SOCIETY OF ACTUARIES

The Actuary

OCTOBER/NOVEMBER 2010 VOLUME 7 ISSUE 5

THE SECTIONS
From 1981 to Now

TENNIS LESSONS
A Look at 1-in-200-Year Events

FINANCIAL AND HEALTH ECONOMICS
The New FSA Module

RETIREMENT 20/20
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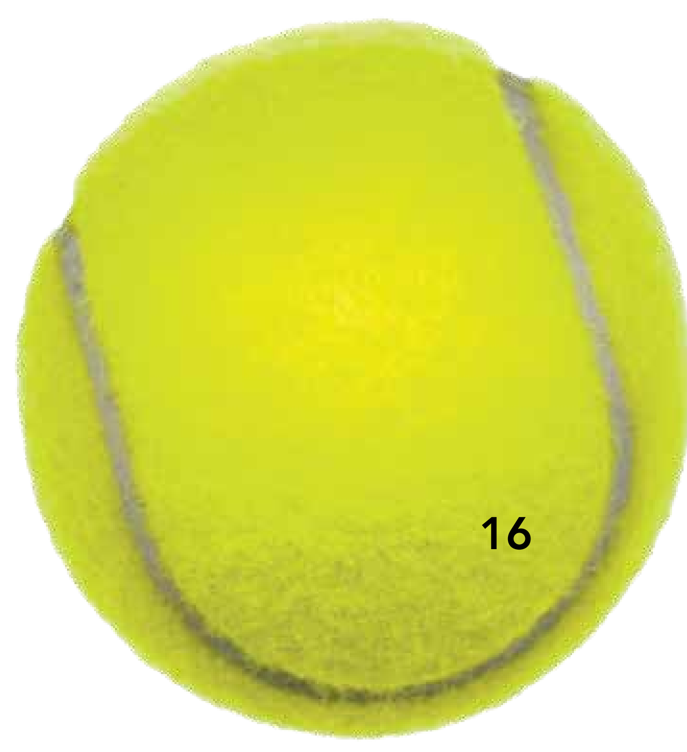

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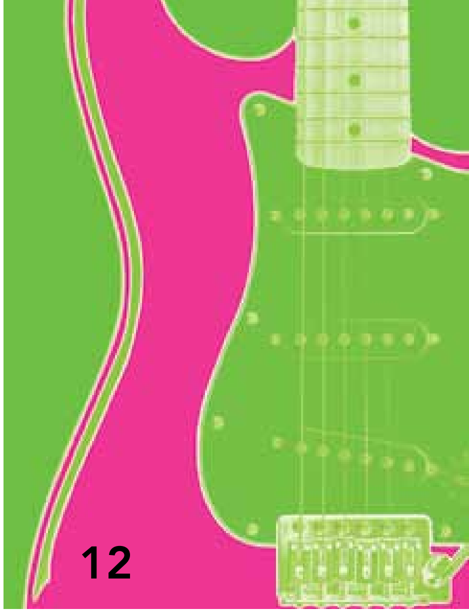


12

FEATURES

COVER STORY

DEPARTMENTS

24

Editorial

LOOK OUT NEW YORK HERE COME THE ACTUARIES

BY LARRY RUBIN, LIFELONG NEW YORKER

ON OCTOBER 17 – 20 more than 2,000 risk management specialists will descend upon New York City for the Society of Actuaries' Annual Meeting. As professionals skilled in averting risk, many may choose to play it safe, perhaps by seeing a Broadway production, having dinner at Lindy's and maybe even taking a ride to the Statue of Liberty or Ellis Island. For others seeking reward for taking a risk, New York offers a plethora of adventures that will please even the most cautious among us. As a native New Yorker and Annual Meeting planning committee member, I encourage you to consider making a quick calculation about the returns and don't delay getting your feet wet in NYC.

New York City offers some of the finest museums in the country. The American Museum of Natural History should fascinate anyone with a scientific outlook on life. Located at 79th Street and Central Park West, it features enough exhibits to be intriguing for weeks on end. Be sure to visit its website and download a personal GPS for the museum at *www.amnh.org/apps/explorer.php*. Right next door is the New York Historical Society. For Boston actuaries, if you're lucky, you may get to see its famous exhibit featuring Bucky Dent, Bill Buckner and David Tyree.

Of course not all actuaries have a scientific outlook on life. I hear there are a minority of actuaries who actually prefer aesthetic pleasures (how they ever passed their exams we will never know). For these actuaries, New York offers world-renowned art museums including the Guggenheim and the Museum of Modern Art. Farther off the beaten track is the New Museum, which is a leading destination for new art and new ideas.

Unlike many other cities, New York has four seasons and the fall is one of the most pleasant times to be in the city. The Manhattan Waterfront Greenway encircles New York offering a pleasant bike ride along the Hudson and East rivers. (Go to *www.nycbikemaps.com/maps/manhattan-waterfront-greenway-bike-map/* to see more details.) Besides, anyone who has driven a car in New York will tell you it is a strange feeling to be moving faster than five miles an hour. For the less adventurous, a stroll through Central Park is an enjoyable way to spend an afternoon. Located in Central Park is the Central Park Zoo (*www.centralparkzoo.com*), a smaller cousin of the more famous Bronx Zoo.

Or consider a visit to Chelsea Piers. It has the only driving range in Manhattan (New Yorkers consider this to be their golf course), disco bowling, the Sky Rink ice skating gallery and more. (Visit *www.chelseapiers.com/* for more information.)

A truly unique experience is available at the Alvin Ailey School of Dance. The school offers open dance classes in a variety of techniques for levels from novice (the absolute beginner) to advanced for less than $20 for 1 1/2 hours. (Visit *www.alvinailey.org/*.)

New York is famous for its cuisine. Some of the world's finest restaurants are in New York. But to really know the New York cuisine you need to go off the beaten track. You should not leave New York without experiencing a New York kosher deli. Two of my favorites are Wolf and Lamb and 2nd Ave. Deli—which is famous for its apple strudel. For an interesting take-home of New York's dining excellence, consider a stop at Guss' Pickles at 85 Orchard Street and pick up a few quarts of their famous pickles, although you may be too full from the free samples to enjoy dinner that evening. The Hungarian Pastry Shop near Columbia University offers some of the finest pastries in the city.

Entertainment opportunities are abundant in the city that never sleeps. While Broadway plays initially come to mind, some of the more interesting opportunities occur under the radar. For those coming for the weekend before the meeting, the National Comedy Theatre offers a hilarious night of improvisational comedy for $15 (however, given the area of the city where the theatre is located, a risk-averse actuary may not want to travel there alone). Visit *www.manhattancomedy.com/index.html*. There are numerous jazz clubs that offer an opportunity to mellow out and feel the rhythm of the city. Try the Blue Note Jazz Club, *www.bluenote.net/live/index.html*.

New York's professional sports teams attract a loyal following that makes attendance at one of their games exciting. On Sunday, October 17, the New York Giants will be playing the Detroit Lions at the new Meadowlands football stadium (future home of the next cold-weather Super Bowl), which is only a short train ride from midtown Manhattan. The New York Rangers and the New York Knicks play at Madison Square Garden, a short walk from the Annual Meeting host hotel. Of course, this being October, you'll be able to attend the World Series held annually at Yankee Stadium.

Larry Rubin

All this excitement should result in an unforgettable trip to New York City. While you're here you may even want to check out the Society of Actuaries' Annual Meeting being held at the Hilton New York. A lot of planning has gone into making this a great meeting. It would be a shame to miss it! A

Larry Rubin, FSA, CERA, CFA, MAAA, is partner, PricewaterhouseCoopers, LLP. He can be contacted at *larry.rubin@us.pwc.com*.

Letter From The President

NEWS ON MANY FRONTS

BY MIKE MCLAUGHLIN

IN THIS COLUMN, there are a number of items I would like to share with you, including a report on my recent trip to Asia, an update on the global CERA credential, volunteer opportunities and information about the SOA's research function.

JOINT REGIONAL SEMINAR IN ASIA

In August, I was privileged to spend a few weeks in Asia as part of the Joint Regional Seminar. The Joint Regional Seminar is a collaborative effort among the SOA, the Institute & Faculty of Actuaries and the Institute of Actuaries of Australia with the support of local actuarial organizations. The theme this year was "Asset, Liability and Capital Management: Where are your Risks?" The event was held in five cities: Bangkok, Singapore, Taipei, Hong Kong and Beijing.

On this trip I met with hundreds of actuaries and employers. Whenever possible, I took time out to meet with representatives of the local actuarial associations. Informal meetings with local members, several visits to universities with actuarial science programs and meetings with local insurance regulators rounded out my itinerary. I came away impressed with the high regard in which the actuarial profession is held in Asia, our opportunities to serve the financial community, and the enthusiasm of our members and candidates.

While I'm on the topic of international issues, I've appointed a task force to work on a strategic initiative to determine our future international strategy. The number of members outside of North America is 12 percent, and growing! You can expect to hear much more about this in the next several months.

GLOBAL CERA CREDENTIAL

On September 1, I signed the final documents transferring ownership of CERA from the SOA to the new CERA Global Association, in accordance with the Board's decision. This was a major step in creating the new organization and evolves the CERA into a globally owned credential.

On my trip to Asia, I was pleased to hear a lot of interest in the CERA—both from actuaries who are planning on earning the credential and employers who recognize the benefit of having the CERA as part of the global marketplace. I met with many bright students and members who are excited about the profession and the idea of a global actuarial credential!

The global nature of the CERA will increase its prominence within North America as well as around the world. Offering the CERA globally will facilitate the free movement of actuaries internationally. It will also increase the influence of the actuarial profession in the world of ERM and will allow CERAs to have an internationally recognized credential.

For current FSAs, the path to earn the CERA credential is relatively short—all you would need to complete would be the Operational Risk Module and the Advanced Finance/ERM exam. I urge those of you who are interested to consider earning your CERA.

THE IMPORTANCE OF VOLUNTEERISM

The SOA has a very capable professional staff—however the cost of running an operation like ours without the time and energy of our volunteers would be prohibitive! The SOA has more than 1,500 dedicated members and candidates who volunteer. We have many career-long volunteers, and we always welcome new volunteers into the fold. (You find that out when you attend the Fellowship Admissions Course!)

Volunteerism is an important way to grow your career, and the SOA provides many opportunities to do that. You continue to learn new skills and you build a network of professionals that is of huge value over time.

The SOA has established a Leadership Development Program which can help link you to various opportunities. Our volunteers are involved in a variety of areas—from helping manage the exam process, to organizing our meetings and events, to driving our research, to leading the sections. Just this year, 500 people—members, candidates and even students—have expressed interest. You can learn more about the Leadership Development Program on the SOA website.

