



SOCIETY OF ACTUARIES

Article from:

The Actuary

April 1980 – Volume 14, No. 4



The Actuary

The Newsletter of the Society of Actuaries

VOLUME 14, No. 4

APRIL, 1980

NEW MORTALITY TABLES K(M) AND K(F)

by Michael G. Reilly

Ed. Note: This article describes the mortality tables that our Board of Governors is recommending to the NAIC as successors to the 1958 CSO Table — see 2(A) of "Summary of Non-Routine Business" in this issue. Mr. Reilly, though not a member of Charles A. Ormsby's special committee that constructed these tables, is on the staff of Committee Vice-Chairman Joseph C. Sibigtrath.

Need for a Successor to the 1958 CSO Table

Appointed in June 1976 to investigate the need for new valuation mortality tables, the Special Committee determined that mortality of insured lives has improved significantly in the more than twenty years since the exposure period of the 1958 CSO Table. Continued use of the 1958 CSO Table produces life insurance reserves and minimum cash values higher than those based on a table reflecting current mortality levels and has created serious deficiency reserve problems.

The 1958 CSO Table generally represented male mortality with a three-year age setback assumed for females to reflect their lower mortality experience. The Committee developed separate male and female tables because there are significant mortality differences by sex (intercompany experience indicates female to male mortality ratios of 60%), which could not accurately be reflected by an age setback. More female mortality experience is currently available giving greater credibility to a separate female table.

Constructing the New Basic Tables

The new tables are based on intercompany experience between 1970 and

(Continued on page 6)

LINDEN N. COLE, DIRECTOR OF EDUCATION

We cordially welcome Linden Cole, F.S.A. 1963, to the key staff post of Director of Education. He tells us that until now he's been a "one employer" actuary, in New Jersey at Mutual Benefit Life. He has had 15 years experience on the Education & Examination Committee, having worked his way up, as he puts it, through the Part 7 hierarchy to Multiple Choice Editor and Part Chairman, then for several years as Education Vice-Chairman and Education Chairman.

Mr. Cole's post was established in 1977, and occupied with distinction by Warren R. Adams. Says Mr. Cole, as he considers the educational scene: "We all know there are limits to how much volunteers can find time to accomplish; with staff support though, the E & E Committee can do the intensive thinking and planning its members wanted to do all along. Witness the excellent program of seminars started during Warren Adams' term.

"With nearly 375 Fellows in the E & E and the Continuing Education Committees, it is obvious that the Society's education efforts will continue to depend on our members' volunteer efforts. Our staff must help their work in such a way that we can respond with all deliberate speed to the inevitable changing needs and new demands upon us. I am honored to be asked to work full-time with our fine volunteers." □

Actuarial Meetings

April 22, Actuaries Club of Philadelphia

May 8, Baltimore Actuaries Club

May 20, Chicago Actuarial Club

May 22, Actuarial Club of Indianapolis

NEBRASKA ROLES AND ETHICS SURVEY

Ed. Note: This, the first of two articles, is a summary of material furnished by Warren R. Luckner. The full survey is available from Prof. Luckner at his address in the Year Book.

The Actuarial Science Program at University of Nebraska includes a course on Actuarial Roles and Ethics. In 1978 the students in this class sent a questionnaire to 265 persons, mostly alumni of the Program, aimed at finding out how actuaries see themselves, and to what extent ethical questions have impinged upon them. This article gives answers by 61 Fellows — 60 F.S.A.'s and one F.C.A.S.

What 61 Fellows Said: Roles

Ques.: Do you consider yourself a professional?

Ans.: Yes, 58; No. 3. Most of the Yes responders cited the body of knowledge and skills called for, or the educational standards. Eighteen mentioned the standards of professional conduct. Of the three No's, one said, "Haven't enough responsibility"; one, "Am doing other than actuarial work"; the third regards himself as a "businessman with technical expertise."

Ques.: Which (of five given choices) best describes the current market for new actuarial students?

Ans.: No Fellow picked unreservedly the top category offered (wide open, no problem getting a job). The majority checked, in nearly equal numbers, the second choice (very good, but need an exam or two), or the third (good, but tightening up somewhat). Six supported the fourth category (fair, has tightened up considerably), and there was one

(Continued on page 3)

MORE ACTUARIES IN PRINT

Paul H. Gilman sent us a review, in the *San Francisco Examiner & Chronicle*, of a thriller by Geoffrey Watson, *The Nooriabad File*. Its hero is a youngish actuarial consultant who, says reviewer Lenore Glen Offord, is kidnapped by an unexpectedly polite group of terrorists. The review closes thus: "I couldn't really grasp the idea of the yarn, or all about what happened. Other readers may be brighter."

