



SOCIETY OF ACTUARIES

Article From:

The Actuary

September 1986 – Volume No. 20, Issue No. 7



The Actuary

The Newsletter of the Society of Actuaries

VOL. 20, No. 7

September, 1986

MORTALITY EXPERIENCE AMONG ACTUARIES

By Mohamed F. Amer

The February issue of *The Actuary* shows the number of survivors from those who became Fellows in the years 1920-1936. It occurred to me to try to construct an abridged mortality table from this scanty data. The number of persons exposed is 291, among whom there have been 184 deaths.

I did not use traditional age-related mortality, but rather tried to get rates by duration since attaining Fellowship.

1. From the numbers of survivors in 1949, by year of obtaining Fellowship, the crude 1_n^c values can be obtained for $n=13$ to 29 (where n is the years since Fellowship). From the survivors in 1986 1_n^c values for $n=50$ to 66 can be found. The results are as follows:

Year of FSA				
n	1_n^c	n	1_n^c	
13	9474	1936	50	6316
14	9000	1935	51	6000
15	9333	1934	52	5333
16	9474	1933	53	6316
17	10000	1932	54	4118
18	10000	1931	55	4737
19	10000	1930	56	5000
20	9565	1929	57	3478
21	9333	1928	58	1333
22	8095	1927	59	1905
23	10000	1926	60	4167
24	9167	1925	61	1250
25	9286	1924	62	2857
26	10000	1923	63	1000
27	6667	1922	64	1111
28	7857	1921	65	1429
29	7500	1920	66	2500

2. Needing a reference table to graduate these 1_n^c , and having experience from 1920 to 1986, I decided to use 1958 CSO males. The best fit was obtained by assuming fellowship at age 22.

The graduation formula is $1_n = 9238 1'_{22+n} + 811.51$

where 1_n is the graduated value of 1_n^c
and $1'_x$ is that of the reference table.

CURRENT PENSION ISSUES IN THE UNITED KINGDOM

By Alistair Neill

Pension actuaries across the Atlantic may be interested in two different issues of current concern in the UK.

Transfer Values

Actuaries have a new statutory involvement in transfer values arising from change in employment. The Social Security Act 1985 provides that transfer values must be calculated in accordance with regulations. The regulations specify no interest rates or mortality tables, but do say that the value must be calculated on a basis approved by an actuary and consistent with professional guidelines.

The Institute and the Faculty have issued guidelines on the calculation of transfer values in final salary plans. These state that the value should be the present value of the expected pension on a prospective basis (rather than a retrospective roll-up of contributions). As to interest, the guidelines say: "Such actuarial value should be assessed having regard to market rates of interest. One of the ways in which a market value assessment can be made is on the basis of market redemption yields on British Government obligations of appropriate duration and type, at the time of transfer, with an allowance for the investment of future investment receipts at such rates as the actuary considers reasonable." As great differences in the other parts of the actuarial basis (such as mortality) are unlikely, the main reason for differing values being quoted by different actuaries will be the assumptions as to the rates at which future money can be invested.

(Continued on page 3)

(Continued on page 3)

Workday Problems

(Continued from page 2)

separately are needed. The easiest is relating cancelled loans to death claims, since (presumably) this number is not much affected by voluntary actions by the policyholder. Developing factors for loans cancelled by surrender is a little more interesting. We found that the average loan on policies being surrendered was considerably higher than the average loan on all inforce policies. If this is found to be true of your company, this should be reflected in your model. In passing, this fact could have an important influence in understanding the effect of higher surrenders on profitability (especially if differences in policy loan activity are not recognized in dividends).

The next step is to correlate new loans net of voluntary repayments to interest rates. After testing various approaches, the one that worked for us was first, to express this amount as a percent of loan values available, and then to correlate the change in this percent to the change in interest rates (actually a moving average of interest rates).

Mortality Experience Among Actuaries

(Continued from page 1)

3. The following is the resulting abridged life table for Fellows of the Society:

<u>n</u>	<u>l_n</u>
0	10000
5	9623
10	9532
15	9427
20	9286
25	9078
30	8766
35	8300
40	7624
45	6683
50	5455
55	4067
60	2714

4. The total expected deaths is 222 as compared to the actual 184, so this table includes a 17% margin. Can we conclude that Fellows of the Society experienced mortality (over the 1920 to 1986 period) approximately equal to 1958 CSO, but rated back at least 10 years? Surely the average age of obtaining Fellowship was no less than 30.

5. The data is very scanty and the approach is not traditional. Actuaries may differ as to the procedure. Nonetheless, these results may be of interest.

LIBRARY NEEDS

If anyone has a spare copy of the following book: *Concepts of Actuarial Soundness in Pension Plans* by Dorrance C. Bronson (published by Irwin for the Pension Research Council in the middle '50s), a donation to the SOA Library will be greatly appreciated.

Joan I. Chapa, Librarian

This approach may sound more complicated than what the subject at first glance may deserve, but our formula has worked remarkably well over the last 3 years, where I suspect simpler approaches may not have held up as well. Perhaps more importantly, this approach provides further insight into the dynamics of loans, surrenders, dividends, and profitability. One final comment: Such things as dividend deposits and paid-up additions are often ignored in such model studies. The actuary should carefully evaluate whether, for his company, the impact of these items is significant.

Pension Issues in UK

(Continued from page 1)

Although the Government presumably thought they were ensuring an increase in transfer values (there having been media comment that transfer values were too low), the values in the future are likely to be less. In the past some actuaries used for transfer value purposes the same interest rates as for funding, say 8 to 9%; but they will now be using 10 to 11%.

Personal Pensions

The Conservative Government, as a part of their enthusiasm for privatisation, are headed for a system in which people are encouraged to opt-out of a part of the State pension. They could do this through a "personal pension" funded by the rebate of part of the State plan contributions.

Some of us are concerned that the public will not understand the risks they run in substituting their own retirement account (which buys a uni-sex annuity at retirement) for a pension based on earnings; but our Secretary of State for Social Services has made at least two visits to the United States and is very impressed by your IRAs.

We hear that much of the in-flow to your IRAs is going into deposit-type investments. These do not seem very suitable for pension fund savings, which surely should be invested in a wide range of securities with a considerable emphasis on equities. Perhaps American actuaries might like to offer advice. Is this enthusiasm for individual accounts reasonable — or is it misplaced? And what about uni-sex annuities?

Addition to the Program Booklet

An open committee meeting of the Task Force on Mutual Life Insurance Company Conversion will be held at 8:30 A.M. on Tuesday, Oct. 7, as a part of the Society of Actuaries annual meeting in Chicago. At that meeting, the draft report of the Task Force will be discussed. Advance copies of the draft report may be obtained from Terry D. Garver, Task Force Chairman, at his *Yearbook* address.