

Actuary

Where were the actuaries during the health care debate?

by Barton H. Clennon

During the past six months, the actuarial profession has had to address the implications and opportunities that health care reform presents. It also has had to question its responsibilities. Do actuaries, the experts in future cost analysis, have a public responsibility to independently study the adequacy and costs of health care proposals? A small group of actuaries at the request of the Clinton administration previously did a narrowly focused analysis of some cost estimates provided to them. They did not “sign off” on the administration’s plan as implied in the press.

Very few actuaries have been invited to the table. The profession as a whole — known in the business world as analysts of future financial risks — has not officially been called on for help. If health reform legislation fails to provide a fair and affordable health care plan and turns into a bureaucratic, financial nightmare, won’t the public ask, “Where were the actuaries when they formed this plan? Didn’t they look at the numbers? Why didn’t they speak up?”

Business groups speak out

Other business and insurance industry groups are not waiting to be asked their opinions. The Health Insurance Association of America (HIAA) aired television commercials with an average

couple, “Harry and Louise,” worrying about mandatory government health alliances, an aspect of health care reform that HIAA opposes and a subject of intense dialogue between senior White House officials and HIAA. The first week in February, the Business Roundtable, an organization of chief executive officers of large corporations, made headlines by coming out against even using Clinton’s Health Security Act as a starting point for legislation. Headed by Robert Winters, FSA, and CEO of Prudential Insurance Co. of America, the Roundtable instead supported legislation written by Rep. Jim Cooper (D., Tenn.). The Cooper Bill does not require employers to pay for a health plan for their employees, but only to offer one.

Actuarial leadership steps forward

As reported in the November 1993 *Actuary*, the American Academy of Actuaries (AAA) and the Society of Actuaries (SOA) have allocated resources to 17 AAA work groups and 6 SOA task forces to look at various aspects of health care reform. The AAA Cost Estimates Work Group will complete an independent analysis of the Clinton administration’s whole package by March 31. Although focusing on the Clinton plan, this group’s analysis will allow it to be in a position

to comment on the costs of other proposals as needed.

In addition, three work groups formed last spring under the AAA
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The Actuary

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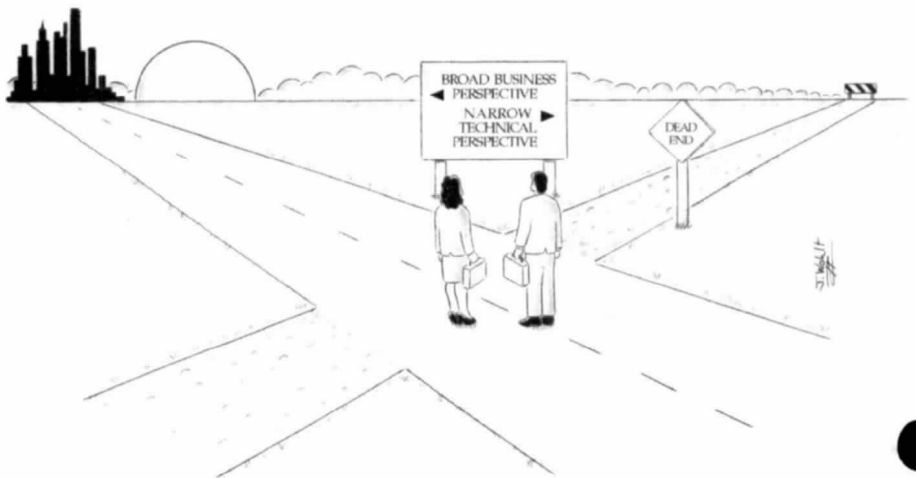


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EDITORIAL

The actuarial profession at a crossroads

by Robert D. Shapiro



Our actuarial profession is at a crossroads. *Actuary* authors often describe challenges we face, and how we must respond to maintain our profession's strength and integrity.

Ultimately, it is what we as individuals do that will make the difference. We cannot wait for the Society of Actuaries, the American Academy of Actuaries, or our other professional organizations to act. Beyond support, our professional organizations are limited in what they can provide. They are not capable of developing most of the insights and actions that really make a difference.

We first must recognize that our clients — both traditional and emerging nontraditional clients — will only value us for what they believe we provide in helping them resolve their issues. They don't define their issues in terms like insurance, pensions, and

investments, but by their uncertainty in areas such as retirement planning, business succession, health care, and asset management. They relate to big issues, not narrow, compartmentalized components of these issues.

So where's the crossroads? Take as an example, last year's references to actuaries related to President Clinton's health care proposals. Many actuaries were pleased just to see the term "actuary" appear in major newspapers and magazines around the country. The message to the public that came across in these articles, however, was that actuaries are narrow technicians who can be called on to provide limited calculations. The articles did not portray actuaries as professionals likely to shape or to influence the resolution of the broader health care issues. Also readers may have interpreted the actuaries' analysis slice as validation of the Clinton proposal's cost basis. This is

At a position many of us want to be in, based on the limited analysis that has been done to date.

What can each of us, as individuals, do? First, we must stay sensitive to emerging major issues that will affect the public. We must use our actuarial skill of synthesis to quantify and address these issues. We should be able to make informed judgments even when substantial pieces of desired information are unavailable. We should help users of reports by clearly articulating underlying assumptions, models, and sources and developing alternative scenario analyses. We should not merely define (or accept) narrow analyses that can be fit to available data or resort to other reductionist copouts.

Second, we can't wait until we are asked to help. We must try to identify emerging issues early, jump on top of

them, give talks and publish articles suggesting needed analysis and solution paths. We must push our actuarial peers to aid this effort.

Professional organizations like the Society and the Academy can help. They can support and help you structure your defined efforts. If you wait for a professional organization, however, to take the lead on your issue, you and the profession are likely to be disappointed.

The ideal quantity of data or enough time to do a "perfect" actuarial job does not exist. If it did, we actuaries would not add the value that we do. It is our ability to synthesize imperfect information and provide early guidance in resolving critical issues that will form the foundation of our profession's future. If we choose to be narrow calculators, our future will be very limited.

To create exceptional value for our "clients" and for the public, we must be:

- Excellent businesspersons, not merely competent technicians
- Strong in synthesizing emerging information and in anticipating future changes
- Aggressive in applying our craft early in the game
- Clear in communicating what we expect to do and, when it is done, clear in what we recommend

This issue's front page article by Bart Clennon focuses on the actuary's public responsibility to the health care issue. We all owe much to the actuarial profession. Each of us should think about what we can do as individuals as we read this article and as we read the headlines every day.

Here were the actuaries (continued from page 1)

Health Practice Council have produced these monographs:

- "Health Risk Assessment and Health Risk Adjustment: Crucial Elements in Effective Health Care Reform" (group leader, Alice Rosenblatt)
- "Standard Benefits in Health Care Reform: The Impact and Cost" (group leader, Julia Philips)
- "An Analysis of Mandated Community Rating" (group leaders, Gregory Herrle and Harry Sutton)

The first two monographs have been sent to AAA Health Practice Council members, trade associations concerned with health care reform, and Congressional members and staff. The Academy staff also has responded to requests for this information from state governments and hospitals. The third monograph should be available March. Copies are available from the Academy or the SOA.

