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"For Professional Recognition of the Health Actuary"

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Chairperson's Corner

by Thomas R. Corcoran

I would like to take this opportunity to address a subject that was always a big question for me, and may be a question for you. That is "What does the Health Section do?"

Two major responsibilities of the Health Section are establishing the content and quality of health sessions at the Society of Actuaries meetings and recruiting authors and collecting news for this newsletter.

Developing session content and quality for SOA meetings requires co-ordination of a huge effort. The Council and numerous volunteers have been extremely busy preparing for the Health Specialty Meeting in Hawaii, June 22–24. The Health Section is sponsoring 54 diverse sessions, so there should be plenty of interest to each of you.

We will be kicking things off with a welcoming Health/Pension reception on June 21 for you and your guests. In addition, the Section Council is jointly sponsoring an open session with the SOA Health Benefit Practice Advancement Committee and the Academy Health Practice Council on June 24. This session will tell you what we have planned for the upcoming year and
and will give you an opportunity to tell us what we ought to be doing. We look forward to seeing you there.

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"Credibility"—The Health Actuary's Nemesis or Friend?

by Thomas J. Stoiber

Most professionals exhibit an almost innate understanding of certain fundamental concepts developed through education and experience. The benefits to clients are obvious—no time wasted working through what would otherwise be time-consuming, usually complex, issues. But did you ever wonder what would happen if the professional had only a vague understanding of a key concept or its application to a practical situation? And what if two professionals working on the same practical issue have a different understanding of that concept and can't reconcile their differences? "Credibility" seems to be one such concept for health actuaries.

Health actuaries often rely on projections of historical experience. The actuary knows that experience that is not "fully credible" (whatever that really means) may deviate from expected simply due to random variation implicit in the nature of the business. The expected magnitude of the variation is well understood to be larger as the dataset becomes smaller. Removal of this size-dependent variation is important to get to the underlying statistic of the experience. Commonly that statistic is the mean cost, which in many cases will be the basis for premiums or reserves. The question becomes how to quantify the value of credibility in health situations and then how to apply it to reach the goal of understanding the underlying experience.

The SOA has now formally taken up this question for the health insurance actuary. The Credibility Task Force for Health Coverage was assembled nearly two years ago to identify needs, evaluate them, and find solutions.

So far, the Task Force has identified multiple needs:

- *Education*. Some of the members of the Task Force expressed concern that many actuaries have either forgotten the mathematics of credibility or don't know how to apply it in real situations.

  There is little on practical applications of credibility theory in the health syllabus. Practical application of credibility theory has received more emphasis among casualty actuaries. However, direct application to health insurance is not appropriate because of the highly dependent nature of a health

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In fact, these same questions must be answered by any actuary who needs to price a health product, regardless of the involvement of a regulator.

Unfortunately, we are beginning to see some oversimplification on the regulatory front. In some cases, volume thresholds are being used to make simple "all or nothing" determinations regarding credible, ignoring the concept of partial credibility.

These questions are equally important to valuation actuaries. How many valuation actuaries have not battled with issues related to setting reserves based on a claim triangle that is less than fully credible? Three years ago, the NAIC model reserve standards were changed to allow a company to use its own experience to compute group disability income claim reserves, provided the experience was "credible." However, the DI actuary may not have the resources necessary to evaluate credibility.

Up until now, we health actuaries have gotten by without much more than an intuitive approach to handling credibility issues, because the penalty for error was not severe. Errors in predicting the morbidity costs of a health product for purposes of pricing could be made up later in premium rate adjustments. Competition has a major impact on the prices that could be charged in the market anyway on products and/or groups with less than "credible" experience. Similarly, an error in valuation would often be self-correcting in the following period.

Now things have changed. Downward pressure on premium rates is making it more difficult to correct for past errors in future rate increases.

