

The Actuary

DECEMBER 2014/JANUARY 2015 VOLUME 11 ISSUE 6

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BUILDING A NERVOUS SYSTEM FOR INSURANCE PRODUCTS

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LIVING LONGER

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Opening Doors for Actuaries Globally

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Editorial

WHAT DOES IT MEAN TO BE INTERNATIONAL?

BY CARL HANSEN

HISTORICALLY, the Society of Actuaries (SOA) has been primarily focused in North America. With the rapid growth of membership outside the United States and Canada, the SOA is a truly global organization with members in more than 60 countries and territories. Members around the world may have very different needs. What does this mean for the SOA? I volunteer my own perspective, and offer roles that we can each play.

Due to my job relocating from Seattle nearly four years ago, I have been living and working in Guernsey—a respected international finance center in the Channel between the United Kingdom and France. I also spent a year working in London in the year 2000. Much of my work activity for the last 15 years or so has involved dealing with people from other countries. During that time, I have made some observations from an international perspective.

The natural tendency for many people is to assume the tools you grow up with are always the best. As a general example, I am amazed (and often amused) at how many different versions of simple things

like electrical plugs or toilets one can find while traveling. It's equally amazing that, at the end of the day, many travellers often come to the conclusion that the tools from their respective native countries are the best. The same concept is true for typical actuarial problems like pension funding or insurance pricing. A different approach is not necessarily wrong. Embracing new ideas and working to understand

When working internationally, it is particularly important to communicate in a way that is easily understood by a broad audience.

differences give additional insight that can lead to future refinements to actuarial methods. *The Actuary* editorial board intends to feature more articles in future issues of the magazine to compare and contrast financial risks in various countries and the systems used to manage them.

In addition, the board is actively seeking more content on newly developing practice areas, experiences working across borders, and other globally focused subject matter.

All SOA members are encouraged to submit ideas for future articles by writing to actuary@soa.org. On a related note, I hope that all of the SOA special interest sections are actively pursuing newsletter content on non-U.S. issues that speak to all members across the globe.

When working internationally, it is particularly important to communicate

in a way that is easily understood by a broad audience. Thanks to my parents living in Seattle in the United States when I was born, I have the good fortune to be a native speaker of a language often used for business. However, I have learned over the years that the British version of English is more commonly taught in schools outside of the United States. A truly global organization should have website and periodical content offered in other languages as well as various versions



Carl Hansen

of English, depending on the author. Abbreviations, slang and contractions do not translate well and should be avoided. I suggest that the SOA staff start with these modifications to the editorial policies and guidelines to better accommodate the growing global audience.

I applaud the SOA's efforts to expand the membership beyond historical boundaries. A more geographically diverse membership will bring a fresh perspective to the issues facing actuaries, as well as a new set of issues to challenge our

traditional thinking. I strongly encourage the organization's leadership to better understand the needs of all countries and to consider those needs in future strategy and decision-making sessions. The SOA members outside the United States also have a responsibility to express their views on how they can get more value for their membership dues. The SOA needs more leaders from outside the United States, or leaders with international experience. I encourage members with this background to consider standing for election to a section council or to other leadership

positions within the organization.

What does it mean to you to be a part of a global organization? Please share your opinion with the SOA leadership, the SOA communications staff, or the members of the editorial board. **A**

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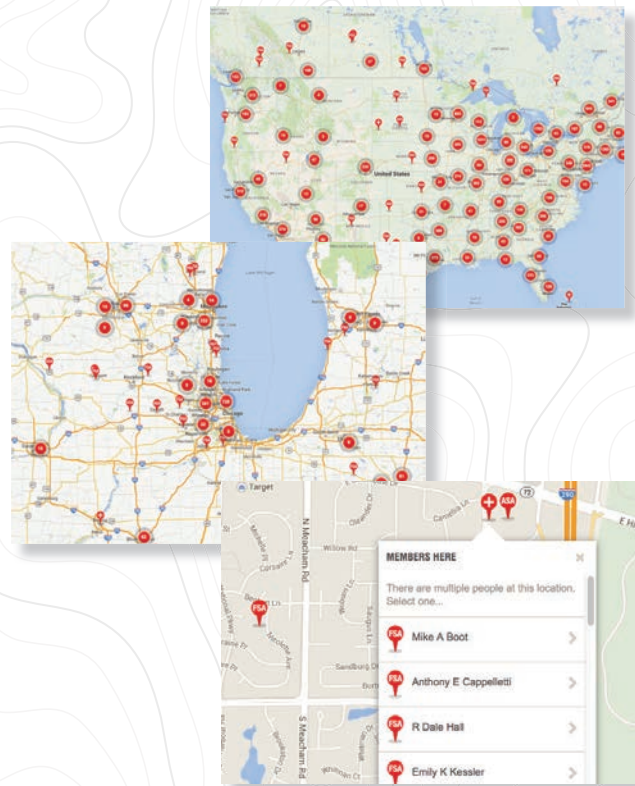
SOCIETY OF ACTUARIES

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To use the SOA Explorer Tool, visit soa.org and sign in as a member.