Communications plans

After the profession's extensive analyses

are done, it's important that policymakers and the public understand this work. It must be perceived as credible and valuable information to achieve the desired result: informed decisions that will create viable and accessible health care for the United States.

That's why a joint AAA/SOA Health Care Reform Communications Work Group has been assigned the task of getting this information out to interested groups. These groups include:

- Members of the actuarial profession
- Members of Congress, the Clinton administration and its staff, and other policymakers directly involved in health care reform
- Members of the public

To reach these audiences, this work group plans to:

- Send a special mailing to all SOA and AAA members about work groups' progress on health care issues.

- Send the first issues paper with a cover letter to members of Congress, administration, and staffers explaining what the work groups are doing. Then, send others as they are completed.
- Issue news releases to appropriate media about work groups goals and accomplishments.

The challenge, the expectation

The profession accepted the challenge of providing objective and meaningful input on health care issues, free from political and philosophical implications of the alternatives. Now it must perform these duties rapidly, yet thoroughly, and communicate its results as widely possible.

Barton H. Clennon lives in Wenatchee, Washington, and is chairperson of the Joint AAA/SOA Health Care Reform Communications Work Group.

Appointed Actuaries survey results: Part II

What practices actuaries followed for 1992 reserves

by Donna R. Claire and Maria Thomson

The February *Actuary* included results of Part I of a survey of appointed actuaries sponsored by the American Academy of Actuaries Committee on Life Insurance Financial Reporting and the Society of Actuaries Financial Reporting Section. This article summarizes Part II of the survey, which asked what the appointed actuary did for asset adequacy testing.

Responses came from 140 actuaries. Thirteen people, or about 10% of those responding, stated that reserves were increased as a result of testing. This implies that some people did discover asset adequacy problems.

Asset testing

Some questions involved asset modeling. Of those replying, 93% had 5% or less of their assets in real estate. Only four respondents said real estate was more than 10% of their portfolios, with one stating real estate made up 50% of its assets. Two of these four companies increased the amount of reserves held.

Collateralized mortgage obligations (CMOs) were a popular investment vehicle for the insurance companies. CMOs averaged 16% of the portfolios of the respondents who had them, although 25% of the respondents had no CMOs. About 14% stated CMOs were at least 40% of their assets. Two of those companies put up extra reserves.

One-third had no commercial mortgages in the model. Two companies that put up extra reserves indicated they had a large percentage of assets in commercial mortgages. Of those who modeled commercial mortgages, about one-half used the default rates based on either the AVR rates or some outside study. Some that used their own study indicated they also checked rates with outside sources for consistency.

The survey also asked what assets caused trouble in modeling. Aside from CMOs, the most popular answers were equity-type assets, such as real estate, common stocks, joint ventures, and limited partnerships. Many actuaries' solution to the modeling problem was to put these assets in surplus.

Expenses

The survey asked how people determined that the investment and insurance expenses used were reasonable. Many actuaries compared these expenses to annual statement numbers. Others used their own company's expense survey. Some actuaries said they increased the expense levels for inflation.

One question asked whether shareholder dividends

should be reflected in the testing. At least 20% of the respondents tested shareholder dividends. (Some of the other surveys came from mutual companies, where this question was not applicable.) One way actuaries said they determined the dividend amount was to pay out the excess above the target surplus formula.

Liabilities

Most people answering the survey based lapse and morbidity and mortality assumptions on their own company experience. Several also considered industry experience. Some actuaries said they based the lapse assumption on the LIMRA/SOA study on SPDA persistency.

Most people surveyed did not include mortality improvements in the testing. Of those that did, several only included it on the annuity side, where mortality improvements could cause a company to suffer losses. A slightly higher percent of people reflected AIDS in their testing. Some said that separate AIDS reserves already had been set up.

Data

Another question asked about obtaining data. About half the respondents said they had difficulty obtaining data, especially for CMOs. Some who based testing on year-end information mentioned the difficulty of getting accurate data in the time allotted.

About half the respondents mentioned that they used pre-year-end data. September 30 data was the most popular alternative date. Most of these did some sort of reconciliation to year end. Some said they examined all key characteristics of the data, such as the duration and yield of the assets by asset type, and the age-sex-smoker-size status of the liabilities. Others did a more cursory examination. Some actuaries updated their testing for year-end yield curves, since they felt that the interest rates changed enough to warrant the update.

Sensitivities

Most of those surveyed did some form of sensitivity testing. The most popular types of sensitivity testing included lapses, mortality and morbidity assumptions, returns on various asset types such as CMOs, asset default rates, and expense assumptions. Others mentioned testing mortgage prepayments, interest and dividend crediting strategies, and reinvestment/disinvestment strategies. Some actuaries also tested interrelationships, that is, high mortality and high lapses. There were six companies in the survey that increased reserves as a result of sensitivity testing.

Analyzing results

Most people analyzed intermediate results. More than half the people surveyed said they considered the size of the intermediate negatives in relation to surplus.

Several companies only tested the basic seven interest scenarios. Those that did a few more scenarios typically tested inverted interest rate scenarios. Several tested more scenarios, at least for certain lines of business. About one-third of those surveyed did stochastic testing.

Most companies surveyed "passed" all seven basic scenarios. Eight companies failed one scenario, and four of those established extra reserves. Four companies failed two scenarios, and three of those put up extra reserves.

The survey asked how many positive outcomes were needed for the tests to be considered passing. Of those that answered this question, most said all of the basic seven, with some believing that passing was five or six of the seven. For random scenarios, the answers typically ranged between 80% and 100% pass ratio. At least one person pointed out that several factors entered into the equation, such as whether "reasonable" or "conservative" assumptions were used in the testing.

Opinion language

Several people changed at least some of the recommended wording of the actuarial opinion. Some changes were made to give the actuary more protection. Another area changed was in the list of liabilities, adding, for example, cost of collection in excess of loading, net due and deferred premiums, dividend liability, liability for unauthorized reinsurance, and separate account transfers.

Many of these survey results were incorporated into the 1993 Practice Notes detailing current practices in asset adequacy analysis. As more is learned about asset adequacy analysis, current practices will evolve and should provide more useful information to management.

Donna Claire is president of Claire Thinking, Inc., Dix Hills, New York, and a member of the SOA Board of Governors. Maria N. Thomson is managing principal at Thomson Management Solutions, Inc., Palmer, Massachusetts.

RESEARCH CORNER

The Research Department is always looking for volunteers knowledgeable in any practice area. If you are interested in more information on being a volunteer, please call the Research Department at 708/706-3573.