RESEARCH GENERATES MEDIA ATTENTION FOR OUR PROFESSION

There are two pieces of SOA research that have earned strong media attention this year. One is the research completed in conjunction with Milliman, Inc., to determine the overall cost of medical errors on the U.S. economy.

Using claims data from 2008, the researchers developed an actuarially sound measurement that found avoidable medical injuries cost the U.S. economy $19.5 billion.

We were able to earn high-profile media attention for this news. For instance, SOA Fellow Jim Toole was interviewed on PBS's "Nightly Business Report," and we also got placements in many other newspapers and magazines. This was just one example of how we were able to demonstrate actuaries' expertise in helping to provide solutions to the important issue of rising health care costs.

The SOA and Milliman were able to generate a lot of media interest in this important issue. The Associated Press covered the findings, which led to dozens of placements in newspapers and online.

Another pressing issue is retirement planning. Every other year, the SOA prepares a survey called "Risks and Process of Retirement."

This year's results found that nearly one-third of pre-retirees—individuals currently in the workforce—said that the concept of retirement will not really apply to them because they will never be financially able to retire. Among other findings, fewer than 30 percent of pre-retirees say they plan to retire at age 65. Overall, inflation is the main concern of both retirees and pre-retirees, as are health care costs.

STRENGTHENING THE SOA RESEARCH FUNCTION

We know that our members, our employers and clients, and the general public have found value in the results of SOA research. We also know that there are new and emerging issues in society—such as health care reform and pension issues—that would benefit from the analysis that is the hallmark of our profession.

This is why we are taking steps to strengthen the SOA research function. We are adding two high-level oversight groups that will assist in driving research in appropriate directions. We are putting a greater emphasis on selecting projects that will be valuable for members and the general public (such as an upcoming report on the costs of obesity project).

We are also looking at producing outputs (other than reports) such as useful software and adding staff resources to the experience studies side of our operation. These steps will make our research efforts more timely and applicable.

In addition, we are moving ahead with the Rapid Research Pilot announced earlier this year, which will help us generate research quickly on important issues. We hope to be able to address questions like the effect of the financial crisis on pension solvency and how pension systems might be affected by significant legislative or economic changes.

Mike McLaughlin

This work will supplement—not replace—current SOA research efforts. We plan to work closely with the Academy and the Canadian Institute of Actuaries to ensure that this effort is valuable in their efforts to strengthen retirement systems in the United States and Canada.

SOA DIALOGUE: INTERACTIVE LEADER SESSION A SUCCESS!

We held our second Interactive Leader Session on September 1, and we were happy to have over 250 sites participate, with people joining us from around the globe! In addition to those from the United States and Canada, we also had a number of international participants from countries such as Greece, Hong Kong, the Netherlands and Pakistan!

We covered a wide variety of topics including the election of board and council members, volunteerism and research. Approximately 30 minutes of the one-hour webcast were devoted to answering participant questions, whether submitted ahead of time or during the webcast.

Ninety-five percent of participants reported that they were either satisfied or extremely satisfied with the event. As I write this, the SOA is preparing to archive the Interactive Leader Session on the website, so you can download it there. And look for more Interactive Leader Sessions in the future!

Finding more and better ways to speak and listen to members is a priority for us. As always, if you have an idea, a question or a concern, feel free to contact me at *mmclaughlin@soa.org*.

Mike McLaughlin, FSA, CERA, FIA, MAAA, is president of the SOA. He can be contacted at *mmclaughlin@soa.org.*

Letters To The Editor

TWO TOPICS

DEAR EDITOR,

THIS LETTER IS IN RESPONSE to the June/July article in *The Actuary* titled, "Retirement Software Eat Dots, Avoid Ghosts."

After examining 12 non-randomly selected retirement planning software programs, the authors of "Retirement Software Eat Dots, Avoid Ghosts" conclude that there are a number of issues that these programs fail to adequately address. While I agree with the authors, I don't think that retirees who chose to self-insure their retirement will necessarily be better served with more sophisticated software designed to address all the supposed shortcomings of the existing software. What is needed, instead, are applications by retirees of effective algorithms to periodically adjust the results developed by the existing software for deviations between actual and assumed experience to keep their retirement spending on track. In short, retirees who choose to self-insure their retirement need to apply accepted actuarial principles to better manage the risks involved.

I've developed a website to help retirees and soon-to-be-retirees develop a spending budget throughout retirement. The website contains a paper that discusses the risks involved in self-insuring one's retirement and includes two "unsophisticated" spreadsheets that can be used to develop an initial spending budget. As noted in the paper, more sophisticated calculation tools may be used for this purpose, but the most important aspect of determining an ongoing spending plan is to follow the general actuarial process described in the paper to "manage the risks like an actuary."

The website is: *http://howmuchcaniaffordtospendinretirement.webs.com/*

No financial gain inures to me from visits to this site.

It is my hope that this site can be of some value to individuals who choose to self-insure their retirement and want an idea of how much of their accumulated savings they can afford to spend each year. The spreadsheets can also be useful for individuals who may know how much they want to spend each year, but may not know how much savings they need to accumulate to provide such an annual income.

I know that the spreadsheet has already helped at least one family; my wife and I have developed our retirement spending plan for the next year. Our budget was based on a 4 percent investment return assumption, 4 percent inflation and a 40-year life expectancy.

Ken Steiner, FSA, EA, MAAA
Ken retired from Towers Watson on April 30, 2010 after 38 years in the pension field.

MIKE,

I JUST READ YOUR LETTER FROM THE PRESIDENT titled, "NO BOUNDARIES: The SOA as a Global Organization—Serving All Members," in the June/July 2010 issue of *The Actuary*. In particular I noted your comment on page 8 in the third column, second full paragraph: "Now that the CERA has been launched as a global risk management credential, the CERA will increase the visibility and influence of actuaries within the international ERM sphere, leading to a more diverse and prominent actuarial profession."

This statement got me to thinking. Every acronym referring to actuaries, like FSA, ASA, MAAA, FCA, FCIA, FIA, EA and so on, has the word actuary or actuaries in its title. However, the CERA (Chartered Enterprise Risk Analyst) credential does not contain the word actuary or actuaries, so I must disagree with your quoted comment. Instead, I believe the CERA credential will increase the visibility of analysts within the international ERM sphere.

May I suggest that the actuarial profession rethink the name associated with the CERA credential to Chartered Enterprise Risk Actuary?

Am I the only actuary who believes if one wants the actuarial profession to be more visible and influential in the global marketplace, one should at least use the word actuary or actuaries in any acronym referring to the profession?

There, I've had my say. Thanks for listening!

Warm Regards,
Howie Heidorn, ASA, FCA, MAAA

HOWIE,

WHEN THE SOA TASK FORCE was selecting a name for the new actuarial ERM credential, many options were considered. Some people preferred actuary in the name, because it was to be a credential offered by the Society of Actuaries. Others, including me, felt the word actuary was so closely tied to insurance and pensions, that it would reduce the appeal of the credential in broader financial services and other industries. This was a judgment call, but the task force and SOA Board have approved and support the use of Chartered Enterprise Risk Analyst. It's already gaining good recognition. In some countries, for example Australia, the word actuary already has broad appeal; hence the Australians will use the word actuary instead of analyst, and that is permitted by the Global Treaty.

Sincerely,
Mike McLaughlin, FSA, CERA, FIA, MAAA

The Sections

GREATEST HITS 1981–2010

FROM HOW THEY BEGAN to where they are going—a look at the SOA's sections BY MEG WEBER

FLASHBACK—1981. Newly elected President Ronald Reagan appointed the first woman, Sandra Day O'Connor, to the Supreme Court. Going to Starbucks meant 1912 Pike Place in Seattle for several more years. Quebec enacted the French language sign law. Also in Canada, liters of gasoline replaced gallons at the station. Powerful earthquakes shook Greece and China. Five men in Los Angeles were diagnosed with a rare form of pneumonia seen only in patients with weakened immune systems (the first cases of AIDS). The first DeLorean sports car with its stainless steel body and gull wing doors rolled off the assembly line in Ireland. And this was the year the first SOA section, the Health Section, was launched. New members and section leaders were energized! From the grassroots, individuals could now contribute to their area of expertise in the profession.

The "early adopter" members waited another two years for the postman to deliver their first *Health Section News* newsletter. The newsletter, produced annually, included problems and case studies to be answered in the next issue. Members also received a typed list of all fellow section members and contact information for networking purposes. (Council members and officers additionally appeared in the SOA Yearbook.) And that was about the extent of the benefits for the $6 dues.

But despite the initially slim portfolio of benefits, the concept of sections had strong appeal. Sections meant "home" for members looking for people of similar interests in the larger organization of the SOA. Very quickly the Health Section was followed by the formation of the Financial Reporting, Futurism,[1] Pension, and Product Development sections, all with similar member benefits. All these sections were an outgrowth of the 1979 Task Force report to the Board which envisioned sections as, "a group of members organized to study and discuss their common functional and/or professional interests and to contribute information on those interests to the actuarial profession through special meetings, seminars and research projects." Ten signatures on a petition and Board approval was (and still is) all it took to get started. And in these aspects, purpose and formation, sections have not changed.

EARLY GROWTH

Throughout the 1980s and 1990s, new sections continued to be formed. They were created by members—for the members. Their focus was their special interest or practice and less so the overall organization or profession. But as the number of sections grew as well as their membership, so did their influence. Section outputs in continuing education, research and publications as well as the increased involvement of their members greatly added to the development and transfer of knowledge for the Society of Actuaries. By the early 2000s, section energy outstripped the traditional practice area organization of the SOA. In 2005 the two were merged.

SOA sections differ from most of their counterparts in other professional organizations. Some have a much looser connection to the parent organization. SOA sections resemble strong corporate business units. Like Ford Motor Company supports product lines as diverse as Mustang and Hybrid Escapes, within certain parameters, our section leaders plan and execute tactics with a great deal of autonomy. Their efforts contribute to the overall actuarial brand. The SOA staff and resources act as "shared services" to support the infrastructure issues for the sections. Significantly, via continuing education events, sections generate considerable non-dues income. In fact, several SOA sections have both the financial resources and memberships that would be the envy of many not-for-profit organizations.

PRESENT DAY

Fast forward to 2010. Barack Obama is president. Starbucks offers unlimited and free Internet in more than 12,000 U.S. and Canadian locations. GM begins phaseout of Pontiac, which follows the Oldsmobile and Saturn product lines. There are three women on the Supreme Court. The latest "epidemic" in the United States is obesity. Apple opens a flagship store in Shanghai. And, the Social Insurance & Public Finance Section celebrates its one-year anniversary.