Letter to the Editor

ADDITIONAL THOUGHTS ON HIRING OLDER WORKERS

BY JOSEPH LIUZZO

I WAS QUITE HEARTENED AND PLEASED to see your essay in the August/September issue of *The Actuary*, “Have You Hired Any 65-Year-Olds Lately?” While I am not quite at that age yet, your words resonated very well with my own situation. After having been laid off, along with five other senior actuaries, I am finding it quite difficult to obtain a replacement position. I am sure this is in part due to the fact that I am past 60, and many employers seem skittish about hiring someone they feel might not be around too long.

Perhaps they fear that their inevitable investment in a new hire will not yield a return on their investment, a rationale based on the presumption the older person’s tenure will be relatively short-lived. While on the surface this may be true of course, the fallacy in this thinking is obvious—younger workers, particularly millennials, are predicted to change jobs every few years, so hiring and investing in a younger worker will not necessarily provide the payback for which the employer may be looking.

Will the older worker, including the older actuary, command a somewhat higher salary than his/her younger counterparts? More than likely, yes, but there is value in

those 30 or 40 years of experience that is very hard to quantify. My bet, though, is that it more than pays for itself in increased productivity and avoidance of costly mistakes likely to be made by a less-experienced employee.

As you point out, gradually extending the Social Security age for full benefits to 70 might be a partial solution to the strains upon retirement assets (read: Social Security trust funds, defined-benefit plan assets, accumulated defined-contribution balances and personal savings) that the effects of longevity increases are causing. No doubt you are also correct that absent a mindset change or other economic incentives to encourage hiring at older ages, the law of unintended consequences would result in the creation of a waiting period or deductible for the involuntarily unemployed worker.

But simply wishing for it won’t make the mindset change occur. Not even the statutory stricture about discrimination based on age being one of the protected classes makes it so.

However, we know that tax policy is an often-used tactic to encourage the

social good, albeit with mixed results, but usually with some good measure of positive impact, e.g., “sin taxes,” excise taxes on early withdrawal of pension funds, etc. Perhaps providing companies an additional corporate tax deduction (xx basis points kicker) for the salaries paid to older workers, say those over 60, would be the incentive needed to keep them in the ranks of the employed or to re-hire them, perhaps in jobs-sharing mode. It would only be available until the full-benefit Social Security age, so as not to encourage the issues that higher education sometimes encounters with tenured faculty not making way for younger replacements. This might not be the *right* answer, but I think it might be in the right direction—unless the wallet of the employer is affected, there will likely be no change in hiring attitude.

Kudos on a thought-provoking piece. **A**

Joseph Liuzzo, FSA, MAAA, FLMI, can be reached at JoeLiuzzo@att.net.

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Letter From The President

THE FUTURE OF THE ACTUARIAL PROFESSION

BY ERROL CRAMER

THE FOLLOWING IS AN EXCERPT OF SOA PRESIDENT ERROL CRAMER'S ADDRESS TO MEMBERS AT THE 2014 SOA ANNUAL MEETING & EXHIBIT.

It never entered my mind 30 years ago, in 1984, when I attended the annual meeting as a brand new FSA, that I would ever be standing here as your incoming president.

I am honored and delighted at this new opportunity to give back to the profession, to the SOA, and to both existing members and to the future generation.

The SOA is a volunteer-driven organization. It is also a major educational institution, and volunteerism is what enables us to offer a prestigious professional credential at a tiny fraction of the cost of graduate school.

We are a true meritocracy—the SOA's door is open to anyone with the will and the intellect—in North America and worldwide. It may surprise you that we currently have 37,000 candidates in our education system, and that more than 20 percent of these candidates reside outside North America. It may also surprise you, or not if you are a member, that less than 10 percent of starting candidates eventually qualify with an FSA.

We are unabashedly rigorous and selective in our membership standards. Although we are selective, we are equally inclusive and welcome all without barriers to entry. I am happy to announce that the Board this weekend approved a new pilot program on diversity.