Following is an update of recent research activities:

- The final report of the 1986-89 pilot Credit Risk study for private placement bonds and commercial mortgages is available through the SOA Books Department, 708/706-3526.
- Data for the Universal Life Persistency study has been received from 21 companies providing 700,000 policy records. Data validation is continuing, and analysis is scheduled to begin by the end of March.
- Results of the Long-Term Bond Yields study are scheduled to be presented at Session 80, April 22, 1994, at the SOA spring meeting in Orlando.
- A report on the data collected for the Reinsurance Mortality experience study has been completed.
- The eight Requests for Proposals (RFPs) announced in a flyer with the January *Actuary* brought in several proposals to complete specified research projects. The projects included three topics in the health practice area, three topics related to dynamic solvency testing, a retirement systems topic, and a project on multi-life risks.

Intensive review seminars offered

The following intensive review seminars will be offered in Philadelphia.

Sponsored by Temple University Actuarial Institute

Course 140	April 16-17	Course 200	April 13-16
Course 151	April 7-9	Course 230	April 18-19
Course 160	April 29-30	Course I340	April 6-9
Course 165	April 9-10		

CAMAR (Casualty Actuaries of Mid-Atlantic Region) review seminars of interest to SOA students

Course 100	April 7-10	Course 135	April 22-23
Course 110	April 14-17	Course 4B	March 6-8
Course 120	April 24-25		

For more information, write to Bonnie Averbach, Program in Actuarial Science, Ritter Annex 475 (004-00), Temple University, Philadelphia, PA 19122, or call 215/204-8153.

THE COMPLETE ACTUARY

Building participative teams

by Joan C. Barrett

Many companies are using teamwork to meet the challenges of the 1990s.

Teamwork, however, means different things to different people. Historically, teams have been built on an hierarchical model: the manager gives orders, and employees follow the orders with little or no questioning of authority. Each person's duties and limitations are spelled out or at least understood.

In actuarial areas, the manager often is chosen by senior management based on his or her credentials, technical expertise, and managerial ability.

Participative management model

Recently, some companies have made an about face, turning from hierarchical toward participative management, also known as empowered teams or self-directed teams. In this model, members are given virtually equal voice in some decisions, regardless of title, technical expertise, or management experience. Such team decisions may include equipment purchases, hiring, and production scheduling, including decisions to stop production to fix a quality problem.

Participative management usually is introduced into a production environment to improve quality and efficiency. Two basic premises are behind the structure. First, individuals who perform the work often are better able to see flaws in the process than someone who only reviews the work flow and output. Second, an individual will do a better job if he or she understands the whole process and not just one specific job. It also is believed the team's synergy will promote creativity and reduce blind spots.

Technical experts, such as actuaries, often serve as team leaders in the initial

stages of team development and gradually move to a consulting role.

Modified structures

A "pure" example of either model is hard to find. Even under the most stringent hierarchical model, some participation is permitted through suggestion boxes and employee surveys. Conversely, even the most autonomous teams have to work under constraints set by law or senior management. Most participative managements have a steering committee to define the guidelines and ensure compliance.

Many actuarial departments use a modified form of participative management by extensively cross-training department members. Even if members aren't decision makers, they have a better view of the "big picture." It also allows managers to be more flexible in assigning work.

7 essential factors for success

Some companies have proclaimed that participative teams have greatly improved product quality, efficiency, and employee satisfaction. Some factors named as crucial to their success are:

1. Open discussion

Since participative teams are founded on the principle that everyone contributes to improving a process, the first step is to create an atmosphere in which members feel safe to express their opinions.

Nothing will derail team-building quicker than "discounts." Discounts are actions or gestures that signal to someone that his or her opinion is not valued — a sarcastic tone of voice or a whispered comment to another team member.

Although discounts are usually unintentional, they are common. To make members aware of how their

actions are perceived by others, a team may adopt "team norms": a list of behaviors that are acceptable or unacceptable to the group.

2. A clean slate

Once a pattern of behaviors and relationships is established, it is very hard to break. It usually is easier to make a radical change in management style in a new department or plant. In established organizations, it usually is easier to phase in changes by setting up pilot programs or adopting modified forms of participative teams first.

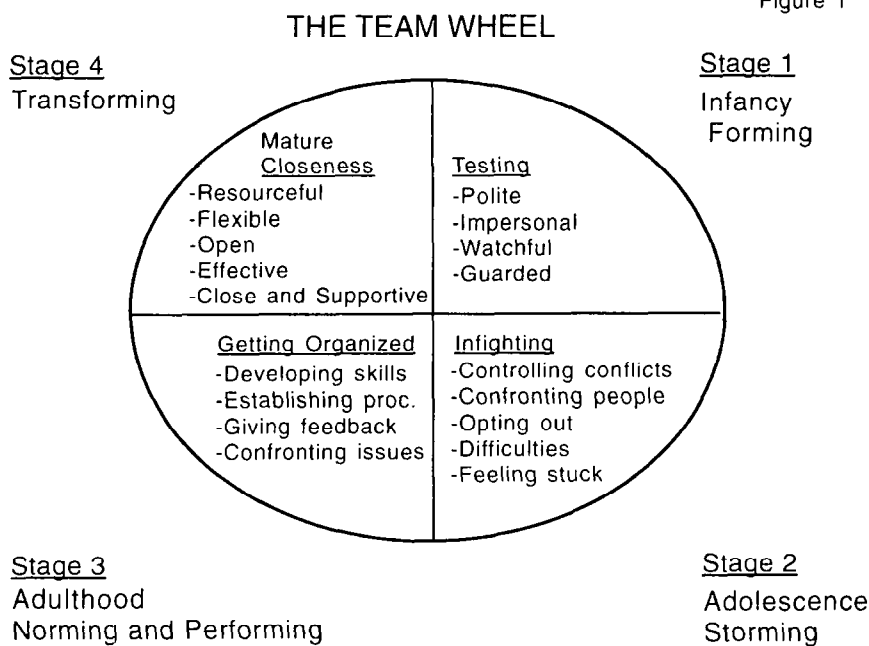
3. New skills and vocabulary

Working in teams requires a whole new set of social, managerial and, often, technical skills. One of the first dilemmas facing the team is where to start the process of building new skills — with technical skills or with social/management skills. Some experts recommend teams start with solving technical problems to show some immediate results and build the team's confidence. The danger in this approach is that without laying the proper foundation, some undesirable behavior patterns, such as a rivalry or feud between members, can occur.

4. Consistency/defined scope

Under hierarchical structures, everyone must follow a set of rules or pay the consequences. The same is true for participative organizations, but, in many cases, it takes time to sort out the appropriate rules and the consequences for breaking them. Most people assume that everyone is following a set of unwritten rules. Chances are, however, that no two people can agree what these rules are.

For example, a steering committee told a team to cut turnaround time by 50% the best way they saw fit. The team decided the best way was to buy a very expensive piece of equipment.



Since they considered themselves empowered, they did the research and authorized the purchase. The steering committee found out and canceled the order. The team felt betrayed and embarrassed. After all, they put a lot of time and effort into the decision, and they thought they followed the one and only rule: find the best solution.

