27	398	450	654	1,179	1,700	2,134	2,838	4,003	5,746	9,633	12,698	16,045
28	389	442	643	1,159	1,673	2,106	2,806	3,951	5,681	9,526	12,589	15,931
29	380	434	632	1,140	1,648	2,080	2,776	3,904	5,620	9,423	12,482	15,818
30	372	427	622	1,122	1,624	2,055	2,748	3,860	5,563	9,324	12,377	15,706
31	364	421	613	1,105	1,603	2,032	2,722	3,819	5,509	9,228	12,274	15,595
32	357	414	605	1,090	1,583	2,011	2,698	3,780	5,458	9,135	12,173	15,485

Duration (years)	Age at Disablement

Duration (years)	17	22	27	32	37	42	47	52	57	62	67	72
3	333	393	575	1,038	1,514	1,940	2,616	3,648	5,279	8,793	11,786	15,051
4	285	353	518	936	1,380	1,797	2,447	3,377	4,890	7,980	10,769	13,819
5	257	328	483	874	1,298	1,707	2,332	3,194	4,613	7,371	9,923	12,681
6	238	310	459	830	1,238	1,638	2,240	3,048	4,384	6,882	9,199	11,626
7	224	296	439	794	1,190	1,580	2,157	2,920	4,182	6,463	8,559	10,644
8	213	284	423	764	1,148	1,528	2,081	2,802	3,993	6,087	7,977	9,726
9	203	273	408	736	1,110	1,479	2,008	2,690	3,813	5,740	7,433	8,861
10	194	263	394	710	1,075	1,433	1,937	2,582	3,640	5,411	6,913	8,040
11	186	253	382	685	1,041	1,388	1,868	2,477	3,471	5,096	6,411	7,254
12	178	244	369	662	1,008	1,344	1,801	2,374	3,305	4,791	5,921	6,496
13	170	235	357	639	976	1,301	1,734	2,274	3,142	4,494	5,442	5,761
14	163	226	346	617	945	1,259	1,669	2,174	2,982	4,204	4,974	5,047
15	156	218	335	595	915	1,217	1,604	2,076	2,825	3,920	4,517	4,357
16	150	210	323	574	885	1,176	1,541	1,980	2,670	3,642	4,072	3,693
17	144	202	313	553	856	1,135	1,477	1,885	2,517	3,370	3,639	3,057
18	137	194	302	533	827	1,095	1,415	1,791	2,366	3,103	3,219	2,451
19	131	187	292	513	798	1,055	1,354	1,698	2,218	2,842	2,813	1,880
20	126	179	281	493	770	1,016	1,293	1,607	2,072	2,587	2,421	1,349
21	120	172	271	474	743	977	1,233	1,517	1,928	2,338	2,045	865
22	114	165	261	455	715	938	1,173	1,428	1,787	2,095	1,686	440
23	109	158	252	436	688	900	1,115	1,341	1,648	1,859	1,346	103
24	104	151	242	418	661	862	1,057	1,255	1,512	1,630	1,027	. . . .
25	99	145	233	400	635	825	1,000	1,171	1,379	1,408	732	. . . .
26	94	138	224	382	609	788	944	1,088	1,248	1,194	465	. . . .
27	89	132	215	365	583	751	889	1,007	1,121	990	233	. . . .
28	85	126	206	348	557	715	834	927	997	795	53	. . . .
29	81	120	197	332	532	679	781	849	876	610	. . . .	. . . .
30	76	114	188	315	507	644	728	772	759	439	. . . .	. . . .
31	72	109	180	300	483	609	676	697	645	282	. . . .	. . . .
32	68	103	172	284	459	574	625	625	537	144	. . . .	. . . .
33	64	98	164	269	435	540	575	554	433	34	. . . .	. . . .
34	61	93	156	254	412	507	527	485	334	. . . .	. . . .	. . . .

