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MORTALITY MEASUREMENT

- A. Is comparison of its mortality with that of other companies important to the smaller company? Does the customary mortality ratio from the Gain and Loss Exhibit have any validity for this purpose? Do the Society studies provide a better measure? Is there need for reliable data on individual companies such as is available concerning interest earnings or expense rates?
- B. To what extent do variations in age, sex, duration, plan, and medical requirements distort results? How great a difference may arise between ordinary and combination companies? What minimum data would be necessary to obtain significant results for intercompany comparisons?

MR. W. J. DAVIDSON, JR., pointed out that a small company must make suitable combinations of mortality data in order to avoid the variations arising from the use of small numbers. The Pan-American accomplishes this by deriving mortality ratios from a combination of the five most recent years of experience. These results are not very sensitive to change and indicate significant trends rather slowly, but, on the other hand, are not overly distorted by the experience of a single good or bad year.

MR. L. S. NORMAN discussed a number of the factors which can cause distortion in the results of mortality studies. First year select mortality ranges from 30 to 60 percent of ultimate. Nonmedical experience is from 10 to 25 percent higher than medical. Female mortality ratios are only about 60 percent of male. Because of these extreme variations, it becomes necessary to separate experience on these types of business. Consequently, a number of years of experience must be combined in order to get significant results.

MR. E. F. ESTES urged the pooling of mortality data from smaller companies into a combined experience. Each company would then be able to compare its experience with that of a group of other companies of its own size. In addition it would result in the development among small companies of uniform procedures for preparing material. His company, the Bankers Life of Nebraska, has been preparing mortality tables from its own experience for 25 years. They combine 5 years' experience in order to get sufficient exposure (about 1 billion dollars). Their most recent table is based on experience of 1950-1955. The accompanying table gives their aggregate mortality experience for the years 1950-1955. Commutation columns at $2\frac{1}{2}\%$, $3\frac{1}{4}\%$ and $3\frac{1}{2}\%$ are available.

BANKERS LIFE AGGREGATE EXPERIENCE, 1950-1955

Age	q_x	Age	q_x	Age	q_x	Age	q_x
0	.00194	26	.00097	52	.00783	78	.07066
1	.00159	27	.00089	53	.00843	79	.07503
2	.00073	28	.00085	54	.00892	80	.08017
3	.00042	29	.00084	55	.00936	81	.08675
4	.00039	30	.00085	56	.00980	82	.09338
5	.00036	31	.00088	57	.01030	83	.10622
6	.00034	32	.00092	58	.01089	84	.12072
7	.00033	33	.00096	59	.01166	85	.13705
8	.00034	34	.00102	60	.01268	86	.15541
9	.00035	35	.00111	61	.01400	87	.17599
10	.00036	36	.00124	62	.01571	88	.19900
11	.00039	37	.00143	63	.01784	89	.22466
12	.00043	38	.00167	64	.02029	90	.25315
13	.00051	39	.00195	65	.02294	91	.28468
14	.00059	40	.00225	66	.02567	92	.31943
15	.00069	41	.00253	67	.02834	93	.35752
16	.00080	42	.00276	68	.03088	94	.39908
17	.00091	43	.00295	69	.03342	95	.44417
18	.00103	44	.00312	70	.03613	96	.49278
19	.00114	45	.00333	71	.03921	97	.54485
20	.00123	46	.00364	72	.04284	98	.60023
21	.00128	47	.00409	73	.04712	99	.65869
22	.00129	48	.00472	74	.05187	100	.71991
23	.00125	49	.00548	75	.05684	101	.78351
24	.00117	50	.00630	76	.06177	102	.84899
25	.00107	51	.00711	77	.06642		

MR. W. M. STEWART stated that a small company, even more than a large one, needs to know its own mortality experience and how it compares with that of other companies. A large company has enough of its own experience to rely entirely on its own mortality studies. A small company, however, because of scarcity of material, must depend on comparison with industry studies to check on the effect of its underwriting practices, to construct dividend scales and to determine its competitive position. The customary Gain and Loss Exhibit ratio is not satisfactory for such comparisons because it is based on mixed mortality standards. The Society studies furnish a better measure, but are derived from large company experience which may be quite different from that in a small company. He went on to point out the distortions which can be caused by varying age distributions, sex, the issues of Preferred Risk plans, medical requirements and geographical location.

These distortions can be minimized by using a modern table as a basis for expected claims and by giving separate treatment to any section of business which presents special difficulties. He ended with a warning that the expense of all such studies should be justifiable in the light of the results obtained.

MR. R. P. WALKER reported that the Wisconsin National (about 140 million insurance in force) makes an annual mortality investigation in the same form as the intercompany studies reported by the Society of Actuaries. Separate exposures for medical standard, nonmedical standard and total substandard business are developed as a by-product of the valuation process by selecting each type of business into separate fields when valuation summary cards are made. The annual study takes up one week of a clerk's time and one hour of the actuary's.

MISS G. A. SCHLACHTER pointed out some of the difficulties of making intercompany comparisons. Very few of the Colonial's current issues could be included in a study similar to the intercompany material published by the Society. Only 25% of its issues fall into the adult standard category. There is little material available for comparisons of juvenile mortality rates. At age 0 the problem is further complicated by varying company practice as to age at which applications are first accepted. Differences in underwriting practice cause other variations in the absolute mortality level. As a result, it is only the combined effect on premiums of mortality and underwriting costs which is of importance.