It is clear this unfortunate case could have been avoided by simply laying out the ground rules up front, explaining why they are necessary, and sticking to them.

5. Resolvable conflicts

In a participative environment, conflicts and differences of opinions are inevitable. In fact, some of the best ideas are born during an animated discussion. If the disagreement is not resolved quickly, however, all the team's efforts can be focused on the conflict and not the work.

Effective teams usually go through a cycle known as the team wheel (shown on this page). At first, members of the group are enthusiastic, but their enthusiasm is guarded. They wait to see what the rules are, whom they can trust, and who has the real influence and power. Eventually, human nature guarantees

that conflicts will arise. They usually are resolved when the team decides what behavioral standards it will adopt. Then, friendships develop as the team works well together.

Often disagreements can be settled by simply nudging or cajoling the parties involved. If the conflict is more serious, the team may use formal team-building techniques, such as setting up norms and trust exercises. If the dissension is caused by serious differences in values or a deep-seated mistrust, the team makeup may have to change. A strong word of caution: if one group member is expelled, even an unpopular member, the result may be an atmosphere of fear and distrust that cannot be overcome.

6. Compensation equity

As soon as any organizational change is announced, someone pulls out a scorecard and tallies up the winners and losers. In participative management, the winners should be the customers who benefit from improved quality and efficiency.

The losers usually are the middle managers who enjoy a pay differential because of their supervisory duties. As more decisions are made by the team, middle managers are needed

less. Technical experts sometimes fall in this category. Some ways to lessen the blow for these individuals are voluntary termination windows or freezing pay.

Other individuals may feel they deserve a raise because of additional training and skill levels required. If a pay raise is not affordable or if senior management does not think it is deserved, then that message has to be given to the workers clearly and consistently across the organization.

7. Moderate support from senior management

No change in a corporate culture can take place without active support from senior management. An interesting paradox arises, however, if senior management appears to be decreeing that the organization follows participative management. After all, a decree is the ultimate form of hierarchical management. Usually, the most effective support comes through setting a good example and removing artificial barriers, such as unnecessary paperwork, from the process.

Building an effective team is clearly a balancing act, with potential either for outstanding success or for huge failure. Is it worth it? Every organization has to answer that question for itself. Some sources that may help with the answer are:

- *Business Without Bosses: How Self-managing Teams Are Building High-performing Companies* by Charles C. Manz and Henry P. Sims, Jr., John Wiley & Sons, Inc., 1993.

- "The New Productivity Challenge" by Peter F. Drucker, *Harvard Business Review*, November-December 1991.

Joan Barrett is senior actuarial associate at Metropolitan Life Insurance Company in Detroit.

1969 class reunion: Renewing the bond

by Daphne D. Bartlett

Certain things represent a special bond in our lives — when we meet someone from home in a strange place; people who have the same birthday; someone who reminds you of someone you know well; people we see wearing our class ring.

The Society of Actuaries doesn't have a class ring, but it has many of the attributes of a university. It is as much an educational institution as any others we attended, even if we did our studying on the job or at home. We all had that wonderful feeling of elation the day we heard we had passed the last exam, the day we graduated and obtained our degree — our actuarial credential. Actuaries feel a great deal of affection for and loyalty to our Society alma mater.

I've felt that special bond with the members of my graduating class from Society U., even if I don't know all of them. The 192 members of the Class of 1969 have probably never all been together. Twenty-five years ago, Fellows received their diplomas at a luncheon at whatever meeting they happened to be attending or through the mail, and Associates didn't receive anything.

So, Society of Actuaries Class of 1969, let's start a new tradition by all coming together to meet each other and celebrate our 25th anniversary as graduate actuaries. A special evening, just for us and our guests, on Tuesday, October 18, during the 1994 annual meeting in Chicago, is being planned by a task force of class members: Dick Bilisoly, Mo Chambers, Jay Jaffe, John Keller, and me.

We'll have a '60s theme (though we probably were all too busy studying to notice what happened), but we promise you won't have to try to fit into your Nehru jackets or miniskirts.

We're also planning a reunion booklet with all sorts of interesting and entertaining actuarial statistics about us, so please respond to our questionnaire when you receive it.

Further details about our celebration will follow. In the meantime, classmates, save October 18, and plan to come to Chicago to share our special bond.

Daphne D. Bartlett was the 1990-91 President of the Society of Actuaries and is president of Interim Actuarial Resources, Inc., Hermosa Beach, California.



Factuaries

Name: W. Paul McCrossan

Current hometown:
Agincourt, Ontario

Current employer and function: Partner at Eckler Partners Ltd.

Marital Status: Married to Sandra for 27 years

Children's names and ages: Megan, 22; Bryn, 20; and Margot, 15 (all girls)

Birthday: May 20, 1942

Birthplace: Toronto

My first job was: Drugstore delivery boy (age 13)

With experience, I've learned: Almost anything is possible

I completed my ASA/FSA in: 6 years

I'd give anything to have met: Isaac Asimov or Edward de Bono

Nobody would believe it if they saw me: Jogging

The book I recommend most often: *Management and Machiavelli* by Antony Jay

The TV show I stay home to watch: "Yes (Prime) Minister" (also by Antony Jay)

If I could change one thing about myself, I'd: Eat less

When I'm feeling sorry for myself, I: Eat

If I could do anything, I'd: Redesign Canada's Social Security programs

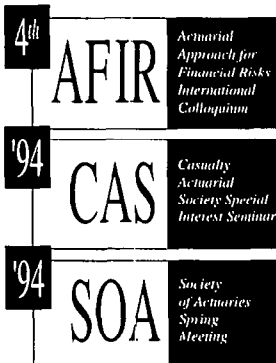
If I could do it over, I'd: Not change much from what I did

I care most about: The future

My favorite way to spend a Sunday: Sailing at the cottage or walking in the Alps

My proudest actuarial moment: Being present in the House of Commons when the House passed the Appointed Actuary legislation with last minute amendments giving legal protection to the Appointed Actuaries' work which I had proposed

MEETING NEWS



First SOA spring meeting offers unique variety

Time is running out to sign up for the first SOA spring meeting of 1994, April 20-22, at the Buena Vista Palace in Orlando, Florida. This unique meeting offers everything from the usual SOA continuing education sessions to Casualty

and SOA and CAS actuaries a chance to exchange ideas with financial and investment specialists.

The 4th AFIR International Colloquium, conducted in conjunction with the meeting, will broaden the meeting's international focus with sessions discussing 66 papers from 17 countries. Papers will cover a range of topics, including asset liability management strategies and modeling, solvency risk, selecting investment managers, stock exchanges in Eastern Europe, and the coming revolution in the theory of finance. Meeting registrants will receive copies of the paper proceedings by mail if they register by March 18. Otherwise, registrants will receive proceedings during registration at the meeting while supplies last.

AFIR (Actuarial Approach for Financial Risks) is the investment and finance section of the International Actuarial Association. AFIR addresses financial issues and risks that concern actuaries, and it promotes the exchange of ideas between the actuarial profession and other financial experts.