We are currently under-represented in the Black and Hispanic groups in North America and I would like to see the SOA partner with the International Association of Black Actuaries, and The Actuarial Foundation, among our other sister organizations, to promote in a meaningful way the actuarial profession as a career in those population groups.

One area where we are well-represented is the Asian population. Asia represents an emerging and fast-growing insurance market with a robust demand for actuaries.

There may be quicker and easier choices than the SOA pathway to becoming an actuary, but the SOA designation is known for its rigor and selectivity and recognized worldwide as a highly credentialed qualification. Our FSA is prized as a distinguisher.

I was at the East Asian Actuarial Conference in Taipei earlier this month and I was struck

by the commonality of insurance industry issues with those of North America and Europe, and was heartened to see the quality and high standard of actuarial expertise of our members in that part of the world.

In large part, the SOA, together with our equally well-credentialed colleagues at the Institute and Faculty of Actuaries, provide, I believe, a powerful positive influence on the actuarial profession in Asia and raise the bar for all.

The SOA is a major actuarial research institution, an area where volunteers play a vital role. It has been my passion to help advance the actuarial research function at the SOA, and I am heartened at the great strides taken over the past few years.

The SOA has significantly beefed up its research staff, adding a managing director and research actuaries in the retirement and health areas; it has signed major data access agreements with governmental agencies and partners, federal and state; it has established its reputation as a respected and unbiased public policy research institution.

And, it has established a major scholarship program for Ph.D. students pursuing careers in actuarial teaching and research. We



Errol Cramer

currently commit more dollars and volunteer effort to actuarial research than any other organization in the world, and I aim to keep significantly growing our meaningful and impactful research.

As Mark (Past President Mark Freedman) mentioned yesterday, SOA members represent approximately 40 percent of the world's actuaries.

But, the SOA is just one organization within the global community of actuaries. The International Actuarial Association, including approximately 100 member organizations, encourages the established actuarial organizations to provide expertise to the newer ones, and has a goal of maintaining a consistently high brand of the actuary globally. We applaud and support the work of the IAA. As one symbol of our commitment to the IAA, I am pleased to announce that the SOA has submitted a proposal to host their 2017 fall meeting in the SOA's hometown, Chicago.

The SOA is the largest actuarial professional body in the world and growing, and we have much to be proud of. The most valuable benefit we derive from the SOA is our actuarial certification, FSA, ASA and CERA, and my over-arching objective as your president is to protect and strengthen the value of our credentials.

Looking forward to my year as president, there are three areas I see as most impactful for the SOA and the profession, where I plan to focus my energy and be a driving force: First, we need to stay current and relevant. There is no excuse for lagging current best practices or being less than fully effective in meeting today's challenges. We live in a world of accelerating change. The age of computers and the Internet brought us new technologies at nanosecond speed.

But, that's old school.

The digital revolution with its mobile connectivity and live data streaming is the new paradigm, and its new buzzwords are big data, data analytics and predictive modeling.

Second, we are a global profession and need to be properly prepared in this role. The actuarial profession is global and the businesses we consult and work in are often multinational and cross borders. Regardless of your current employment and location, everyone here is operating in a globally connected world. The SOA needs to be global both in a geographic sense, and global in covering all areas of actuarial practice.

Third, we need to be responsive to societal issues.

Societies are becoming increasingly more complex and expect solutions from well-educated experts.

Professions are defined in terms of the public good they serve, and as actuaries we have the expertise to help address financial issues people care about, including health, wealth, retirement and property protection. Doing so enhances our credibility and relevancy, and it's our duty as an actuarial profession.

I'd like to discuss briefly each of these areas in turn.

STAYING CURRENT

Data analytics is a nascent field with enormous potential, and an area where we need to stake out our claim early. IT specialists and data scientists are in heavy demand, but the biggest unmet demand is for business application specialists. Our training enables us to be these business specialists for the industries we serve.

There is a parallel here with risk management where pioneers led the way to a new track of enterprise risk management, or ERM, with the CERA designation. We need to leverage the work of our pioneers in data analytics to the broader membership.

Our rigorous education system is core to our brand. This year the SOA began a new strategic initiative, the Learning Strategy, aimed at developing our future for actuarial education and credentialing. The Learning Strategy is not another look at university accreditation or an exam exemption system. Instead, it is intended to identify best practices in adult education, now and in the foreseeable future.

One aspect of this review is the continually evolving role of the actuary with de-emphasis on technical and production skills, as technology advances, and with emphasis instead on higher-level professional work. Actuaries with the ability to think strategically, act tactically, network and communicate will thrive. Business acumen and leadership skills need to move from "nice to have" to a core requirement.