Valuation is increasingly being used to determine the transaction price of the sale/purchase of blocks of business. Premium is actually being refunded in the case of Medicare Supplement policies based on federal regulation that specifies thresholds of credibility. Consequently, the unanswered questions surrounding credibility issues are becoming more critical.

Now who's to question health actuaries' grasp of credibility theory? Isn't it simply the application of the classic "z-factor" formula:

$$C = Z \times R + (1-z) \times H,$$

where

C is the underlying cost of a specific experience set

R is the statistic derived from the specific experience set

H is the corresponding statistic in a similar general "universe" set

Z is the credibility factor, ranging between 0 and 1.

Simple. Right? Sure, if one really knows the value for all of these variables. But the fact is only those actuaries working in a large company have access to the values and then only in limited situations. Referring to the questions listed above, we can see how difficult this formula can be. Before we can calculate a value for H, we must answer Question 1, "Where does one get the "universe" data?"

Z can be derived by statistical techniques that consider the size and variability of the statistic in both the general "universe" and specific "experience" datasets. Those techniques must take into consideration the nature of the business, including parameters that measure correlation or independence. So before we can calculate a value for Z, we must answer Questions 2 and 3.

Now that I have convinced you of what you already knew, that you really don't have the tools to effectively apply credibility to health activities, just what can the Task Force do for you, what are their plans, and just who are they?

The Task Force is rather a unique composition in SOA efforts of this type. Ten members were assembled from both academic and company backgrounds.

It took nearly all of the first year of meetings to agree on what the needs are and to identify what the SOA could do to meet those needs. The rest of the time has been used to formulate a plan of action. Here's our plan to date in a nutshell:

(1) Provide a health orientation to educating the actuary in the application of credibility theory. As a result, we hope that generally accepted methods will evolve throughout the health actuarial community.

(2) Provide the general "universe" statistics that credibility theory requires but are lacking in all but the largest company environments.

(3) Train actuaries on the correct way to blend the general "universe" statistics developed in step 2 with their own specific company experience.

(4) Provide practical advice on credibility theory in regulation, including:

- Defining the thresholds of "credible experience" in the NAIC model minimum reserve standards for group disability income claims
- Suggesting how state regulators reviewing premium rates can blend general universe and specific experience in reaching their conclusions
- Revising the Medicare Supplement Refund Credibility Tables.

Later this year you should begin to see some of the results of our efforts. We are planning a two-day teaching seminar on the application of credibility theory to health insurance. Our current thought is to spend the first day covering the mathematics of credibility (a refresher to us who believe we already know credibility theory mathematics). The second day would be devoted to practical case studies, using real data, in pricing medical and limited benefits products and in valuation of disability income and medical expense policies.

"The SOA has now formally taken up this question for the health insurance actuary …"

Gathering the needed general universe type statistics is proving to be very difficult. Right now we are concentrating on medical insurance products, but plan to move into other lines such as disability income, long-term-care and limited-benefit policies. Another SOA task force is currently working on an update to the large claims intercompany study prepared a few years ago. We are actively working with that group to determine whether it is feasible to enhance their collection criteria so that we can publish a general "universe" dataset. These data are

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required to compute the *"H"* and "*Z*" of our credibility formula. Final results could be two years away.

For nonmedical lines, we are hopeful that recent intercompany studies may provide enough information to extract the credibility values without the need to gather additional data. The long-term- care study and the recent experience study on disability income products are prime sources that we will be reviewing.

Once the data collection/analysis effort nears completion, we think we would be ready to make a serious contribution to regulators' needs. The NAIC has already expressed interest in our efforts, particularly regarding long-term disability, long-term care, and limited- benefit health plans. These efforts typically fall under the realm of the American Academy of Actuaries. So as we near completion, we as an SOA task force may have to reconstitute ourselves or in some other fashion turn the baton over to the Academy. We have no target date yet set for this facet of our plan, but 1999 is a best guess.