For registration or other information, please call the SOA Continuing Education Department at 708/706-3540.

Actuarial Society sessions and the 4th AFIR International Colloquium.

Professor Stephen A. Ross will speak at the general session, Wednesday, April 20, from 8-10 a.m. He holds the Sterling Professorship of Economics and Finance at Yale University and is a principal of Roll and Ross Asset Management Corporation.

The meeting features international topics like appointed actuaries around the world, successful insurance products of the Pacific Rim, the actuary and the need for global awareness, and international job opportunities. It also gives

1994 Seminar Calendar

April 20-22	AFIR/SOA Spring Meeting	Orlando Buena Vista Palace
May 10-11	Chief Actuaries Open Forum	New Orleans Le Meridien
May 25	Insurance Marketing in the '90s	San Francisco Westin St. Francis
May 26-27	SOA Spring Meeting (Financial Reporting & Product Development)	San Francisco Westin St. Francis
June 7-8	Investment Spring Training Seminar	Chicago/O'Hare The Westin Hotel O'Hare
June 15-17	SOA Spring Meeting (Health/Pension)	San Antonio Marriott River Center
Sept. 12 -13	Valuation Actuary Symposium	Orlando Disney Yacht and Beach Club
Sept. 13-14	A Primer on GAAP Reporting	Orlando Disney Yacht and Beach Club
December 5-6	Critical Issues in Underwriting	New Orleans Hotel Inter-Continental

Valuing retiree mortality improvements

by Michael R. Virga

The popular and the scientific press have noted the decline in pension mortality and have suggested reasons for further decreases. This article is the first in a series exploring the improvement in retiree life expectancies and ways the improvement can be incorporated into actuarial estimates of annuity and pension plan reserves. It reviews recent mortality history for two large pension systems, analyzes what effects mortality improvements have had to date (if assumed to stop as of the valuation date), and shows the trend in costs implicit in prior mortality improvements. Later articles will examine what happens to liabilities when improvements in mortality are assumed to occur after the date of valuation.

Data sources

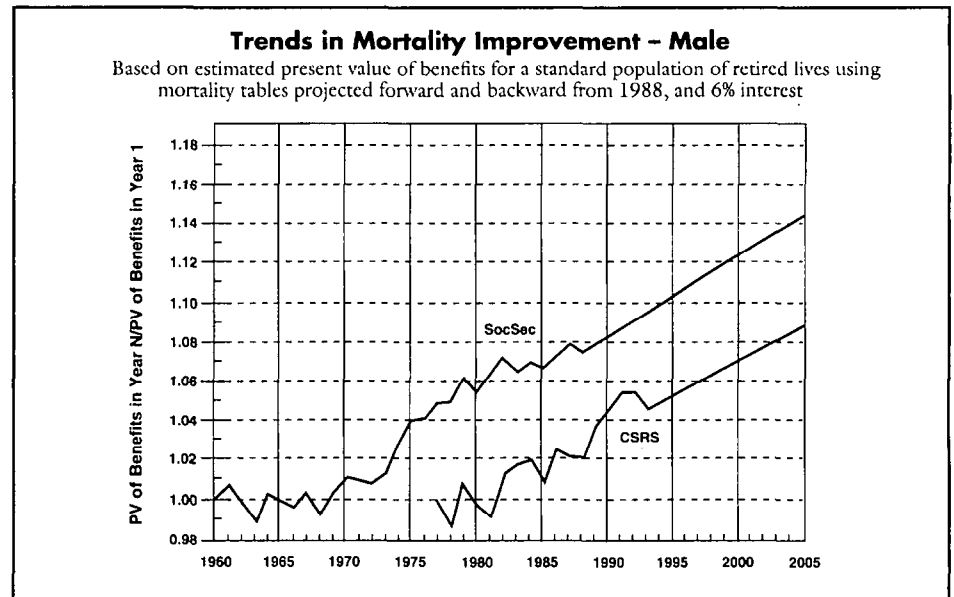
To analyze mortality experience, a large body of data reflecting actual mortality incidence must exist from consistent and reliable sources over a suitable period. Social Security and the Civil Service Retirement System mortality data meet these criteria.

Data on long-term mortality trends is published by the Office of the Actuary at the Social Security Administration, with the most recent publication being Actuarial Study No. 107. For 1960 through 1967, the Social Security age-sex specific central death rates were calculated from Vital Statistics tabulations of deaths and Census estimates of population. For 1968 through 1988, these two sources were used for ages under 65, but the Medicare records were used to calculate rates for ages 65 and over.

Mortality rates for the Civil Service Retirement System (CSRS) annuitants are available for each fiscal year 1977 through 1993 and for employees through 1990. This data covers about 2.5 million employees and more than 1 million nondisability annuitants.

Mortality trend analysis

Mortality trends can be analyzed by illustrating year-to-year changes in a



single number. One commonly used measure of the overall mortality for all ages combined is the ratio of actual to expected mortality. Another measure is changes in the value of an annuity factor. For pension valuations, a "bottom line" measure of overall mortality might be the present value of benefits for a standard population of retired lives.

Effects of mortality improvements

The accompanying graphs show the effect of changes in mortality rates on the present value of benefits for a standard population of retired lives. The group selected for this purpose was the current population of retired lives under the CSRS. Since the CSRS started in 1920, this represents a mature population of annuitants. Although the average age is 70, this population also includes some annuitants under age 60, because normal retirement under the CSRS can be as early as age 55 with 30 years service.

The base line for this analysis is a mortality table that reflects recent experience (1986-1990) for private pension plans. This table was assumed to represent mortality rates for 1988. These mortality rates were projected

backward and forward in time, using both the Social Security and Civil Service trends, creating different mortality tables for each calendar year.

To illustrate the effect of possible future trends, a projection of the Social Security mortality for 1989 through 2005 is included. This projection is based on the average mortality improvement trend for Social Security for 1968 through 1988. Also included is a projection of CSRS mortality, based on the average trend for CSRS for 1977 through 1993.

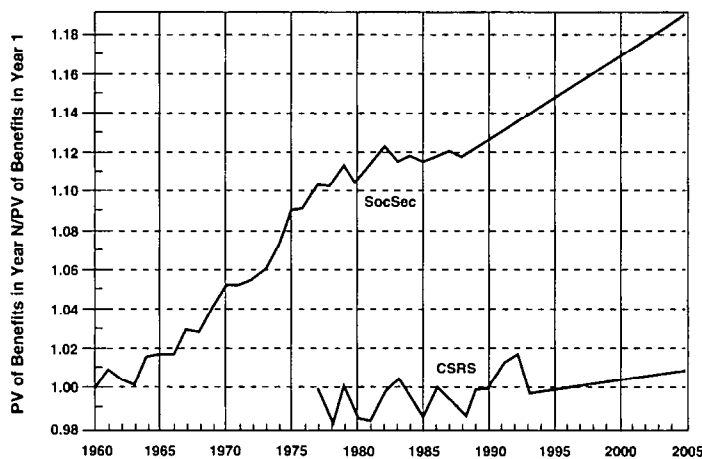
For both Social Security and CSRS, the average mortality improvement trend for each age was calculated as the complement of the exponential of the slope of the least-squares line through the logarithms of the death rates for that age. This procedure helps remove some of the seemingly random year-to-year fluctuations in determining the average trend.