TURNING NOW TO GLOBALIZATION

The Board just approved a new strategy for strengthening our commitment and value to our members in China. Concrete actions include targeted professional development events, joint research projects and enhanced volunteer opportunities. Also, we will build our relationships, most importantly, with the China Association of Actuaries, but also with employers and universities. We will hire our first new staff member located in mainland China. The China Strategy serves as a springboard in creating a larger regional community for all our Asia Pacific members.

Turning now to Latin America, interest has been expressed by U.S. multinationals operating there, and by academics and students, to support growth of the profession in those countries.

The SOA has begun a review of the potential development of the profession in Latin America focused particularly on countries such as Panama, Chile, Brazil, Columbia, Argentina and Uruguay. Recommendations will be delivered in 2015, and I look forward to working with our Board to craft a Latin America strategy.

As you may be aware, the Institute and Faculty of Actuaries, one of our closest partners in the world, recently launched its Certified Actuarial Analyst designation, which is a three-year study and work diploma for those performing actuarial support functions. One target group for the CAA diploma is workers in countries with emerging insurance industries. The SOA has formed a task force to evaluate the implications of this for the SOA. As part of our globalization, our general insurance (GI) track is in place, and we now offer a comprehensive syllabus in line with the actuarial profession of the rest of the world. I look forward to congratulating the first FSAs of this track in 2015!

The Institute and Faculty of Actuaries has evaluated our GI track and found it acceptable for exam credit under our mutual recognition agreement, as it has for our other tracks, and we are now working to get evaluation and acceptance of this track by the U.S. regulators.

THE NEED TO BE RESPONSIVE TO SOCIETAL ISSUES

Mark spoke yesterday about the SOA's public policy research program to educate and inform the public and decision makers, and

to do so in an unbiased, objective and non-partisan way.

Wherever possible, I'd like to see us leverage our resources by partnering with other research-centered organizations, such as LIMRA or MIB Group; with government partners such as the Pension Benefit Guaranty Corporation, our new Regulatory Research Advisory Council, or with other actuarial organizations such as the Canadian Institute of Actuaries, the Institute and Faculty of Actuaries, the China Association of Actuaries, and the Academy.

The SOA has many research activities already underway, but the opportunities for good new research are abundant and I think there is more we can do. For example, our aging population is faced with planning for and managing the complex needs of retirement in a post-defined-benefit world.

Others are doing research here—Nobel economist Robert Merton is searching for simplified rules for individuals to manage toward units of income replacement rather than asset accumulation; in Canada, they are introducing enabling legislation for hybrid defined-benefit and defined-contribution plans, and in the United Kingdom, there is research into longevity and into behavioral aspects of plan participants.

Other examples are in the area of national retirement systems, evaluation of the impact of the Affordable Care Act in the United States, and in our new specialty area of general insurance where we have just begun to work on research projects.


I've covered a lot of ground in a short time. My intention has been to show you a few of the initiatives and programs the SOA is working on. Even more important, I have

wanted to give you a view of my priorities and where I think we need to take our profession.

As we pursue these priorities, I want to assure you as well that I am reaching out to all of you, to our sister actuarial organizations here and around the world, and to all of our stakeholders in a spirit of openness and cooperation. I want to work with you to move our great profession forward, for the benefit of all our members and students, but more importantly for the benefit of the public and the world in which we live.

We have a lot to be proud of. We are members of the largest professional actuarial society in the world, carrying credentials that are a mark of distinction wherever actuaries work today. Our profession is respected. It is known for its integrity, rigor and intelligence and trusted to work on some of the most difficult issues facing humankind.

The SOA is on the right path. We are protecting and enhancing the value of our brand and of actuaries globally. We are building in our members the skills that are needed today and in the future. We are a global organization in a global profession, offering our credentials in all parts of the world and covering all actuarial disciplines. We are the world's leader in actuarial research and are continually strengthening those capabilities. I am excited about the challenges and opportunities ahead and ask you to join me in this work!

Thank you. 

Errol Cramer, FSA, MAAA, is president of the Society of Actuaries. He can be reached at errol.cramer@soa.org.



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The About





Hard Truth Soft Skills

By Joanne Ryan

SEMINAR: JAN 6, 2015
THE ART OF
COMMUNICATION

COMMUNICATION
SKILLS
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TEACHING
ASSERTIVENESS

Soft skills can be developed just like technical skills, requiring commitment, patience, focus and hard work. Are you ready for the challenge?