As you can see, we have a lot on our plate. The good news is that we have moved from the early design stages to production mode in several areas. Since we see our efforts potentially affecting all health actuaries, we want to regularly update members on our progress. Look for more articles in this newsletter and sessions at upcoming meetings. We'll be giving senior managing actuaries the opportunity to help focus the design of our next steps at the Annual Meeting this fall. Any input you would like to provide is welcome. Please feel free to contact any of the following members of our Task Force.

- Brett Gant, AFLAC
- Charles Fuhrer, BCBS of the National Capitol Area
- P. Anthony Hammond, Principal Healthcare Inc.
- Thomas Herzog, U.S. Department of Housing and Urban Development
- Leonard Koloms, Trustmark Insurance Company
- James Robinson, University of Wisconsin, CHSRA
- Craig Shigeno, Tillinghast-Towers Perrin
- H. Dennis Tolley, Brigham Young University
- Andrew Wang, PREMERA
- Thomas Stoiber (Chair) In. Health Actuarial Associates.

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pricing periods but at the cost of increases over longer periods.

A Substitute for Medicare

If Medicare becomes increasingly irrelevant in providing health care security at older ages, insureds can be persuaded to use the paid-up period to prefund old age health care security under a separate policy.

MMPP for Employer-Sponsored Group Health Insurance

The concept of MMPP can be used in employer-sponsored health insurance programs in several ways. An employee may enter employment with his own prior policy (if any), negotiating for compensation without health insurance and continuing his policy with or without an employer premium subsidy. For employees without prior personal coverage, active life reserves may be generated in employees' accounts on MMPP basis, with the employees taking over premium payments if separated from employment.

The extra premiums required under MMPP in early years may be subsidized by the employer. Employees could be encouraged to deposit additional funds at a discount to cover probable periods of layoff or low income or to accelerate the paid-up period. If the policy is paid up or prepaid for some period, a laid-off employee will have a competitive advantage in seeking new employment or in becoming self-employed.

Voluntary Offer to Existing Insureds

A paid-up period option could be offered to existing insureds if the current premium scale for a policy appears adequate.

Impact of MMPP on Premium Pattern

With no changes in actuarial assumptions except zero voluntary lapses and no antiselection during the paid-up period, MMPP will result in only a modest increase in premiums during early years compared with an existing scale, but a significant decrease in total premiums over the insurance period. If lapses remain unchanged during the premium-paying period, the savings to persisters will be large. If early lapses are lower the force of antiselection will be less and the savings for a much larger population will be even more significant. The investment income will pay an increasing proportion of benefits. A pricing comparison will be included in the Fall 1998 edition of *ARCH*.

Increasing the Effectiveness of MMPP

In order to make MMPP effective and to beneficial and to minimize its abuse, the following measures will also be necessary.

Right to Revise Premiums Whenever Actuarially Necessary

Each insurer should have the right to revise rates once a year if necessary, in the judgment of its actuary, to ensure the solvency of the program. However, this should be balanced by the following requirements:

- *Disclosure of Pure Premiums and Expenses*. The market, and not regulators, should determine whether an insurer's expenses are reasonable.
- *First-Year Expense Charge to be a Certain Minimum Multiple of Renewal Charge*. Insurers should be discouraged from loading renewal charges with what are really marketing costs added for the purposes of reducing initial charges to new insureds. This will help make renewal charges to persisters consistent with and closer to actual expenses incurred and will encourage persistency.
- *Good-Faith Estimates of Projected Premiums and Charges in the Near Future*. Good-faith estimates together with regulatory oversight would promote competitiveness of premiums consistent with solvency. These estimates should be based on reasonable projections of rates of inflation, antiselection, and so forth. This will enable insureds to plan ahead, minimize financial hardship resulting from rate increases, reduce shock lapses, and discourage insurers from offering artificially low initial premiums and charges to entice insureds.

  An insurer should be free to charge, but required to justify, rates that fall outside a reasonable range based on these good-faith estimates. It should show that both the good- faith estimates and the actual

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