Trend in costs

The present value of benefits for the standard population of retired lives was determined each year using the mortality table applicable for that year, applied on a static basis, using a 6% interest rate. Thus, they represent the

Trends in Mortality Improvement - Female

Based on estimated present value of benefits for a standard population of retired lives using mortality tables projected forward and backward from 1988, and 6% interest



value of liabilities, assuming mortality improvements and mortality rates are frozen at the point of valuation.

The numbers actually plotted on the accompanying graphs are the ratios of the present value of benefits for each year to the present value for the first year in the series, which was 1960 for Social Security and 1977 for Civil Service. Because of the different starting and ending years, only the slope is relevant when comparing trends between Social Security and CSRS.

The graph for males shows that, with the Social Security trends, the present value of benefits increases by about 8% from 1960 to 1988, due to changes in mortality. Very little mortality improvement occurred during the 1960s, with rapid improvement during the 1970s and a slower improvement rate during the 1980s. The Civil Service data for males shows a slightly higher trend than Social Security for the period from 1977 to 1988, and this higher trend continues through 1993, the last year for which there is data under CSRS.

For females, the Social Security data shows very rapid improvement in mortality during the 1960s and 1970s, with the present value of benefits increasing more than 10% during this period. The improvement continued at a slower pace during the 1980s. The Civil Service data for females

shows almost no improvement from 1977 to 1988, with some improvement in 1991 and 1992. This is offset, to some extent, by the results for 1993, which show a decrease in the present value of benefits from 1992.

The trend under CSRS after 1993, based on the CSRS experience for 1977 through 1993, is less than the trend under Social Security, based on Social Security experience for 1968 through 1988. This is especially true for females because of rapid improvement rates during the 1970s under Social Security, combined with much slower improvement rates under CSRS during the 1980s.

The projected trends in liability values are especially interesting. They show an additional increase of 5% to 6% in most scenarios by the year 2005, assuming mortality improvements follow recent trend lines and improvements are not recognized until they happen.

Michael R. Virga is senior actuary for pension programs, U.S. Office of Personnel Management in Washington, D.C. He is chair of the Task Force on UP94 Table for the SOA Retirement Plans Experience Committee and a member of the Group Annuity Valuation Table Task Force.

Laval University seeks applicants

Positions:

Two tenure-track professorial appointments in Laval University's School of Actuarial Science starting August 1994. The two new professors will join seven current faculty members in the school, which is responsible for teaching and research in actuarial science.

Duties:

Teaching undergraduate and graduate students, conducting research in actuarial science, counseling students, supervising graduate students, and participating in academic responsibilities.

Qualifications:

First position — Hold or be near completion of a Ph.D., preferably in actuarial science or a related area; engaged in actuarial research and a member of, or a candidate for membership in, a recognized actuarial association.

Second position — A Fellow of any recognized actuarial association or the equivalent, with proven actuarial science research and ability to supervise graduate students.

Applications:

Send applications with a recent curriculum vitae to André Prémont, Director, School of Actuarial Science, Alexandre-Vachon Building, Laval University, Sainte-Foy, Québec G1K 7P4.

Laval University has an equal opportunity program and dedicates half its openings to women applicants. In accordance with Canadian immigration requirements, priority consideration is given to Canadian citizens and permanent residents.

THAT'S YOUR OPINION

SOA should change to nonmember organization

by Eric J. Klieber

Membership statistics in the *1994 Directory of Actuarial Memberships* show that almost two-thirds of the 18,547 actuaries listed belong to more than one organization. Among the 15,084 Society of Actuaries (SOA) members, a similar percentage belongs to at least one other organization, which is in almost every case, the American Academy of Actuaries (AAA) and/or the Canadian Institute of Actuaries (CIA).

Most actuaries believe it is necessary to belong to more than one organization to fulfill their professional obligations. The problems associated with multiple actuarial organizations and memberships, especially in the United States, have been discussed frequently. Discussions include these assertions:

- The public is confused about exactly who represents the actuarial profession.
- Actuaries are confused about what the different organizations' roles are.
- It is difficult to coordinate profession-wide responses to the challenges facing all actuaries.

As a result, our small professional group suffers from a self-imposed weakness as it tries to carve out new roles for itself in a rapidly changing business environment.

We, as SOA members, can take a giant step toward alleviating these problems. I propose transforming the SOA from a membership to a nonmembership body. Such a transformed body would perform the following functions:

- Prepare and administer actuarial examinations tailored to the admission requirements of other actuarial organizations.
- Organize conferences and seminars for continuing education, by itself or jointly with other actuarial organizations.
- Coordinate or conduct research funded by other actuarial organizations or by academic or governmental organizations.
- Publish actuarial journals on a subscription basis.
- Publish books of special interest to actuaries, especially textbooks for the actuarial examinations.
- Promote the actuarial profession among students at the high school and college levels.

The advantages to individual actuaries and their employers and to the profession would be many:

- The burden of dues would be reduced. The SOA's financial statement consistently shows dues income almost exactly covering the costs of membership services, so eliminating dues would not affect the new body's finances. Admittedly, dues to the AAA and Conference of Consulting Actuaries (CCA) would probably increase. These organizations currently share some of their expenses for membership services with the SOA, but there would still be a significant overall savings.

- The AAA would assume a role similar to that of the CIA in Canada. The CIA's success in gaining recognition for the profession in Canada in government and among the public is the envy of U.S. actuaries. This is because almost all Canadian actuaries are members of the CIA. The Canadian public sees the CIA as the single representative body of a strong and unified profession. Eliminating membership in the SOA would encourage more U.S. actuaries to join the AAA, enabling that organization to speak for the profession in the United States with the same authority the CIA has in Canada.

- The AAA also would assume the principal responsibility for credentialing U.S. actuaries, based on examinations administered by the transformed SOA. Again, this would be like the current situation in Canada. Other organizations, such as the CCA, the Casualty Actuarial Society (CAS) and the American Society of Pension Actuaries (ASPA) could take advantage of the transformed SOA's examination services, eliminating wasteful duplication of effort. Most important, I strongly believe the functions of setting admission requirements and devising syllabi should be vested in organizations directly responsible to the public. Separating those functions from the functions of preparing and administering examinations would reduce the bickering about appropriate content of the examination program.

- Since journals and continuing education programs offered by the transformed SOA would be in free competition with those offered by other organizations, including private business, quality and relevance would be assured. Offerings that cannot support themselves financially would be dropped. The *Record* presumably would meet this fate,

because it is difficult to imagine many people spending money on this when cassette recordings of conference sessions are available.

The SOA should change to a nonmembership structure rather than the AAA, because organizations successfully involved in public interface are nearly always membership organizations, while those involved in research and education are rarely so.