Duration (years)	Age at Disablement											
	17	22	27	32	37	42	47	52	57	62	67	72
35	57	88	148	240	389	473	479	419	241	. . . .	. . . .	. . . .
36	54	83	140	225	366	441	432	355	157	. . . .	. . . .	. . . .
37	50	78	133	212	344	409	387	294	81	. . . .	. . . .	. . . .
38	47	74	126	198	322	377	343	236	20	. . . .	. . . .	. . . .
39	44	69	119	185	300	346	300	181	. . . .	. . . .	. . . .	. . . .
40	41	65	112	172	279	316	259	130	. . . .	. . . .	. . . .	. . . .
41	39	61	105	160	259	286	220	83	. . . .	. . . .	. . . .	. . . .
42	36	57	99	148	239	257	182	43	. . . .	. . . .	. . . .	. . . .
43	33	53	92	137	219	229	146	10	. . . .	. . . .	. . . .	. . . .
44	31	49	86	126	200	201	112	. . . .	. . . .	. . . .	. . . .	. . . .
45	29	46	80	115	181	175	80	. . . .	. . . .	. . . .	. . . .	. . . .
46	26	42	74	104	163	149	51	. . . .	. . . .	. . . .	. . . .	. . . .
47	24	39	69	95	145	124	26	. . . .	. . . .	. . . .	. . . .	. . . .
48	22	36	63	85	128	100	6	. . . .	. . . .	. . . .	. . . .	. . . .
49	20	33	58	76	112	77	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
50	19	30	53	67	96	56	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
51	17	28	48	59	81	37	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
52	15	25	43	51	66	19	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
53	14	23	39	44	53	5	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
54	13	20	35	37	40	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
55	11	18	31	31	28	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
56	10	16	27	25	18	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
57	9	14	23	19	9	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
58	8	12	20	15	2	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
59	7	11	17	10	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
60	6	9	14	7	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
61	5	8	11	4	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
62	4	6	9	2	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
63	4	5	7	0	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
64	3	4	5	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
65	3	3	3	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
66	2	3	2	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .

1983 DISABILITY TABLE

Male Net Annual Claim Costs per $100 Monthly Benefit

at 7.50 Percent Interest

(24-Month Maximum after Age 65)

Age	Elimination Period (Months)						
	.23	.46	1	2	3	6	12
	12-Month Accident, 12-Month Sickness Maximums						
17	12.037	7.860	3.135	1.006	0.659	0.613	0.544
22	14.298	9.092	3.401	1.206	0.821	0.742	0.630
27	15.127	9.513	3.530	1.348	0.938	0.830	0.685
32	14.537	8.844	3.100	1.287	0.979	0.919	0.822
37	15.223	9.713	4.077	1.906	1.416	1.283	1.101
42	18.525	11.930	5.244	2.850	2.309	2.105	1.843
47	20.592	14.694	7.357	3.587	2.924	2.810	2.614
52	22.902	17.342	9.884	5.392	4.571	4.398	4.112
57	30.123	23.395	14.639	9.662	8.802	8.505	7.980
62	39.269	32.168	22.624	16.935	15.867	15.364	14.454
67	47.200	41.259	32.478	25.886	24.172	23.240	21.806
72	58.148	52.219	42.683	34.227	31.499	29.959	27.975
	24-Month Accident, 24-Month Sickness Maximums						
17	14.447	9.662	4.206	1.646	1.176	1.107	0.998
22	16.863	10.948	4.524	1.945	1.411	1.298	1.132
27	17.574	11.301	4.667	2.138	1.574	1.425	1.218
32	16.922	10.671	4.380	2.226	1.761	1.666	1.508
37	18.061	11.984	5.723	3.138	2.451	2.264	1.993
42	21.872	14.764	7.545	4.792	4.061	3.779	3.391
47	26.204	19.418	10.948	6.410	5.451	5.256	4.912
52	29.791	23.408	14.853	9.634	8.553	8.255	7.735
57	40.425	32.986	23.302	17.691	16.537	16.003	15.028
62	55.434	47.854	37.637	31.340	29.886	28.959	27.233
67	69.541	63.430	54.346	47.345	45.297	43.700	40.981
72	86.330	80.248	70.435	61.600	58.556	56.121	52.408
	60-Month Accident, 60-Month Sickness Maximums						
17	17.292	11.907	5.796	2.891	2.327	2.220	2.041
22	19.889	13.303	6.245	3.329	2.660	2.501	2.254
27	20.460	13.597	6.429	3.599	2.893	2.696	2.403
32	20.143	13.417	6.647	4.133	3.499	3.346	3.083
37	22.031	15.408	8.574	5.587	4.701	4.438	4.031
42	27.288	19.744	12.081	8.975	8.042	7.639	7.027
47	35.699	27.937	18.236	12.788	11.441	11.078	10.416
52	42.546	35.243	25.494	19.421	17.937	17.359	16.308
57	61.718	53.546	42.891	36.446	34.754	33.666	31.631
62	62.259	54.294	43.311	35.754	33.129	28.959	27.233
67	69.541	63.430	54.346	47.345	45.297	43.700	40.981
72	86.330	80.248	70.435	61.600	58.556	56.121	52.408
	To Age 65 Accident, to Age 65 Sickness Maximums						
17	20.843	14.858	8.303	5.284	4.686	4.501	4.174
22	23.748	16.518	9.036	5.972	5.239	4.998	4.593
27	24.361	16.989	9.487	6.509	5.729	5.444	4.984
32	24.585	17.585	10.605	7.941	7.227	6.957	6.470
37	27.979	20.878	13.650	10.422	9.407	8.992	8.294
42	36.392	28.529	20.555	17.160	16.039	15.364	14.230
47	49.151	40.652	30.145	24.144	22.520	21.742	20.284
52	57.566	49.576	38.983	32.259	30.383	29.165	26.890
57	73.598	65.093	53.923	46.820	44.570	42.247	37.857
62	62.259	54.294	43.311	35.754	33.129	28.959	27.233