The world has certainly changed in 30 years and so have sections. Did the merger of sections and practice areas work? Recently at the request of the SOA Board Finance Committee, SOA Staff reviewed the cost/benefit of the section organization. What is the section influence in 2010?

With 19 sections and nearly 35,000 section memberships, sections continue to attract like-minded individuals to their organizations. Networking electronically or face-to-face helps build and cement relationships. At major meetings, such as the 2010 Annual Meeting, there may be as many as 20 such networking events. Sections, under the leadership of their councils, are essential for content and delivery of SOA

FOOTNOTES:

[1] Now the Forecasting & Futurism Section.

continuing education. Frequently sections pay for professional speakers at SOA events—individual sessions and even contributions for keynotes. Using SOA publication resources, each section produces two to four newsletters (electronic and/or printed) per year. Some also produce journals, bulletins, essays on critical issues, and papers. For the SOA, the sections serve an important role identifying emerging issues in strategic areas.

Retirement 20/20 and Untapped Opportunities for Actuaries in Health strategic initiative were initiated at the section level. Many sections partner with other professional organizations such as the American Academy of Actuaries, the American Bar Association, LOMA/LIMRA and PRMIA, to name a few. This strengthens relationships for the SOA and the credibility of the profession. In aggregate, in addition to recommending and overseeing projects, each year sections commit significant funds toward research. Most importantly, the Section organization provides an effective means to recruit qualified volunteers to work on teams, projects, or presentations when needed. Clearly sections and their success are now vital to the SOA organization.

MORE TO THE STORY

There is another compelling reason why we should be interested in maintaining or increasing SOA member participation in sections. Per the 2009 SOA membership survey, people belonging to sections reported greater satisfaction with the services of the SOA.[2] Therefore, it is imperative we keep looking forward to ensure continued section relevance as the SOA membership and the world we live in change.

FOOTNOTES:

[2] To be truly happy, join the Taxation, Smaller Insurance Company, Reinsurance, or Financial Reporting sections. Their members were the most satisfied with the SOA.

The section membership relationship to the SOA is more like a customer relationship. Each year you make a decision to join or retain your memberships based on your perceptions of value (with the average dues amount being $25). This may surprise you. Whether it is paying section dues or purchasing a luxury car, for all the analysis and evaluation, typically the decisions to buy or join are emotional ones.

WHY PEOPLE JOIN—IN THEIR WORDS

It is an easy trap as a provider of services to make assumptions about what the members think is important. As Mark Yu, 2010 chairperson of the Actuary of the Future Section, puts it, "We need to align our focus with members' perceived value. It's what members/customers want that counts, not what we have to offer." For that reason the Section Membership Value Team was created to review costs and benefits from your individual member perspective. The team was formed from members of the Council of Section Chairs. The Membership Value Team

1981
MTV's first video airs.

1981

The first laptop computer, **Osborne 1**, is developed.

1983

Michael Jackson releases all-time best selling album **Thriller**.

1984

Mary Lou Retton scores a **perfect 10**.

1986

Halley's Comet swings by. Back again in 2061.

1987
Starbucks opens its first locations outside Seattle.

1989
The first combat use of **stealth bomber**—Operation Just Cause in Panama.


1991
Nirvana popularizes "Grunge" style.


1992
The **European Union** is formed.

1993
Last episode of **Cheers** airs.

1994

Nelson Mandela is inaugurated as South Africa's first black president. * from Wikipedia.

Memorable moments from 1981 to 2010

had several surveys to work from: the 2009 SOA member value survey, four recent section member "pulse" surveys, and also their colleagues in the Council of Section Chairs. Despite the different sources, the reasons for joining a section are the same. They are:

Section membership …

1. Enhances personal brand/image,
2. Provides direct communications based on areas of interest,
3. Improves opportunities for networking,
4. Provides an avenue for greater SOA participation, and
5. Makes everything possible (altruism).[3]

INTERNATIONAL ORGANIZATION

Sections stem from the grassroots. Their annual activities are determined by the current councils within the broadly defined missions. As a consequence, some sections address topics that are far more adaptable to an international member base than others. Currently the four sections with the most appeal to non-U.S. members are: Financial Reporting, Product Development, Joint Risk Management, and the International sections. Joint Risk Management is actually co-sponsored by the Canadian Institute of Actuaries. It, along with the Education & Research and Pension sections, has always enjoyed higher participation by Canadian members than some sections. Plans are in place to attract more international section members. However, some sections will likely remain primarily U.S.-focused, some North American-focused, and others worldwide.

FUTURE PLANS

Looking at the time spent and commitment of all the team members (as well as other section leaders and volunteers) should tell you we all believe sections are a great value not only to SOA members but nonactuaries as well. The section leaders, staff and the Member Value Team will continue to explore and develop new ideas. Opportunities using social networking and new applications for Section Web pages are being piloted. Obtaining feedback from our members and benchmarking with other organizations provides more ideas pertaining to benefits and service delivery. If you have ideas or challenges you would like to share, please feel free to contact me or any other member of the Member Value Team. They are: Alan Cooke (International), Larry Stern (Entrepreneurial Actuaries and Reinsurance), Judy Strachan (Health), and Mark Yu (Actuary of the Future). We welcome your participation in the process. A

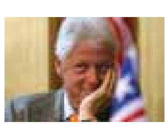
Meg Weber is director of Section Services at the Society of Actuaries. She can be contacted at *mweber@soa.org*.

FOOTNOTES:

[3] Makes everything possible in terms that the dues paid enables the Section to take action.

Dolly was the first sheep to be cloned from an adult somatic cell. * from Wikipedia.
1996

1998
Last episode of Seinfeld airs.



Bill Clinton acquitted in impeachment proceedings.
1999

September 11, United States attacked by al-Qaeda.
2001

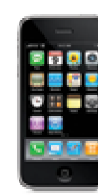
2002
Salt Lake City, Utah hosts winter Olympics.

Mike Weir becomes first Canadian and first leftie to win the Masters Tournament.
2003

2004
Facebook becomes available to the public.

First **Tweet** is sent.

2006

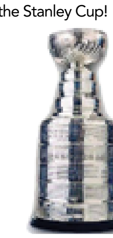


The first **iPhone** is released.
2007

2009

Barack Obama becomes first African-American President of the United States.

Chicago Blackhawks win the Stanley Cup!



2010

TEN
ILES

A LOOK AT 1-IN-200-YEAR EVENTS

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BY JOHN GORDON

A RISK MANAGEMENT LESSON WAS BORN AT THIS YEAR'S WIMBLEDON MATCHES.

Those of you who are interested in tennis—and perhaps even a few of you who aren't—will be aware that history was made at Wimbledon this year, when those watching were treated to a match of quite gargantuan proportions in the first round of the Men's singles competition.

It was the kind of match to get the nerdy numbers types among us scrambling for our probability distributions. Any actuary who presumes that the past is a reliable guide to the future could have been forgiven for thinking that a tennis match could not possibly end 70 games to 68 in the final set, or that a single set of tennis could not possibly last longer than any previously recorded *match* ever had.

And who could blame them. Before John Isner of the United States walked onto court 18 with Nicolas Mahut of France, most tennis players didn't think it could happen either. But 183 games, 11 hours and five minutes of power tennis later, John Isner had limped into round two and their match had stormed into the record books.

It is a contest that cries out for a little statistical analysis, but to do that we need first to break the match down into its component parts, its base building blocks. As luck would have it, anyone who's been following tennis for a while will know that the quality of MI (match information, in this case!) that is available to viewers and commentators has gotten much better in recent years. So courtesy of the BBC, in figure 1 are the match statistics that count for Isner vs. Mahut.

Figure 1: Isner/Mahut

	ISNER	MAHUT
1ST Serves in:	74%	67%
2ND Serves in:	92%	88%
1ST Serves won:	81%	87%
2ND Serves won:	63%	63%
Total points won:	478	502
Average interval between points:	41 Seconds	

So, how likely is it that a match like this could ever happen again? Well, a lot of factors will have a bearing on that, many of them not readily quantifiable. But there are two very relevant questions we could reasonably ask that do have a very statistical flavor:

1. How exceptional is it for two players to serve this well in a match?
2. If these service and points won percentages *are* typical of Isner and Mahut, how long might we have to wait before they served up another match like this one?

Sadly even my own degree of nerdiness doesn't stretch to trawling the tennis archives for a large enough sample of past match statistics to test question 1 above.

If we assume they are characteristic of a level of performance that the two players concerned are capable of reaching regularly, then we have something to work with.

The obvious question for nerdy types is if they played each other over and over again and always performed to this level, what would be the likely outcome? Well, being a sometime nerdy type myself I built a little stochastic model to test that out. And if you're a nerdy type too, the results might make interesting reading.

Simulations show that even their average match would last three hours, 48 minutes, with the 5 percent tail of the distribution kicking in at an impressive six hours, 40 minutes. Looking at the split of their matches by number of sets, 27 percent would be straight sets victories and 19 percent would go to four sets, leaving a whopping 54 percent of matches going the distance. How unlucky was Mahut to have lost? The answer is "a bit": in practice, he could expect to win 60 percent of his matches against Isner at this level of performance.

More pertinently, how many times might they need to play each other before they broke their own record? Well, on these performance stats they could expect a match this long about once every 500 outings. So it may not happen again for a while. But on this evidence, the likelihood of that is still five times greater than either of them winning a single set 6-0!

Just games with numbers, of course. Back in the real world, sadly nothing is ever quite so simple. Complete physical exhaustion might well bring any similar game to a grinding halt or quicker conclusion if it didn't happen to be spread over three days as this one was, and I leave unanswered the question of just how likely a repeat performance of such dominant serving might be. There were, after all, only 17 break points in the entire 980-point match.

THE BIGGER PICTURE

Well, I guess that's more than enough tennis for one article in an actuarial magazine. But are there any lessons we might draw from this relating to matters a little closer to home?

I think there are.

Perhaps the Isner/Mahut match has something important to tell us about the management of risk. For as the financial crisis has ably demonstrated, dramatic events that many did not foresee are not confined to the tennis court.

Back in January 2009, I attended the presentation and discussion of a paper by Bernard Bergman called "Capital – It's Over-rated!" in London. Bernard presented his paper against a backdrop of financial crisis and the forthcoming introduction of the Solvency II regime across the EU (in 2012). The capital adequacy test of the latter requires firms to maintain sufficient capital to ensure that the modelled probability of defaulting on policyholder liabilities over a one-year horizon is no more than one-half percent. In essence, this test requires the assessment of so-called 1-in-200-year events and their financial impact.