* * * *

Paul Thomson found a handsome tribute to an unidentified member of our profession in an article, "Putting Life into the Computer," in *The Christian Century*, March 5, 1980:

"From time to time we deal with the actuary who annually figures how much money the Christian Century Foundation must pay out each month to properly fund our retirement investment program. It is a complicated procedure, based on the number of employees, their ages, their life expectancy, and the sum they are to receive. . . . This man probably uses a computer. . . . but when he writes to tell us what we will owe, it is a personal letter indicating that he knows our people and is concerned that we keep our retirement fund at a level sufficient to cover future spending. I get the feeling that he looks upon our active and retired staff members as individuals of worth. . . . Our auditors tell us that

he is a conservative man, insisting that we put aside a bit more money than is actually necessary, but we do it anyway because we figure that it's a good idea to be conservative where pensions are concerned. A computer wouldn't add that personal touch. Our actuarial expert does."

* * * *

James B. Germain writes: "I have long supported the proposition that, for an actuary, verbal skills are more important than mathematical. Accordingly, I was delighted to find that my daughter's high school guidance chart cross-matches Math and English and comes up with "Actuarial"! □

New Mortality Tables

(Continued from page 1)

1975 policy anniversaries. A five-year period, one year longer than that of the 1958 CSO Table, was used to provide more data, especially for the female table. The first five policy years were, as in the 1958 CSO Table, excluded from the data (except for the young ages). This introduces an element of conservatism by eliminating favorable select experience and avoids the wide variation in intercompany experience in these years due to differences in underwriting rules, etc. Both non-medical and medical experience were included throughout, even though the 1958 CSO Table excluded non-medical experience in years 6-15, because the percentage of non-medical business has grown substantially.

The experience rates were graduated using the same Jenkins' formula used for the 1958 CSO Table. Minor adjustments in experience rates were made so that (1) at the very young ages they

would be more consistent with other mortality tables; (2) they would grade smoothly into unity at age 100 for the Basic Tables and age 99 for K(M) and K(F); and (3) the overall ratio of actual to expected claims based on the Basic Tables would be 1.000.

There is a significant dip in mortality rates in the 20's in the Male Basic Table and Table K(M). Even though the Committee considered removing this dip as was done in the 1958 CSO Table, it was retained because it is now so much more pronounced and to remove it would disregard the experience at important insuring ages. Although there was a very slight dip in the female experience, it was removed by the graduation process.

Developing the Margin Formula

The margin formula used to load the Basic Tables consists of a quadratic function of age divided by the curtate expectation of life calculated from the Basic Tables. The prime constraint was that reserves in the aggregate (for a

model office) be close to those developed using the underlying 1970-75 fifteen year select and ultimate mortality experience. Tables K(M) and K(F) produced model office reserves that are about 7% lower than those based on the 1958 CSO Table.

Comparison with 1958 CSO Table

As the table below shows, Table K(M) rates are generally 10-20% lower than those of the 1958 CSO Table; the reductions are greater for Table K(F) over the 1958 CSO rates setback three years.

Future Action

After the report was presented to the Board of Governors early in 1979, it requested that copies be distributed to the entire membership for discussion at the Society's meeting in Bal Harbour in October 1979. The general reaction to the report has been very favorable. It is now anticipated that the NAIC will this December vote on the adoption of the tables as the new minimum valuation standard.

Tables K(M) and K(F) vs. 1958 CSO Tables
(1000 q_x)

Age x	Male			Female		
	Table K(M) (1)	1958 CSO (2)	(1)/(2) x 100% (3)	Table K(F) (4)	1958 CSO (3-year setback) (5)	(4)/(5) x 100% (6)
15	1.33	1.46	91.1%	.85	1.26	67.5%
25	1.77	1.93	91.7	1.16	1.86	62.4
35	2.11	2.51	84.1	1.65	2.25	73.3
45	4.55	5.35	85.0	3.56	4.17	85.4
55	10.47	13.00	80.5	7.09	9.96	71.2
65	25.42	31.75	80.1	14.59	24.31	60.0
75	64.19	73.37	87.5	38.24	58.65	65.2