TABLE R4f

1983 DISABILITY TABLE
Female Net Annual Claim Costs per $100 Monthly Benefit
at 7.50 Percent Interest
(24-Month Maximum after Age 65)

Age	Elimination Period (Months)						
	.23	.46	1	2	3	6	12
12-Month Accident, 12-Month Sickness Maximums							
17	13.828	9.201	3.479	0.905	0.631	0.546	0.434
22	16.156	10.734	4.032	1.105	0.818	0.684	0.530
27	19.209	12.637	4.725	1.605	1.391	1.159	0.879
32	22.531	14.788	5.954	2.693	2.158	1.780	1.367
37	27.015	18.597	8.497	4.224	3.406	2.711	2.031
42	31.431	22.234	10.660	5.400	4.578	3.623	2.704
47	33.862	24.616	12.714	7.008	6.122	4.833	3.635
52	35.358	26.835	15.098	8.467	7.444	6.295	5.000
57	36.111	29.005	18.283	10.551	8.957	8.018	6.838
62	36.925	30.630	21.481	15.377	14.199	13.194	11.622
67	37.431	32.507	24.908	18.801	17.130	16.143	14.761
72	42.917	38.016	30.087	23.051	20.836	19.680	18.287
24-Month Accident, 24-Month Sickness Maximums							
17	14.901	10.019	4.047	1.356	1.027	0.910	0.751
22	17.224	11.564	4.650	1.635	1.301	1.131	0.924
27	20.628	13.753	5.605	2.424	2.182	1.882	1.505
32	24.746	16.660	7.529	4.072	3.403	2.934	2.390
37	30.161	21.273	10.752	6.234	5.251	4.419	3.547
42	34.777	25.260	13.402	7.976	7.035	5.898	4.729
47	38.245	28.564	16.282	10.422	9.441	7.921	6.401
52	42.090	32.762	20.176	13.197	12.048	10.594	8.852
57	44.736	36.950	25.362	17.131	15.379	14.094	12.364
62	48.847	42.353	32.932	26.559	25.170	23.583	21.017
67	52.268	47.253	39.489	33.149	31.271	29.699	27.240
72	61.262	52.276	48.188	40.914	38.484	36.710	34.135
60-Month Accident, 60-Month Sickness Maximums							
17	15.990	11.003	4.927	2.161	1.784	1.635	1.419
22	18.406	12.680	5.707	2.641	2.268	2.062	1.792
27	22.306	15.353	7.152	3.944	3.679	3.316	2.831
32	27.775	19.576	10.322	6.722	5.946	5.386	4.684
37	34.594	25.533	14.844	10.153	9.034	8.070	6.969
42	40.230	30.627	18.678	13.144	12.105	10.795	9.322
47	45.627	35.816	23.424	17.473	16.409	14.658	12.727
52	52.819	43.076	30.109	22.947	21.679	19.890	17.552
57	59.925	51.767	39.738	31.220	29.296	27.538	24.950
62	53.595	46.887	37.000	29.785	27.569	23.583	21.017
67	52.268	47.253	39.489	33.149	31.271	29.699	27.240
72	61.262	56.276	48.188	40.914	38.484	36.710	34.135
To Age 65 Accident, to Age 65 Sickness Maximums							
17	17.673	12.659	6.555	3.757	3.352	3.155	2.846
22	20.654	14.916	7.920	4.819	4.416	4.146	3.753
27	25.673	18.706	10.485	7.244	6.946	6.486	5.815
32	33.734	25.501	16.184	12.483	11.620	10.889	9.860
37	43.429	34.311	23.531	18.692	17.441	16.222	14.630
42	51.199	41.560	29.536	23.866	22.695	21.042	18.910
47	58.722	48.861	36.378	30.265	29.041	26.816	23.978
52	66.409	56.520	43.375	35.986	34.498	32.062	28.485
57	68.403	60.116	47.868	39.018	36.776	34.084	29.710
62	53.595	46.887	37.000	29.785	27.569	23.583	21.017