Much lively discussion followed the presentation of Bernard's paper, but nobody mentioned the elephant in the capital requirements room: how reliable is an actuary's—or anyone else's—judgment as to what a 1-in-200-year event actually looks like in present circumstances, let alone what its financial impact might be?

Consider this list of significant risks that now confronts us.

- Peak oil triggering an energy crisis
- Global warming
- Population growth
- Population aging
- Growing geopolitical tensions between countries
- Growing social tensions within countries
- Overexploitation of resources leading to resource shortages
- Major terrorist incident

Consider also that, in the wake of the financial crisis, the macroeconomic outlook remains uncertain. The position of some developed economies in particular looks precarious, a combination of low interest rates and financial stimulus masking sluggish demand, structural weakness, ongoing debt issues, trade deficits and unsustainable global financial imbalances.

Nicolas Mahut of France

Witness also the trend in recent years for financial markets to become increasingly volatile, with increasingly frequent deviations from economic fundamentals. Not only are our present economic and financial systems not equipped to help us best manage the impact of some of these risks, in present form they may well contrive to make some of those impacts worse.

I would wager that, by the time we see another epic of Isner/Mahut proportions at Wimbledon the world will have had to pick up the pieces from a rather bigger global crisis than the one we've just witnessed. For I would suggest that all of the risks I list above fit comfortably within a 1-in-200-year risk horizon—indeed some of them are already beginning to impact. Most of the organizations we serve may take a sanguine view, but whether we are tennis fans or not, as actuaries with a strong public interest mandate it should give us considerable pause for thought.

For my own part, I've been pondering what I see as the gap between our own industry's preoccupations and this wider reality for some time now. Indeed I became so concerned by it that I took a year off to write about it (see *www.acturage.com/thepaper.as*p).

RISKS AND OPPORTUNITIES

At the risk of stating the obvious, risk management is more about finding ways to mitigate risks than it is about finding ways to analyze them. Some risks can be mitigated without being quantified; some risks can be quantified but are impossible to mitigate; some risks—

John Isner of the United States

rather inconveniently most of the big ones—may appear stubbornly resistant to both. In the wake of the recent financial crisis, talk of risk management is not surprisingly now all the rage. But if we wish to impress our public interest credentials upon a skeptical public then attempting to second guess the frequency and financial impact of big events will not suffice. Likewise, if we wish to give profile to our risk management credentials we will need to invest proportionately more time contributing actively to the mitigation of risks that are of interest to the wider public and proportionately less time contributing to the analysis and reporting of risks that are of interest to those who employ our services.

In the context of the kind of risks I list on page 19, that might look a daunting challenge, and indeed it is. But with a bolder, more committed and more pragmatic approach there is much that as actuaries we could be doing in a range of different areas to raise the profile of our profession, more effectively represent the long-term public interest and contribute more actively to the management of high-profile risks.

To illustrate the point, here are a number of areas that I believe could benefit from our input.

BANKING REFORM

At the time of writing, in the United Kingdom alone taxpayers' collective investment in the banking system amounts to around $250 billion, over $4,000 per head of population. UKFI, the company set up to look after that interest for us, has just 15 employees. Its business to date has been conducted largely behind closed doors, which is disconcerting given the scale of investment they are representing on our behalf.

Banking has become far more complex than it needs to be or needs to be to serve the interests of its customers. If it hadn't, there would not have been a banking crisis. For every actuary who might manage a bank badly there are plenty more who could bring valuable financial and risk management insight to bear in helping to ensure that banks are better managed to the benefit of all. Perhaps it is time we stopped hiding behind the notion that actuaries do not do banking and started lobbying government, regulators and the banks that employ some of us, to utilize our skills to better effect in what is evidently a critical risk area. For as we have learned to our cost, these days we are all doing banking, whether we want to or not.

ECONOMIC AND FINANCIAL MARKET REFORM

Capitalism's failings as an economic doctrine are beginning to cost us dearly. No amount of numerical dexterity is going to make economic growth plus population growth plus resource consumption equate to a sustainable future. Instead of acquiescing when others persist in trying to defy this reality, the profession could better serve the public interest by promoting reasoned debate on the subject, with the aim of helping to develop a sustainable Plan B before it is too late.

In the wake of the latest crisis it is evident to many people that to call only for better governance and greater transparency is simply to treat symptoms rather than causes, and the profession could (and should) be making a far more effective contribution to the ideological debate about what kind of economic and financial market reforms are now needed.

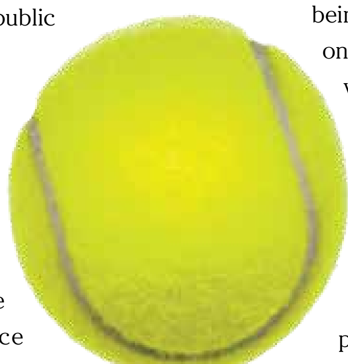
PUBLIC SECTOR REFORM

Given the present fiscal situation on both sides of the Atlantic, the need for public sector efficiency has never been greater. Savings need to be found. Whatever one's political persuasion, it seems clear that the interests of individual taxpayers have not always been well-served in this area in the past. Vast sums are invested—the United Kingdom's health service alone costs around $150 billion a year—but they are not always spent wisely, and institutions often seem to be run in ways that would cause heads to roll in the private sector.

The profession's toolkit and public interest mandate equip it well to assist, and doing so would strike a populist chord. It would be a bold move, but in the present climate if the profession could find an effective mechanism by which to offer its services it would be difficult for any party of government to refuse. And we should remember that as taxpayers this is an area that we all have an interest in.

PENSIONS REFORM

Another good place to start looking for public sector savings might be in the public sector pensions provision. It would be interesting to see an analysis of that provision across the public sector in comparison with its equivalent in the private sector, with particular focus on the relative cost of each, and how this has changed over the last 20 years or so. Who better placed than our own profession to undertake such a study, in the wider public interest?



POLICY INITIATIVES

Many of the large-scale problems we presently face require pre-emptive measures to be taken now to mitigate against adverse consequences in the future. This is essentially risk management on a scale that transcends corporate boundaries in pursuit of a greater good.

Unfortunately, government has a track record of doing this poorly, and industry has a track record of doing it hardly at all. We could do much to enhance our own risk management credentials by being more proactive in promoting public debate and formulating policy initiatives in some of these areas (economic reform, the impact of continuing population growth, the management of scarce resources, etc.).

WE COULD DO MUCH TO ENHANCE OUR OWN RISK MANAGEMENT CREDENTIALS BY BEING MORE PROACTIVE. ...

ENERGY EFFICIENCY AND RECYCLING POLICY

Investment in each of these has fallen on hard times recently. Thanks to the financial crisis and the associated collapse in oil prices, investment in renewables has taken a nosedive since early 2008, at a time when it should be being massively expanded. Similar logic (if one can call it that) explains a reduction in investment in recycling. Could the profession not bring its risk analysis and projection skills to bear in articulating a longer term business case based on a more realistic economic cost/benefit model? That oil might run out looks rather less a 1-in-200-year risk than a 1-in-50-year near-certainty, particularly if fears that key producers may have been over-estimating their reserves prove well-founded. Is it not time we dedicated more of our long-term vision and risk analysis ability to the task of painting some of the scenarios that could arise from underinvestment in these areas, given their criticality to the long-term public interest?

TRANSPORT POLICY

One doesn't need to look beyond the relative cost of road, rail and air travel, and how the cost of each has changed over the last 20 years, to see that transport policy is a mess. Furthermore, governments that talk green while expanding airports and building more roads do little to reassure that the issue is in safe hands.

Little short of a fundamental overhaul of travel taxes and incentives and a new financial framework for properly evaluating the respective costs and benefits of different modes of transport is needed—and when it comes to air travel, that would have to be on a global scale. The actuarial skill set is well-suited to the task of helping to build one, and the profession could also bring a much-needed independent and objective view to a subject that can be something of a political football.

CARBON COSTING

One of the largest and most topical intangibles on the World Plc balance sheet, this is becoming a big employer. The development of reliable carbon models is growing in importance as the scale of the global warming

Isner and Mahut, Wimbledon 2010

challenge becomes clearer. Actuaries are well-qualified to provide input both into modelling techniques and to support analysis and projection of long-term costs and benefits.

FOOD LABELING

We've gotten used to eating what we like when we like, but if an enforced drastic change in habits is to be avoided we are going to need to be a lot smarter about the balance between consumption and conservation than we presently are. Better labelling and smarter pricing will be needed before, as consumers, we are able to make informed choices and pay a price more reflective of the true resource cost of what we eat and drink. That will require the modelling of many interrelated factors, for example energy invested in production versus energy value on consumption, amount of land required for production, for how long it is required and with what environmental impact, etc. Could we not assist?

As actuaries, we are well-trained professionals. Our analytical skills are peerless; we have a strong public interest mandate; we understand the nature of risk; we have intimate knowledge of the workings of our financial system; we're independent; and we're used to taking a long-term view. As the president of the Faculty of Actuaries said from the midst of crisis, back in October 2008, "These are times when the world needs actuaries, even if the world does not yet know it."

I agree, on both counts. But if we are to change the world's mind, we must first understand the reasons for its thinking. In an age of great change it is tempting to seek comfort in tradition, but the truth is that in such times those same traditions can become barriers to progress. We should of course defend those traditions that are serving us well, but we must also challenge those that are serving us badly.

These are exceptional times, both on and off the tennis court. There are many reasons why the world may never see another epic to match Isner vs. Mahut, not all of them relating to tennis. Clearly we do not hold all of the risk management answers, but if as a profession we wish to fulfill both our vision and our public interest obligations, we must improve our own contribution to the collective cause of ensuring that some of the worse ones do not come to pass. If they knew what we have to say about ourselves, our public would expect nothing less. A

John Gordon is a U.K.-based independent actuary and consultant. His book is titled *On the Role of the Actuary in a Changing World.* If you have any comments on this article, Gordon is contactable at *john@acturage.com.*


Retirement 20/20

The Amazing Transformation of RET I. REMENT

BY EMILY KESSLER AND ANDREW PETERSON

IT WASN'T THAT LONG AGO that the world saw defined benefit and defined contribution as our only retirement system solutions. Today, actuaries are developing a brave new world of retirement designs and opening up new frontiers.