I can think of only a few possible objections to this proposal, each of which is easily rebutted. The number of offices in professional bodies would remain about the same for actuaries who aspire to professional office, with the transformed SOA still requiring a governing board. The AAA should move to direct election of officers,

so individual actuaries would retain a meaningful voice in the profession's governance. The SOA Sections could be transferred to the AAA. Appropriate smaller functions of the SOA could be retained or transferred to the AAA. Volunteers for examination committees could be recruited from the organizations using the examinations.

Changing structure from a membership to a nonmembership organization would require a name change. It would not be appropriate to call a nonmembership organization a "Society." I suggest the Foundation for Actuarial Research and Education in North America (FARENA).

Eric J. Klieber is an actuary at W F Corroon in Cleveland, Ohio.

4 schools receive grants

The Society of Actuaries recently awarded \$5,000 grants to two universities in recognition of full-time faculty members attaining Fellowship status and two \$2,500 grants for faculty members attaining Associateship status.

The Department of Economics and Statistics at the National University of Singapore received a \$5,000 grant for Yiu K. Tse attaining FSA status and the Department of Math Sciences at Butler University, Indianapolis, Indiana, received one for Donald P. Minassian, professor and associate actuary, earning his Fellowship designation. The Department of Mathematics and Statistics at

Concordia University in Montreal received a \$2,500 grant for Shaun Wang attaining Associateship and the Department of Statistics at the University of Toronto received one for Xiaodong Lin becoming an ASA.

The schools will use the grants for funding actuarial exam fees, actuarial seminar and meeting fees for staff, and other related materials used for actuarial research.

These grants are part of an SOA program to strengthen relations between the Society and the academic community. Twenty-six grants have been given since the program started in 1991.

Educational opportunity in London

Anyone with Fellowship designations in the Society of Actuaries, Casualty Actuarial Society, Canadian Institute of Actuaries, Institute of Actuaries, or the Institute of Actuaries in Australia is eligible to pursue a master's degree in actuarial science at the City University in London, England. This research-based M.Sc. course involves ten weeks of classes in research methodology, six months

full-time or up to two years part-time completing a dissertation, and an oral examination.

Although this course is aimed primarily at actuaries practicing in Britain, qualified North American actuaries are invited to write to M.Z. Khorasane, Department of Actuarial Science and Statistics, City University, Northampton Square, London EC1V 0HB.

IN MEMORIAM

Robert W. Butcher
FSA 1959, MAAA 1965

Florence P. McLellan
ASA 1927

Herbert A. Winters
ASA 1929, MAAA 1966

Robert W. Butcher, a pioneer in no-fault automobile insurance, died December 7, 1993, in Hartford, Connecticut. He was an actuary at The Travelers Insurance Companies for more than 30 years. His wife is Marjorie V. Butcher, mathematics professor emeritus at Trinity College. Memorial contributions may be made to the University of Michigan, designated for the Cecil J. Nesbitt Chair in Actuarial Science, Department of Mathematics, Ann Arbor, MI 48109-1003, or to Trinity College, designated for the Marjorie V. Butcher Actuarial Studies Fund, Hartford, CT 06106.

Transactions authors profiled

Thirteen papers have been accepted for publication in Volume 45 of the *Transactions*. The following biographical sketches briefly describe four of the eleven authors. The other seven authors were profiled in previous issues.

"Retirement Policy — An International Perspective"

by Denis Latulippe



Denis Latulippe, FSA 1985, FCIA 1985, is head of the research and development department at the Commission administrative des regimes de retraite

et d'assurances in Quebec City, and part-time visiting professor at the School of Actuarial Science at Laval University. He previously worked with Assurance-vie Desjardins and Sobeco Inc. Latulippe received a bachelor's degree in actuarial science from Laval University in 1982, an M.Sc. in social policy from the London School of Economics and Political Science in 1991, and an M.B.A. from Laval University in 1992. He has served on a Society examination committee and on Canadian Institute of Actuaries task forces. He has published papers on retirement and pensions, health care, and asset/liability management.

"Multidimensional Whittaker-Henderson Graduation with Constraints and Mixed Differences"

by Walter B. Lowrie



Walter B. Lowrie, FSA 1977, is associate professor at the University of Connecticut and does extensive consulting on

stop-loss insurance. He received a bachelor's degree from the University of California at Los Angeles, a master's degree from California State University at Los Angeles, and did postgraduate work at the University of Southern California. Before joining the University of Connecticut, he was an assistant professor at the University of Nebraska—Lincoln and before that, assistant actuary and actuarial training director at Transamerica Occidental Life. He has served on several Society committees and task forces, including chairing the Task Force to Determine Numerical Analysis and Graduation Subjects. Lowrie has published papers in the *Transactions*: "An Extension of Whittaker-Henderson Graduation" (Volume 34, 1982) and "Policy Reserves in Group Insurance" (Volume 35, 1983); *Proceedings of the Conference of Actuaries in Public Practice, Radiation Research*, and *ARCH*.

"Mortality Differences by Handedness: Survival Analysis for a Right-Truncated Sample of Baseball Players"

by Harry H. Panjer



Harry H. Panjer, FSA 1976 and FCIA 1977, is professor of actuarial science at the University of Waterloo, Ontario. He is the founding director of the

Institute of Insurance and Pension Research at the university. He received a B.A. in 1969, an M.A. in 1971, and a Ph.D. in 1975, all from the University of Western Ontario. He served on the Board of Governors and as a Vice-President of the Society, on the Council of the Canadian Institute of Actuaries, and on several committees of the Society. He currently chairs the SOA Course 152, Intensive

Seminar on Risk Theory, committee. He is the co-author (with Gordon Willmot) of *Insurance Risk Models* (Society of Actuaries, 1993) and has published more than 30 papers, which have appeared in the *Transactions*, *Journal of Risk and Insurance*, *Insurance: Mathematics and Economics*, *Transactions of the International Congress of Actuaries*, *ASTIN Bulletin*, and *Journal of Econometrics*. He has won best paper awards from the *Journal of Risk and Insurance*, the *Transactions*, and from the Canadian Institute of Actuaries.

"The Application of Fuzzy Sets to Group Health Underwriting"

by Virginia R. Young



Virginia R. Young, FSA 1992, is assistant professor of actuarial science in the School of Business at the University of Wisconsin in Madison. She

received her bachelor's degree in mathematics and physics from Cumberland College in 1981 and her Ph.D. in algebraic topology from the University of Virginia in 1984. Before joining the faculty at the University of Wisconsin, she worked as group health actuary for Wausau Insurance Companies. She serves on the Education and Research Section Council, the Health Practice Education Committee, and the Spring Group Benefits Examination Committee. She has published papers in the *Proceedings of the American Mathematical Society* and in the *Indiana University Mathematics Journal*.