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1983 DISABILITY TABLE
Male Net Annual Claim Costs per $100 Monthly Benefit
at 4.50 Percent Interest
(24-Month Maximum after Age 65)

Age	Elimination Period (Months)						
	.23	.46	1	2	3	6	12
12-Month Accident, 12-Month Sickness Maximums							
17	12.139	7.939	3.175	1.024	0.673	0.631	0.568
22	14.396	9.159	3.427	1.219	0.836	0.761	0.657
27	15.212	9.568	3.548	1.358	0.952	0.850	0.714
32	14.650	8.923	3.137	1.310	1.000	0.946	0.858
37	15.286	9.759	4.098	1.924	1.439	1.316	1.147
42	18.559	11.952	5.250	2.869	2.344	2.159	1.921
47	20.790	14.857	7.463	3.659	2.993	2.896	2.730
52	23.151	17.559	10.041	5.506	4.683	4.534	4.294
57	30.456	23.700	14.887	9.875	9.022	8.773	8.337
62	39.762	32.637	23.048	17.336	16.284	15.864	15.105
67	47.868	41.921	33.124	26.526	24.837	24.019	22.800
72	59.057	53.121	43.569	35.106	32.402	30.996	29.266
24-Month Accident, 24-Month Sickness Maximums							
17	14.643	9.814	4.293	1.695	1.217	1.153	1.054
22	17.056	11.087	4.599	1.993	1.455	1.349	1.195
27	17.750	11.425	4.733	2.185	1.619	1.479	1.285
32	17.130	10.826	4.474	2.294	1.822	1.736	1.593
37	18.231	12.120	5.814	3.214	2.526	2.353	2.104
42	22.037	14.900	7.651	4.904	4.184	3.930	3.581
47	26.631	19.781	11.216	6.619	5.650	5.484	5.193
52	30.323	23.883	15.235	9.955	8.868	8.615	8.177
57	41.201	33.714	23.950	18.297	17.153	16.705	15.889
62	56.651	49.037	38.767	32.452	31.025	30.247	28.796
67	71.234	65.121	56.033	49.051	47.055	45.666	43.334
72	88.550	82.467	72.655	63.850	60.867	58.675	55.417
60-Month Accident, 60-Month Sickness Maximums							
17	17.717	12.254	6.037	3.069	2.491	2.394	2.233
22	20.329	13.652	6.490	3.521	2.837	2.690	2.463
27	20.876	13.930	6.670	3.797	3.080	2.896	2.625
32	20.640	13.833	6.969	4.398	3.745	3.608	3.372
37	22.556	15.868	8.952	5.917	5.016	4.776	4.406
42	27.963	20.367	12.646	9.522	8.589	8.230	7.688
47	36.993	29.108	19.231	13.658	12.276	11.968	11.407
52	44.238	36.832	26.931	20.751	19.244	18.749	17.849
57	64.522	56.269	45.495	38.979	37.285	36.354	34.606
62	63.916	55.896	44.815	37.161	34.489	30.247	28.796
67	71.234	65.121	56.033	49.051	47.055	45.666	43.334
72	88.550	82.467	72.655	63.850	60.867	58.675	55.417
To Age 65 Accident, to Age 65 Sickness Maximums							
17	22.462	16.356	9.659	6.563	5.945	5.758	5.424
22	25.545	18.172	10.541	7.397	6.637	6.395	5.982
27	26.269	18.772	11.139	8.089	7.281	6.996	6.528
32	26.914	19.803	12.696	9.946	9.198	8.925	8.427
37	30.721	23.510	16.145	12.820	11.764	11.348	10.638
42	40.376	32.425	24.341	20.870	19.713	19.039	17.885
47	54.555	45.850	35.051	28.817	27.104	26.316	24.822
52	62.897	54.741	43.899	36.963	34.991	33.755	31.424
57	78.541	69.920	58.564	51.288	48.948	46.589	47.089
62	63.916	55.896	44.815	37.161	34.489	30.247	28.796