The latest phase of the SOA's *Retirement 20/20* initiative was a call for models. The call for models asked individuals to submit their ideas for new "Tier II" retirement systems—i.e., what is typically thought of as employer-provided retirement benefits that fit between social insurance and private savings. The call for models was the culmination of the *Retirement 20/20* work to date including three conferences which explored needs and risks for stakeholders in the retirement system (individuals, society, employers and the markets). Submissions were judged based on how well they met the criteria of the *Retirement 20/20* Measurement Framework (which considers needs and risks for the various stakeholders) and how well they handled issues of risk, governance, administration, transparency and transition. The Pension Section Council, in conjunction with the SOA, provided a $100,000 cash prize pool to be split evenly among the prize-winning papers. The Pension Section knew that it didn't want to select a single winner, as there would likely be several papers with very different, but equally worthy, ways of rethinking the retirement system.

As a result of the call for models, the SOA received 18 paper submissions from Canadian and American authors. We congratulate the four authors of the prize-winning papers:

- "The SERIOUS System: A New Model for Retirement Income Success," by Ken Beckman, ASA, MAAA.
- "The Tracker Plan: A Controlled Risk Defined-Contribution Retirement Program," by Rowland Davis, FSA.
- "Affordable Retirement Income through Savings and Annuities," by Don Fuerst, FSA, EA, FCA.
- "The Total Career Benchmark Model," by Tom Walker, FSA, FCIA.

Each of the prize-winning papers, as well as four other papers, formed the basis for our most recent conference, *Retirement 20/20: New Designs for a New Century*, held June 2–3 in Washington, D.C. A second conference, in cooperation with the CD Howe Institute and the Canadian Institute of Actuaries, will be held in Toronto in the fall.

We learned a lot, both from all the paper submissions and from the June conference. We'd like to thank all the paper authors and all the participants at the June conference. Even though we haven't yet held our Canadian conference, we want to take this opportunity to summarize some of what we have discovered to date.

WHAT WE LEARNED FROM THE PAPER SUBMISSIONS

The 18 papers submitted in the call for models considered a number of ways to reform the retirement system. Yet, common themes emerged. While no single paper embodies all themes, most submissions contain several similar ideas. This can be seen as a framework to begin discussions about building a stronger retirement system.

Most designs "look" like a defined contribution plan, in that the individual and employer make a contribution into an account each year. But the similarities typically end there. Common themes running through the papers include:

- **FOCUSING RETIREMENT ACCUMULATIONS ON INCOME PROVIDED.** Participants may never see an account balance, but instead see an income projection based on contributions made to date. Some designs directly invest in a deferred annuity. Others have a target benefit defined at retirement age. The plan may adjust the investment mix and sometimes require mid-course contribution adjustments to help assure the individual reaches the target by retirement.

  Some designs **REQUIRE OR DEFAULT INDIVIDUALS TO TAKE A PORTION OF THEIR BENEFIT AS INCOME.** In most designs, individuals can opt out of an income stream at retirement, but as a result they might face a penalty, or lose protection from downside investment risk. Note that in most designs, if the individual is required (or strongly incentivized) to take a portion of the benefit as income, that amount is typically limited. (This would represent the first layer in a two-layer system, as discussed later).

SOME DESIGNS DIRECTLY INVEST IN A DEFERRED ANNUITY. OTHERS HAVE A TARGET BEFEFIT DEFINED AT RETIREMENT AGE.

- **PRESELECTING INVESTMENT MIXES.** While you can think of this feature as a target date fund, these new mixes typically put more investment in fixed income (particularly TIPS—Treasury Inflation Protected Securities) and much less investment in equity, particularly at retirement. The advantages of a preselected investment mix are that individuals participate in a large fund with lower administrative costs, the funds use professional investment advisors, and the funds are designed to meet target benefit goals at retirement (providing greater security to individuals).

- **BUILDING SOME VARIABILITY INTO RETIREMENT INCOME.** For example, if the benefit is defined as a target, the base benefit at retirement may be higher or lower than the target. But more commonly, the income might vary based on investment performance in the fund or changes in future longevity (how long we live). This variability of payment would be small, but building in variability of payment avoids absolute guarantees, which are expensive.

- **CHANGING THE ROLE OF THE EMPLOYER.** Individuals may access benefits through their employers, but their employers might not be the plan sponsor. This allows more small employers to participate, and keeps the cost of running plans low (through economies of scale). It also helps with benefit portability—individuals may be able to stay with the same plan even when they switch employers. In some models, employers are able to offer their own plan, and in some models, employers may have wider choices on the form and level of benefits to be provided.

  If employers are not the plan sponsor, this may also lead to **MORE STANDARDIZATION WITHIN THE SYSTEM.** Some models assume there would be several large retirement plans (for- or not-for-profit) from which individuals or their employers can choose. Other designs assume a uniform benefit structure; individuals and employers then contribute more (or less) to ratchet up (or down) future retirement income. Standardization could help with portability, reduced administration cost and retirement planning.

- There may be a **TWO-LAYER SYSTEM.** In some models, the targeted benefits may only provide a small portion of income in retirement (e.g., 20 percent of final pay for individuals earning up to $60,000 per year at retirement). The goal would be to create ample income, in combination with social insurance, for most middle-income individuals. Individuals could elect to save more in account balance plans like today's 401(k) or Registered Retirement Savings Plan (RRSP), or employers could offer to provide benefits in addition to the basic layer provided by these new systems.

- **THE COST OF THE PLAN WOULD BE BORNE BY EMPLOYERS AND EMPLOYEES.** The exact amount of the contributions, and the exact level of cost sharing, would be determined. Sometimes employer contributions would be encouraged through tax incentives and sometimes equal employer and employee contributions would be mandated, but generally not at a high level (e.g., mandated contributions would only be for the first layer in a two-layer system.)

WHAT WE LEARNED FROM THE JUNE CONFERENCE

Joseph Califano, a former U.S. Secretary of Health, Education and Welfare, wrote a book in 1986 about the U.S. health care debate titled *America's Health Care Revolution: Who Lives, Who Dies, Who Pays*. Another version of the title is, "Who lives, who dies, who pays, and who decides." The title, at least for health care, does get at the heart of how the system manages risk and how the system decides whether and how to mitigate that risk. At our recent Retirement 20/20 conference, equally perplexing questions were asked in our opening session by one conference participant: "Do we provide guarantees? What guarantees do we provide? Who provides them? Who guarantees the guarantors?" While the conference itself was structured somewhat differently, those four questions were at the heart of the submissions, and much of the conference discussion.

DO WE PROVIDE GUARANTEES?

Guaranteed income streams are very expensive to provide, particularly in low-interest-rate environments. A key question to answer is: what is the utility of the guarantees to the recipient (the individual) and to society, relative to the additional marginal cost of securing the guarantee? Many of the Retirement 20/20 papers acknowledge the high cost of guarantees, and seek to achieve reasonable certainty of income, without providing a guarantee. For example, several designs consider variable annuity options, or the purchase of a series of deferred life annuities. One design establishes a targeted account value at retirement (that could be converted to an annuity) by establishing plans that track investment performance over time (including making additional contributions after market downturns) and de-risk investment mix significantly as retirement approaches. Another adds a layer of protection with downside protection structured through a shadow account as a form of reinsurance (which is paid through a small charge to the real account).

Conference participants noted that most individuals are used to having some variability in their income, and small variations in income are generally easy to adjust to. Much of the conference discussion focused on how we could better use markets, and structure investments, to provide as much predictability of income as possible, primarily to protect against significant downside. As one conference participant noted (to paraphrase): "If you're working in guarantees, you're just packaging risk and moving it around. Almost always there will be an escape clause for the guarantor (including bankruptcy). And, guarantees become problematic once politicians become involved."

WHAT GUARANTEES DO WE PROVIDE?

Conference participants and the authors of the papers felt there were a few things that were very important to guarantee. Longevity and inflation risk are key risks to be insured. As noted, most of the call for papers submissions featured annuities, often variable annuities, or variable annuities designed around TIPS to provide inflation protection as well. Sometimes these protections are put in the first tier of a two-tier system, so the ultimate protection is provided on a reasonably small dollar annuity (e.g., no more than \$10,000 – \$15,000 in annual income).

One obstacle that quickly arose in the discussions was how to convince individuals that they should want (or need) annuities. As actuaries, we know that the cost of providing an annuity decreases if you can eliminate anti-selection. That is best done through mandates, but mandates are not popular. More philosophically, as one conference participant noted, "if you have to mandate something because otherwise no one would take it, maybe you should rethink the design."

Many model designers and conference participants hoped that using the best lessons of behavioral finance would be sufficient to ensure individuals are protected against outliving their assets. This could include systems with strong defaults that discuss benefits as income, rather than as balances and provide financial incentives that encourage annuitization (e.g., providing account guarantees if you take the income as an annuity, or charging a small penalty to take the account as a lump sum).

WHO PROVIDES THE GUARANTEES?

Many of the designs worked toward a model where independent institutions provide benefits. The plans essentially become independent entities, designed to be self-supporting without the need for a plan sponsor to guarantee them. In most cases, the designs include a regulator to ensure these systems are well-maintained, make requirements for systems to hedge risks and, in some cases, institute a reinsurance platform as well. This model is very different

than the retirement income system in the United States today, where, with few exceptions, plans have a single employer or group of employers as a plan sponsor. These plans sponsors effectively provide a guarantee on benefits, and are responsible, through IRS regulations, for ensuring the plans maintain a minimum funding level.

As such, these proposals assume the employer's role will be limited—and this concept is a bit controversial. In some cases the employer is simply limited to collecting employee contributions and making elective contributions. Other models have some mandatory contributions for employers, or are designed assuming employer/employee cost sharing. Several conference participants noted that most employers would not like being required to make contributions for benefits.

In addition, several conference participants believed the employer's ability to use retirement benefits to attract, retain and retire individuals was important, and that employers had done well in providing these benefits on a voluntary basis under the current system. They noted that today's system was not designed to ensure adequacy of income or widespread coverage, so the fact that not all participants are covered by pension benefits should not be held as a mark of failure for the system. On the other hand, another conference participant noted that influential Washington policymakers were questioning the role of the employer in the system, beyond that of facilitator of payroll deductions.

WHO GUARANTEES THE GUARANTORS?

Most of the proposals did not assume guarantors backing up the guarantees. While a few proposals did have a role for a government-sponsored reinsurer, most assumed these new financial institutions would be self-sustaining.

What does this mean for the new financial institutions? If, as noted earlier, we are going to design retirement income such that an individual may see some variability in his or her payments, but that the payments would be highly predictable, we need strong market hedges. Participants discussed specifically the role of the markets in financial innovation, and noted in particular investment options which could reduce the risk (and particularly the cost) of hedging:

- One author discussed the G-fund, an investment fund available to federal government employees (and retirees) participating in the federal government's Thrift Savings Plan. The G-fund holds nonmarketable U.S. Treasury securities whose rate of return is calculated based on the weighted average yield of all outstanding Treasury notes and bonds with four or more years to maturity. The fund bears no credit (default) risk and provides a rate of return higher than 90-day T-bills.
- Several model designers used TIPS in their designs, in both accumulation and

WHAT IS RETIREMENT 20/20?