DEAR EDITOR

2% annual growth in profession forecasted

As we ponder the growth of the actuarial profession, it is helpful to have an outside perspective. The November 1993 *Monthly Labor Review* forecasts changes in U.S. civilian employment by category from a base year of 1992 through 2005. It includes actuaries under the "professional specialty" occupations. Actuaries constitute about 1 per 1,000 people so employed, or 15,000 out of 6 million. We are forecast to increase, using the moderate estimate, by 29%, or about 2% annually over the period, in contrast to 37% for the category as a whole. Occupations such as computer engineers and analysts are forecast to double over the period, which pushes the overall rate upward. The rate of increase in actuaries is higher than for physical scientists (forecast to decrease over the period), about the same as for lawyers, and slightly lower than for physicians.

An annual growth of 2% is a far smaller rate than we as a profession have experienced in recent years. This external estimate reminds us of the practical importance and the professional justification of continuing the effort to look for ways to prepare actuaries for careers applying our abilities in nontraditional areas.

Daniel J. McCarthy

Actuaries can help nonprofits

I read the January 1994 editorial on volunteerism with interest. There is a great need for us to use our special skills to contribute to society.

Another opportunity for volunteers is in the area of pension and health benefits for nonprofit organizations. My own experience is as a board member of the United Methodist Church plans. Churches and other nonprofits need board members who understand and appreciate the importance of their

plan's actuarial aspects and the risks that are being assumed. I urge members to become active in the pension and health plans of their favorite nonprofit organizations. Their participation will be very rewarding.

A disturbing facet of nonprofit plans is that they have less rigorous legal requirements than business plans. Participants do not have the legal protection employees of the business community have. We need to work for consistent and comprehensive pension and insurance legislation that covers and protects all employees and insureds.

Victor L. Smith

The last survivor phenomenon

Author Jack Bragg (January 1994 issue) would have a different appreciation of last survivor insurance if he had stayed in Canada. In 1968, the federal Succession Duty Act was replaced by a new Estate Tax Act that allowed assets to pass to a spouse without being taxed, which was delayed until the spouse's death.

As a result, the second death life insurance policy had a new and obvious market. At the time, I was in product development in a large Canadian life company. We even had a version in the rate manual as the "standard" plan that provided for the policy to be fully paid upon the death of the husband.

On a nonparticipating plan basis, the policy could be tailored to the desires of the clients, with the cheapest premium being a continuation of the full premium until the second death.

The Estate Tax Act only lasted a few years. In 1972, capital gains taxation was introduced, including realization on the second death of spouses, and the Estate Tax Act was repealed. The second death policy still is in use today for tax reasons.

D.S. Rudd

Mail alert

The first ballots for the Society of Actuaries' 1994 elections will be mailed to all Fellows on March 15. If you are a Fellow and do not receive the first ballot by March 25, please call Marilyn Meier at the Society office, 708/706-3500. To be valid, ballots must be returned to the Society office by April 15.

* * *

The 1994 *Directory of Actuarial Memberships* was mailed to SOA members mid-January, and the 1994 *Society of Actuaries Yearbook* was mailed mid-February. If you have not received your copy, please call Missy Gavel at the Society office, 708/706-3526.

Summary of OASDI and Medicare programs

Robert J. Myers, former chief actuary of the Social Security Administration, has completed a revision of his *Summary of the OASDI and Medicare Programs*. This 48-page document describes the program as of January 1994. Copies may be obtained by writing to him at 9610 Wire Avenue, Silver Spring, MD 20901, and enclosing five 29¢ stamps and a self-addressed mailing label.

ACTUCROSTIC

by Julian Ochrymowych

- A. Television audience 94 129 142 163 184 206 29 52 76 216
- B. Egg dish made with ham, peppers and onions (2 wds.) 1 22 43 61 80 92 105 130 149
166 183 204 226
- C. Single concert performance (2 wds., hyph.) 48 71 89 101 145 16 159 170 185
201 230 57 221
- D. Vicar in *As You Like It* (2 wds.) 196 176 151 141 125 109 10 90 82
55 39 215 207
- E. Jeremiad 187 136 112 95 69 51 30 7 224
148 213
- F. Expression of disbelief or scorn (hyph.) 18 35 58 104 126 140 157 172 217
229 9 74
- G. Sensitive, touchy (hyph.) 91 115 168 13 205 232 191 47 131
59 144
- H. Feature in each rear side panel of some cars (2 wds.) 46 37 220 134 200 27 14 152 173
111 75
- I. With intention to steal 114 24 45 160 124 195 66 227 96 79
- J. Haphazardly (hyph.) 8 42 64 84 106 122 138 211 150
167 194 93 180
- K. Attractive (hyph.) 162 177 50 218 25 121 182 102 68
197 87
- L. Athletic award 19 113 44 219 67 165
- M. Ask about one's health (2 wds.) 5 15 40 189 99 118 133 156 21
169 214 231
- N. *St. Paul's Suite* composer (2 wds.) 117 212 34 128 97 107 78 62 188
153 23
- O. Subjection of metals to annealing, tempering, hardening, etc. (2 wds.) 2 11 33 54 77 88 108 127 154
178 228 192 98
- P. Balsam poplar; aromatic resin 158 12 210 28 36 161 135 193 110
- Q. Detective played by Tony Randall and Albert Finney (2 wds.) 85 56 143 202 41 222 119 132 70
175 161 65 26
- R. Now and then 17 63 147 120 206 186 100 49 3
38 171 223
- S. Not selectively placed in the draw for tournament 209 73 198 164 86 60 116 146
- T. Word in a Miller title 6 53 32 155 83 199 174 139
- U. Poem in honor of a bride and groom 123 137 20 4 203 81 31 103 180
179 72 225

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39	D		40	M	41	Q	42	J	43	B	44	L	45	I	46	H	47	G		48	C	49	R	50	K		51	E	52	A	53	T	54	O		55	D	56	Q	57	C	58	F			
59	G	60	S		61	B	62	N		63	R	64	J	65	Q	66	I	67	L		68	K	69	E		70	Q	71	C		72	U	73	S	74	F		75	H	76	A					
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	158	P	159	C	160	I	161	Q	162	K		163	A	164	S	165	L	166	B		167	J	168	G	169	M	170	C	171	R	172	F		173	H	174	T	175	Q	176	D	177	K			
	178	O	179	U	180	J	181	P	182	K	183	B	184	A	185	C		186	R	187	E	188	N	189	M	190	U	191	G	192	O	193	P	194	J	195	I	196	D	197	K	198	S			
199	T	200	H	201	C	202	Q	203	U	204	B	205	G		206	R	207	D	208	A	209	S	210	P	211	J		212	N	213	E	214	M	215	D	216	A	217	F	218	K	219	L	220	H	
221	C	222	Q	223	R		224	E	225	U		226	B	227	I	228	O		229	F	230	C	231	M	232	G																				

Solution for February Actucrostic: Understanding somebody else's filing system is just about as easy as really getting to know another human being. Just when you think you know everything about them, there's the impossible happening, the M for miscellaneous when you naturally assumed it would be under something else. --- Barbara Pym, *Less Than Angels*