1983 DISABILITY TABLE

Female Net Annual Claim Costs per $100 Monthly Benefit

at 4.50 Percent Interest

(24-Month Maximum after Age 65)

Age	Elimination Period (Months)						
	.23	.46	1	2	3	6	12
12-Month Accident, 12-Month Sickness Maximums							
17	13.921	9.266	3.506	0.914	0.640	0.559	0.452
22	16.248	10.793	4.050	1.108	0.824	0.698	0.552
27	19.324	12.710	4.747	1.609	1.400	1.181	0.915
32	22.598	14.816	5.944	2.688	2.169	1.814	1.422
37	27.000	18.550	8.424	4.182	3.401	2.754	2.111
42	31.424	22.195	10.589	5.354	4.572	3.680	2.812
47	33.847	24.567	12.632	6.956	6.117	4.914	3.782
52	35.529	26.956	15.151	8.503	7.509	6.430	5.207
57	36.414	29.267	18.475	10.697	9.112	8.232	7.132
62	37.310	30.992	21.807	15.687	14.527	13.592	12.134
67	37.926	32.994	25.377	19.258	17.599	16.683	15.433
72	43.541	38.632	30.687	23.640	21.437	20.364	19.132
24-Month Accident, 24-Month Sickness Maximums							
17	15.035	10.117	4.099	1.386	1.055	0.944	0.792
22	17.356	11.655	4.694	1.662	1.331	1.170	0.974
27	20.798	13.871	5.664	2.466	2.230	1.946	1.585
32	24.897	16.762	7.585	4.131	3.476	3.034	2.520
37	30.265	21.330	10.774	6.284	5.336	4.559	3.738
42	34.901	25.343	13.449	8.050	7.150	6.087	4.984
47	38.406	28.677	16.355	10.528	9.599	8.179	6.748
52	42.532	33.129	20.452	13.456	12.342	10.976	9.336
57	45.398	37.551	25.872	17.594	15.858	14.658	13.055
62	49.760	43.242	33.788	27.413	26.057	24.582	22.200
67	53.443	48.423	40.651	34.317	32.471	31.025	28.796
72	62.741	57.752	49.659	42.397	40.004	38.382	36.094
60-Month Accident, 60-Month Sickness Maximums							
17	16.224	11.195	5.067	2.275	1.893	1.752	1.547
22	18.651	12.883	5.858	2.773	2.402	2.208	1.955
27	22.637	15.629	7.368	4.144	3.887	3.544	3.084
32	28.222	19.968	10.662	7.058	6.291	5.767	5.112
37	35.131	26.014	15.281	10.612	9.523	8.629	7.604
42	40.891	31.245	19.260	13.755	12.760	11.543	10.172
47	46.512	36.650	24.219	18.310	17.308	15.683	13.889
52	54.284	44.450	31.381	24.212	22.991	21.324	19.152
57	62.041	53.809	41.681	33.127	31.237	29.613	27.244
62	54.817	48.073	38.125	30.855	28.620	24.582	22.200
67	53.443	48.423	40.651	34.317	32.471	31.025	28.796
72	62.741	57.752	49.659	42.397	40.004	38.382	36.094
To Age 65 Accident, to Age 65 Sickness Maximums							
17	18.704	13.645	7.484	4.654	4.240	4.042	3.729
22	21.999	16.215	9.165	6.039	5.632	5.364	4.966
27	27.655	20.631	12.347	9.084	8.789	8.334	7.656
32	36.933	28.638	19.258	15.534	14.664	13.943	12.904
37	47.811	38.629	27.789	22.945	21.701	20.511	18.911
42	56.165	46.477	34.404	28.742	27.593	25.978	23.835
47	63.944	54.027	41.492	35.396	34.209	32.035	29.180
52	71.389	61.394	48.126	40.695	39.221	36.805	33.185
57	72.066	63.690	51.314	42.380	40.124	37.420	32.963
62	54.817	48.073	38.125	30.855	28.620	24.582	22.200