The Society of Actuaries' Pension Section Council has been concerned about changes to the pension system over the past few years. In looking at the issue several years ago, they concluded that they needed, with assistance from others, to step back and look at the bigger picture. Retirement systems today are based on 20th century models, and there have been significant demographic and economic changes that may mean that yesterday's models no longer fit today. Retirement 20/20 is a process to bring together experts on retirement issues to redesign a system from the ground up to meet 21st century retirement fundamentals. One goal the Pension Section has in this process is to develop new retirement risk sharing models that better utilize risk pooling and risk sharing.

The 2006 Retirement 20/20 conference, "Building the Foundation for New Retirement Systems," looked at the needs, risks and roles for the four major system stakeholders (individuals, society, markets and employers). The 2007 conference, "Resolving Stakeholder Tensions: Aligning Roles with Skills," focused on determining and aligning the optimal roles for the various stakeholders. The 2008 conference, "Defining the Characteristics of the 21st Century Retirement System," discussed optimal characteristics for successful retirement systems.Based on the work of these three previous conferences, the SOA issued a call for models in the summer of 2009 to solicit ideas for new Tier II retirement systems that align with the principles of the Retirement 20/20 initiative. The best call for model papers were featured at a June 2010 conference in Washington, D.C., and a conference in fall 2010 (date to be determined) in Toronto, Ontario. A monograph is forthcoming.

To find out more, go to *www.retirement2020.soa.org*. There is also an article in the April/May 2009 issue of *The Actuary* at *www.soa.org/retirement2020/theactuary*.

payout phases. TIPS as an individual investment (beyond a buy and hold strategy) can be problematic because the market price for the TIP security doesn't always move the same way as market prices for non-inflation-linked securities. One participant noted that all you can tell from the price of TIPS is the demand for TIPS—there isn't an economic link between the TIPS price, regular Treasury security price, and inflation expectations. As such, conference participants felt that TIPS needed to be restructured to be usable—much the same way existing Treasury securities are stripped of their coupon payments to make them better financial building blocks. Finally, there was a lively discussion about whether or not TIPS are a good investment because we have not yet seen real returns fall on TIPS the same way they've fallen in other countries issuing inflation-linked securities (e.g., the United Kingdom, where real returns on TIPS have been less than 1 percent).

POLICY CHALLENGES IN UNITED STATES TO ACHIEVING RETIREMENT 20/20'S PROMISE

One theme of the conference quickly became the difficulty in changing the retirement income system today beyond what some might view as the inevitable shift to a system based on individual defined contribution plans, with little annuitization or risk protection. Many participants cited current U.S. federal budget woes (making it difficult to make any changes to retirement systems that don't generate net savings, or at least no net cost). In addition, in the United States, the 401(k), with a single sum balance, is very popular, and annuities are very unpopular. Finally, individual distrust in institutions, particularly financial institutions, has increased with the recent financial crisis.

Other political difficulties in the United States facing any substantive retirement reform include an inability for the political parties to work toward compromise, particularly post-health care reform and a general perception within Washington that it's more important to focus on savings credits for families (in general) rather than target secured retirement income. One participant cited a 2006 study by the GAO which noted that 3 percent of the baby boomers hold 50 percent of the baby boomer wealth (based on 2004 data from the Survey of Consumer Finance); this study result has made politicians focus on increasing savings rates in general. Several participants argued that, if it was politically effective, the most efficient way of improving retirement income for individuals in the bottom half of the income distribution would be to improve Social Security.

HOW SHOULD WE RESPOND TO THESE POLICY CHALLENGES?

Retirement 20/20's goal has always been to find new ways to generate retirement income for the middle income workers. The 2007 Survey of Consumer Finances defines the 20th income percentile starting at $20,600 and the 80th income percentile starting at $98,200. We recognize that retirement income structures proposed in the Retirement 20/20 call for models cannot address the needs of the poorest citizens, nor are they needed by the wealthiest citizens. We also note that while the large proportion of assets are held by the wealthiest Americans, middle tier households do hold wealth in retirement assets, including pensions (which weren't included in the Survey of Consumer Finances study cited by the GAO). The pension system was never designed to replace Social Security, only to supplement it. What about improving Social Security? Retirement 20/20 has always been concerned with not relying too much on intergenerational transfers of wealth (as occur with Social Security); one lesson realized early on in Retirement 20/20 is that more generous social insurance programs put more intergenerational pressures on taxpayers.

SO WHAT DOES THIS MEAN FOR RETIREMENT 20/20?

Clearly we have to work hard to take what we've learned from the models and the conference (and what we'll learn at the Canadian conference) and put that into context with data to show that the existing retirement savings system does add value, and changing the system could increase the value it provides. Many of today's retirees still have defined benefit pensions to supplement their Social Security, so the long-term risk of a system built on individual accounts has not yet been experienced. The recent financial crisis has shown that we don't always understand the risks we take or the implicit assumptions we've made until conditions change. We have much more to do to help build a common understanding of the importance of retirement income.

To find out more about the results of the call for models, and read the prize-winning papers, go to *http://retirement2020.soa.org/new-designs.aspx*. Selected papers will appare in an upcoming monograph. A

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THE ATTESTATION HOUR IS NEAR

BE SURE YOU SET YOUR ALARM! The attestation period is right around the corner. BY JANE CHLAPATY

While the clock continues to tick, all SOA members should be taking important steps in preparation for the first SOA CPD Requirement attestation period that opens on Nov. 1, 2010, and closes on Feb. 28, 2011.

As part of the SOA CPD Requirement that went into effect on Jan. 1, 2009, SOA members are required to attest compliance with the CPD Requirement to assure the users of actuarial services that SOA members have stayed current with their continuing education standards. Your employers, clients and the general public rely on the work that you do as an actuary and they need to be assured that the existing standards are met.

Currently, you should be earning and tracking your credit while you continue on your CPD compliance path. You should readily be able to meet compliance with either the Basic Requirement provisions (SOA CPD Requirement Section B) or the Alternative Compliance provisions (SOA CPD Requirement Section C). Most members will use one of the four alternative compliance provisions to meet the SOA CPD Requirement: the U.S. Qualification Standard, the CIA Qualification Standard, Category 1 or 2 of the UKAP CPD Scheme or the Institute of Actuaries of Australia CPD Standard. And all members must report compliance with the SOA CPD Requirement as of Dec. 31, 2010.

The process of attestation is simple! Attestation will be done electronically. A link will be sent to all members that, when clicked, will bring you to the member site login page. Once you log in using your user name and password, you will see a screen that looks like the example on page 32.

Those members who click the first button—certifying that they have fulfilled the requirement—must click at least one of the next five buttons to identify the method of compliance. As illustrated in the CPD Requirement (Section C), members can combine standards within a period; members who comply using one standard for one year and another standard for another year should click the radial buttons for **both** standards. For example, a member might fulfill half of the requirements in Section B one year and Category 1 of the UK CPD Scheme (if eligible) in the other. That person would click both the radial button for "the Basic Requirement of Section B" and "Category 1 or 2 of the CPD Scheme of the Faculty of Actuaries and Institute of Actuaries." If a member followed the U.S. Qualification Standard in both years of the cycle, he or she would click that radial button once ("the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States").

After you have completed the electronic attestation, **YOU ARE DONE!** If you are not able to complete the electronic attestation, you may fax or mail a written attestation by using the form that's available online or through SOA Customer Service at 888.697.3900.

AFTER YOU HAVE COMPLETED THE ELECTRONIC ATTESTATION, YOU ARE DONE!

Remember, from this point on, beginning with the year ending Dec. 31, 2010, all

KNOW YOUR
CPD COMPLIANCE PATH

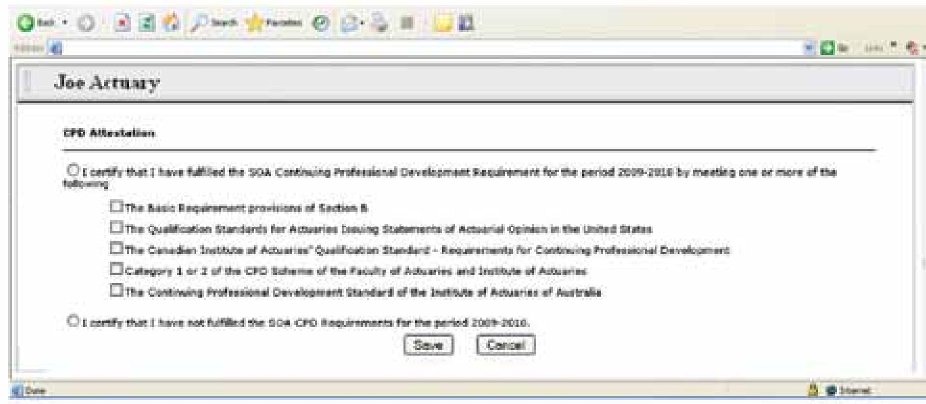
MOST SOA MEMBERS will follow an alternative compliance standard: the U.S. Qualification Standard, the Canadian Institute of Actuaries (CIA) Qualification Standard, Category 1 or 2 of the U.K. Actuarial Profession (UKAP) CPD Scheme, or the Institute of Actuaries of Australia (IAAust) CPD Standard. If you aren't able to follow one of the alternative compliance standards, you can always use the Basic Requirement Provisions of Section B. You are only required to meet the provisions of one CPD standard.

TIPS

- If you are a member of the SOA, you are likely subject to the U.S. Qualification Standard if you practice in the United States (by issuing Statements of Actuarial Opinion).

- You are NOT exempt from earning CPD credits to meet the SOA CPD Requirement if you are exempt from an alternative compliance standard. For example, if you are exempt from the CIA Qualification Standard, you must either voluntarily elect to fulfill the provisions of the CIA Qualification Standard, meet Section B of the SOA CPD Standard, or meet the requirements of another alternative compliance standard for which you are eligible.

Attestation screen



SOA members are required to attest to compliance with the SOA CPD Requirement **annually**. Each year members will attest compliance for the two-year rolling cycle ending on that December 31. Members will attest compliance with the 2009–2010 cycle at year end 2010, with the 2010–2011 cycle at year-end 2011, etc. SOA members are reminded that, should they not comply with the SOA CPD Standard, they are still able to use their SOA designations but must notify anyone who relies on their actuarial services that they have not complied with the SOA CPD Requirement.

The SOA will verify attestation by auditing a subset of the members—about 1 percent of members (approximately 200 members). If you are audited you will be asked to supply a compliance record, showing how you complied with your elected attestation method. For example, a member who complies with the U.S. Qualification Standard will be asked to show how he or she fulfilled, in each year, the 30 hours of required CPD for the U.S. Qualification Standard. A member who complies with the CIA Qualification Standard will be asked to show how he or she met, during the most recent CIA cycle, the 100 hours required by the CIA. Members' records should show the amount of time spent in self-study, webcasts, meetings and seminars attended, type of credit that was earned, and how many hours or units of credit were earned.

For all SOA members, the clock is ticking loudly as we approach the attestation deadline. So know your CPD compliance path, track and earn CPD credits, and attest between Nov. 1, 2010, and Feb. 28, 2011. Assure the public that you are up to date with the latest developments and that you meet all existing standards.

Read the announcement regarding attestation at: *www.soa.org/professional-development/cpd-requirement.* A

Jane Chlapaty is director of Project Management for the Society of Actuaries. She can be contacted at *jchlapaty@soa.org.*

Teachers Across the Country Thank You

"Thank you for your generous donation. Your support of our school and community is recognized and truly appreciated."
Morton High School (IL)

"Thank you for the generous support to educate our students in the areas of personal finance."
North Community High School (MN)

"Education is always running on a tight budget and we are so thankful for people who speak up and take action. Thank you for caring about the financial education of our high school youth."
Bremerton High School (WA)

"Because of your generosity, I am able to provide my students with resources that will enhance the information that I provide. I thank you and appreciate your kindness."
Riverdale High School (TN)

"We are very grateful for your gift. As you know, having our students grasp the essential of personal finance is crucial in today's world and your support of us is very meaningful."
Somers High School (CT)

The THIRST Remains

Today, teenagers spend 30% of their income on debt repayment, doubling the percent spent in 1992.

You can stop this cycle and give them a lifetime of fiscal responsibility by sponsoring a classroom with our *Building Your Future* financial literacy curriculum.

Thanks to your donations through our successful QUENCH THE THIRST campaign, The Actuarial Foundation has already provided the *Building Your Future* curriculum to 2,500 teachers who reach more than 62,000 students.

The THIRST remains! We have a waiting list of 750 teachers who want to bring this curriculum to their students.

Make a difference this "back to school" season.

For just $250 you can bring the *Building Your Future* curriculum to a teacher on our waiting list or even sponsor your alma mater, a local school or a school attended by a child or grandchild. Any teenager can benefit from these sound financial skills.

QUENCH THE THIRST for knowledge today.

Go to *www.ActuarialFoundation.org/donate/quench.shtml*

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phone: 847.706.3535 • web: www.ActuarialFoundation.org

The SOA At Work

PROFESSIONAL GROWTH OPPORTUNITIES

YOU DO NOT WANT TO MISS this year's annual meeting! Among the many sessions, we have a general session keynote speech by Ted Koppel and a presidential luncheon keynote speech by Paul Embrechts, the risk management thought leader who, when he's not working as professor of mathematics at the ETH Zurich, keeps busy working on international advisory groups, consulting to major financial institutions on quantitative risk management issues and authoring books like *Quantitative Risk Management: Concepts, Techniques and Tools*. I had the pleasure of hearing Paul speak at the International Congress of Actuaries last March and can tell you his message is very relevant to actuaries and something you won't want to miss. We also have more than 100 professional development/education seminars which will help you get necessary CPD credit. Registration online closed October 1, but you can still register for the meeting on site.

Speaking of CPD credit—don't forget the attestation requirement. The attestation period opens on Nov. 1, 2010, and closes on Feb. 28, 2011. All the information you need regarding this important subject can be found on the SOA website at *www.soa.org/attestationinfo*.

On a different note, I'd like to focus a bit of attention on one of the SOA's strategic initiatives this year, the development of an international membership strategy. The SOA has many members outside its traditional base in Canada and the United States. The Board directed the organization to focus this year on developing a strategy for continuing that growth and serving our members wherever they are. As you read in Mike McLaughlin's Letter From The President column on page 8, Mike has appointed a special International Membership Strategy Task Force to take on this job and they've been hard at work this year.

The task force is working to:

- Identify an appropriate SOA membership growth and services "posture" internationally, including opportunities and risks facing the SOA internationally.
- Identify international candidate and member service needs.
- Identify key strategies to achieve the recommended goals in the most effective and efficient manner possible.

While in its early stages, the task force has already identified that a collaborative approach to working with national societies around the world will be a key component in any successful international strategic posture. A successful international strategy based on a strong, collaborative effort with other actuarial societies and professionals globally will increase the value of SOA members' credentials wherever they choose to practice. By raising awareness of the SOA credential globally it helps to make SOA members more portable and broadens their career opportunities. Look to hear more about this important effort as the task force continues and completes their work, expected early next year. **— SOA Executive Director Greg Heidrich**

THE ACTUARIAL PROFESSION IN THE NEWS

The SOA is focused on raising awareness of actuaries in the media. Recent efforts have been successful. Here are just a few examples:

Study Puts Cost of Medical Errors At $19.5 Billion
Jim Toole is quoted in *The Wall Street Journal* about the SOA study on medical errors. Visit *www.wsj.com*. Search term: Jim Toole

Actuaries: Flu Could Be Expensive
Jim Toole is referenced is this article about the SOA's pandemic report. Visit *www.lifeandhealthinsurancenews.com*. Search term: Jim Toole

CNN Interview with American Academy of Actuaries Public Interest Committee Chairperson and SOA Member
View Tom Terry commenting on increasing the retirement age for Social Security. Visit *www.soa.org*. Search term: Tom Terry

Sleeping Under a TARP with One Eye Open
Sim Segal discusses risk management issues with Forbes. Visit *www.forbes.com*. Search term: Sim Segal

U.K. Actuaries Awarded CERA
U.K. actuaries awarded Chartered Enterprise Risk Analyst. Visit *www.insuranceerm.com*. Search term: Actuaries awarded CERA

A New Plan for Valuing Pensions
Members Jeremy Gold and Rick Roeder quoted in *The New York Times*. Visit *www.soa.org*. In the Latest News section on the home page, click the More News link.

View all of these articles by going to *www.soa.org/newsroom* and clicking on the Profession In The News link. A

SOA COMPLETES PANDEMIC FLU RESEARCH

Although the effects of H1N1 were not as harsh as originally feared, no one can predict the severity of the next flu pandemic. And with the cold and flu season just around the corner, now is the time to prepare for these events. In a new SOA-sponsored research report, "Potential Impact of Pandemic Influenza on the U.S. Health Insurance Industry," Jim Toole of MBA Actuaries, examines the financial effects of different flu pandemic scenarios on the U.S. health insurance industry and estimates the major medical costs resulting from a potential flu pandemic for three groups: traditional health insurers, self-insured companies, and the total U.S. health care system. In addition to the report, the research also produced a spreadsheet tool that health plans and others can use to better understand and manage the associated risks of a flu pandemic as well as aid them in continuity planning. To view this research and the companion life insurance pandemic flu study, "Potential Impact of Pandemic Influenza on the U.S. Life Insurance Industry," visit *www.soa.org/research/research-projects/default.aspx*. A

PROFESSIONAL DEVELOPMENT OPPORTUNITIES

BRIDGING THE GAP: A PRIMER TO THE EQUITY-BASED INSURANCE GUARANTEES CONFERENCE
October 31
New York, N.Y.

EQUITY-BASED INSURANCE GUARANTEES CONFERENCE
November 1–2
New York, N.Y.

HEALTH VALUATION BOOT CAMP
November 11–12
New Orleans, La.

ENTERPRISE RISK MANAGEMENT TECHNIQUES AND PRACTICES
December 7 – 9
Phoenix, Ariz.

2011

LIVING TO 100 SYMPOSIUM
January 5–7
Orlando, Fla.

REFOCUS CONFERENCE
February 27–March 2
Las Vegas, Nev.

ERM SYMPOSIUM
March 13–16
Chicago, Ill.

View all Professional Development opportunities by visiting *www.soa.org* and clicking on Event Calendar.

Education

FINANCIAL AND HEALTH ECONOMICS

BY JEFF ALLEN

ON JULY 1, 2010, the new Financial and Health Economics module became a requirement for FSA candidates on all tracks and was also made available for credentialed actuaries seeking professional development credit. It enhances the previous Financial Economics module by broadening the scope to include applied economics topics and applications that address all areas of practice.

IMPORTANCE OF APPLIED ECONOMICS TOPICS FOR ACTUARIES

An understanding of economics is essential to the management of risk. Macroeconomic theories of inflation and unemployment underlie the modeling and discounting of future cash flows. Microeconomic theories of supply and demand provide insights into the valuation and pricing of risk. Together they support the concepts and techniques for modeling and managing risk. Mastery of these concepts has been established as an important learning objective for our associate level candidates.

At the fellowship level, candidates are expected to demonstrate expert knowledge of the business environments within which financial decisions are made. Knowledge and awareness of applied economics increase an actuary's understanding of key business and financial decisions within the insurance industry as well as in general industry and the public sector.

The chart on page 37 illustrates the framework of the new Financial and Health Economics module. The module builds on those areas of microeconomics relevant to financial and health systems management.

Applied economics is of strategic importance to the executive management of various organizations, and includes topics that other professions have traditionally addressed. Broadening the coverage of applied economics will help the actuarial profession remain competitive with other rigorously trained professionals who are increasingly encroaching on our historical areas of practice and newer areas like enterprise risk management. Understanding and applying these key concepts help to position actuaries as well-rounded business professionals.

The learning objectives for the Financial and Health Economics module are particularly well-suited for delivery in an e-Learning environment. The candidates are able to achieve and demonstrate a deeper understanding than can be demonstrated with traditional proctored examination methods by working through complex examples, case studies and spreadsheets. The module also allows interactions that demonstrate how the economic theories actually apply in real-life actuarial situations. Completing the module will help actuaries increase their ability to participate in strategic discussions with other business professionals regarding these topics.

The Financial and Health Economics module provides an important initial exposure to applied economics for many candidates. In practice, many actuaries have determined the need to address these topics independent of the Education System. This module better provides candidates with a foundational understanding of applied economic topics, so they can appreciate and pursue future applied economics professional development opportunities throughout their careers.

FINANCIAL AND HEALTH ECONOMICS MODULE OVERVIEW

The Financial and Health Economics e-Learning module enables candidates to

2009 FSA EXAMINATION CANDIDATE SURVEY RESULTS ARE AVAILABLE ON THE SOA WEBSITE. FIND OUT WHAT THE CANDIDATES HAD TO SAY. VISIT ***www.soa.org/fsacansurveyresults***

tailor the content to their specific track of study. The module contains several different sections. Some of the sections are required of all candidates and provide high-level exposure to all of the topics addressed in the module. Other sections are track-specific and are required depending on the candidate's chosen track. For example, a more in-depth health economics section is required of candidates following the Group and Health Track. Candidates on other tracks complete the same set of sections, but there is specialty material within the sections tailored to their needs.

While specified sections are required based on a candidate's chosen track, candidates have access to all sections in the module if they desire to learn that material in more depth. For example, a finance track candidate who works in the health industry might be interested in the option to also study the health economics section. A health track candidate, who works in a financial role, consulting on health plan mergers and acquisitions, might also benefit from the more in-depth coverage of financial economics and asset pricing.

CORE TOPICS REQUIRED OF ALL CANDIDATES

The core topics addressed in the new e-Learning module ensure that all candidates, regardless of track, have a background in financial and health economics. There are aspects of these subjects that affect all areas of actuarial practice.

Following are the learning objectives for these core topics:

- Explain that financial economics has a global perspective, tools and analysis that are applicable for all actuaries.
- Explain the dynamics and the basic financial and resource structures that are common to all health economies.
- Demonstrate a basic knowledge of utility theory.
- Explain sources of empirical anomalies.
- Explain modern corporate finance.

GROUP AND HEALTH TRACK TOPICS

Traditionally, actuaries pursuing the SOA's Group and Health Track initially worked almost exclusively in the health insurance industry. However, over the last 50 years, health economies around the world have grown and evolved in many different ways. As health systems have grown and evolved, actuaries' roles have also evolved, branching into areas such as public sector work, health outcomes research, and organizational productivity.

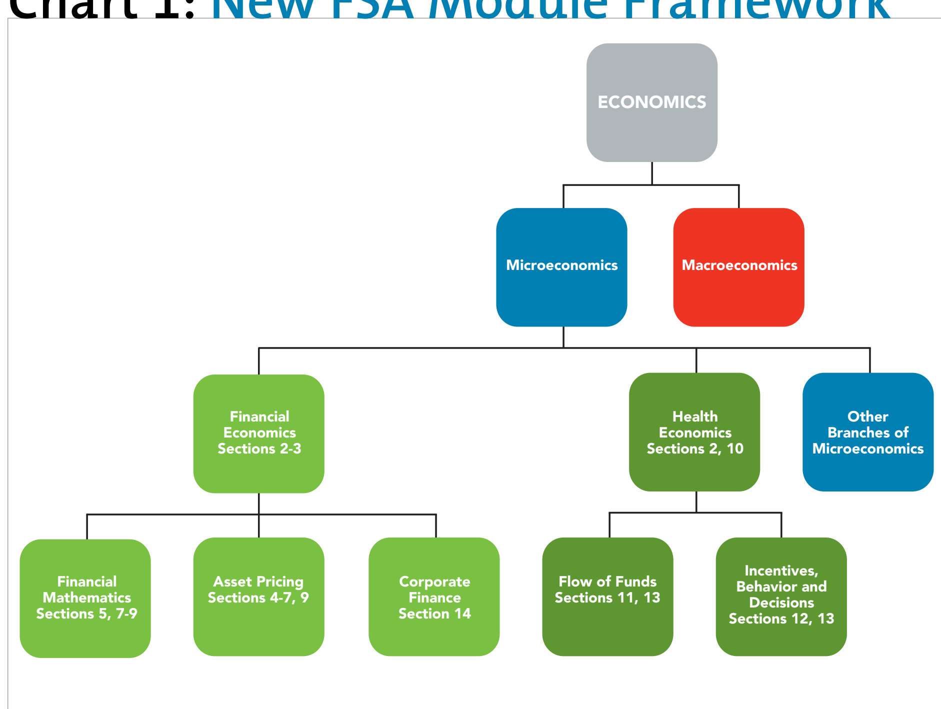
Jeff Allen

As a result of these broadening roles, the need to educate actuaries in the health field has also increased. The health economics topics covered in the new module will provide candidates with a broader perspective of the financial dynamics, resource constraints, and overall personal and system-wide risks present in any health system.

Following are the learning objectives for the health economics topics:

- Establish a framework for understanding how funds flow through the health care system.
- Contrast the economic concept of demand versus the medical concept of need.

Chart 1: New FSA Module Framework



"Knowledge of health economics will enable actuaries to better understand the big picture dynamics of health care and how they affect what we do. In turn, it helps us to make better decisions." — Dale Yamamoto, FSA, EA, FCA, MAAA

- Analyze cost-benefit and cost-effectiveness of health care alternatives.

FINANCE/ERM, INVESTMENT, INDIVIDUAL LIFE AND ANNUITIES, AND RETIREMENT TRACK TOPICS

Candidates on these tracks will focus more in-depth on the Financial Economics topics. The learning objectives are:

- Describe and discuss the assumptions of mean-variance portfolio theory and its principal results.
- Describe asset pricing models and discuss the principal results, assumptions and limitations of such models.
- Describe derivative securities.
- Explain stochastic models and the behavior of security prices.
- Explain the properties of option prices, valuation methods, and hedging techniques.

OPPORTUNITIES FOR CONTINUING EDUCATION

Like all of the FSA modules, the Financial and Health Economics module is offered as an e-Course for members and reflects 7.5 units of structured continuing professional development. (Study time to complete this course will be greater than 7.5 hours. Additional units of unstructured credit can be earned and are the individual member's responsibility to identify and track.)

SUMMARY

All industries are undergoing significant changes. By increasing exposure to topics such as financial economics, health economics, and corporate finance, actuaries will be better prepared to work closely with other business professionals, and support corporate executives as they evaluate and manage risk in an evolving business environment.

A description of the new Financial and Health Economics module can be found at *www.soa.org/fhe.*

Questions may be directed to *education@soa.org.* A

Jeff Allen, FSA, FCA, MAAA, is managing director, HHS, with Ingenix Consulting. He can be contacted at *jeffrey.allen@ingenix.com.*

NOTICE OF DISCIPLINARY DETERMINATION

On March 25, 2010, the Society of Actuaries convened a Discipline Committee to review a matter referred by the Actuarial Board for Counseling and Discipline ("ABCD"). The matter related to work performed by William Lynn Townsend, FSA, in his role as the appointed actuary for a life insurance company for year ends 2004, 2005, and 2006.

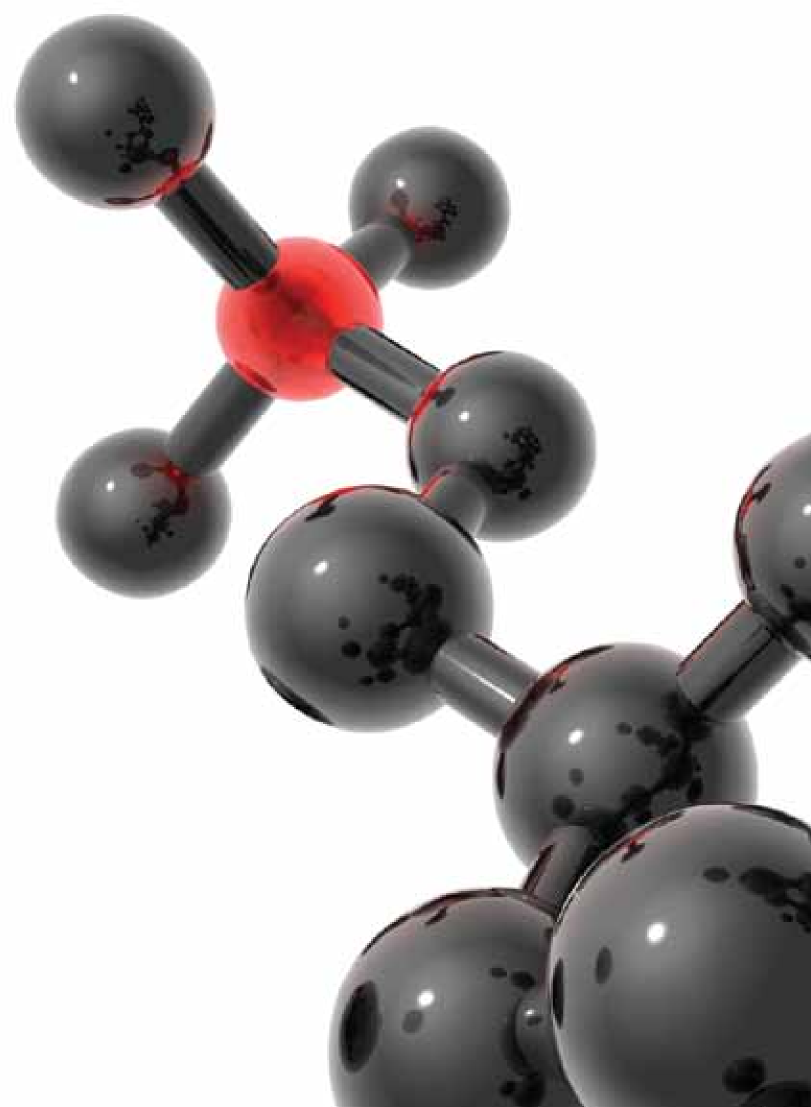
The Discipline Committee determined to publicly reprimand Mr. Townsend for material violations of certain Precepts under the Code of Professional Conduct.

- Precept 1 states, "An Actuary shall act honestly, with integrity and competence, and in a manner to fulfill the profession's responsibility to the public and to uphold the reputation of the actuarial profession."
- Precept 3 states, "An Actuary shall ensure that Actuarial Services performed by or under the direction of the Actuary satisfy applicable standards of practice."
- Precept 4 states, "An Actuary who issues an Actuarial Communication shall take appropriate steps to ensure that the Actuarial Communication is clear and appropriate to the circumstances and its intended audience and satisfies applicable standards of practice."

A violation of Precept 1 related to Mr. Townsend's failure to stay current with the relevant requirements of the insurance department of the state in which the company was domiciled with respect to statements of actuarial opinion for the subject year ends. The violation of Precept 3 related to his failure to comply with the requirements of the U.S. Actuarial Standards of Practice Nos. 22 and 41. Violations of Precepts 1 and 4 related to his issuance of statements of actuarial opinion indicating compliance with the insurance department's asset adequacy analysis requirements, and his failure to incorporate the appropriate analyses in providing those statements of actuarial opinion.

All members of the SOA are reminded that when they are faced with potential issues regarding professional conduct, the ABCD is available for counseling. A

The Actuary



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