How do you relate to this? You get to work in the morning, eager to start your day as you're excited about finishing up that project you've been working on diligently for the past few weeks. You boot up your computer and look at your calendar, only to find an all-day mandatory training class on "Communicating with Impact" that you completely forgot about. You say to yourself, "Ugh! I don't have time for these silly HR classes! What a waste of a day! How is this going to help me get my work done? Actuaries don't need this kind of touchy-feely stuff. How about using that money to upgrade my computer and software? Now that would make me more valuable and productive. Don't waste my time and your money on this fluff."

That's how I have always felt about these types of training classes; that is, until recently, when I may have lost my mind a bit as an actuary and decided to become a coach.

No, not a sports coach, but a life coach. I have been trained to coach anyone about anything, from personal relationships to executive leadership. Why did I become a life coach? The CliffsNotes version is I hired a friend of mine who became a life coach to coach me, and I absolutely loved everything about it. Coaching with my friend had such an impact on my life, both personally and professionally, that I decided to go through the training program myself. Both being coached and going through the training program to become a certified coach have helped me in so many ways, including having a more stress-free, enjoyable and fulfilling life.

One of the things I came to realize is that I have always loved developing my hard skills, such as math or learning how to use a software program; yet I was putting no effort into developing my soft skills. Soft skills include things like communication skills, leadership skills and social skills. They basically help us work effectively with others and are important for career growth. For actuaries, I believe it is even more critical to focus on and develop soft skills, since for many of us soft skills may not come naturally. Most actuaries are extremely competent in the hard, technical skills. It's what we enjoy and probably why we became actuaries. However, actuaries work in the business world where proficient soft skills are expected. A good example is communication skills. If I may generalize a bit, actuaries are typically not the best communicators. What's worse, the information we have to communicate is extremely difficult for others to understand, especially when they've had

How do I best communicate information so it's easy to understand?



How can I better manage my workload?





no training in actuarial concepts. Even though we may understand the material better than anyone, we need to be able to communicate our findings to others. To do this, there is a need to develop what I like to call the “dumb-it-down” skill, or, for a more politically correct term, the skill of “speaking to your audience.” Based on my own experience, “dumbing it down” can be very challenging and takes time, but it is doable. Another area where the importance of communication skills comes up is in interviewing. Over my 25+ years as an actuary, I have interviewed a lot of actuaries, from students to executives. During the interview, it may be difficult to fully gauge how strong the technical skills are of the interviewee; yet it is very easy to pinpoint those with strong communication skills; and oftentimes, they are the ones who get the job.

The good news is soft skills can be developed just like technical skills. It requires commitment, patience, focus and hard work. Hmm ... that sounds a lot like the same stuff required to pass actuarial exams. If you're on board to improve your soft skills, here are the soft skills I believe are critical for actuaries:

COMMUNICATION SKILLS

As I mentioned above, this is a huge one for actuaries and probably one of our weaker areas as a group in general. Whether through writing an email, speaking at a meeting, or making a formal presentation, we are often asked to communicate very technical information to an audience of non-technical, non-actuaries. This can be extremely difficult. There's also a fine line between giving too much data or too many technical details and not enough. Communication skills also include the art of active listening, which I believe everyone, actuaries and non-actuaries, can improve. I could go on and on about communication skills and the importance of

them. An organization I have joined and have found to be very helpful in improving my own communication skills is Toastmasters, which has clubs worldwide and focuses on helping its members improve their communication, public speaking and leadership skills. Check them out at www.toastmasters.org.

LEADERSHIP AND MANAGEMENT SKILLS

Some of you may be thinking: I don't have employees reporting to me or I am not a leader in my organization, so this category doesn't apply. Wrong! It is true that the more you move up the corporate ladder, the more important your ability to lead and manage others is. However, leading and managing others is only a piece of this, because it's also about leading and managing yourself and your work. How do you show up every day? Are you a can-do person or do you find roadblocks with everything you attempt to do? Are you a leader among your peers? How do you motivate yourself? How do you manage projects? How do you manage your time? Leadership and management skills can and should be developed at a very young age, although it's never too late to start. If you're looking to improve your leadership skills, find a leader who impresses you and ask him/her to mentor you. Also, there are a ton of books on leadership with authors ranging from business leaders to spiritual leaders to sports coaches and more. Read one that interests you and put one or two takeaways into action. As mentioned above, Toastmasters has a leadership component, which offers some fabulous ways to develop your leadership skills too.

PROBLEM-SOLVING SKILLS

Much of the role of an actuary is to deal with problems and find creative solutions. Actuaries who are successful at problem

For actuaries, I believe it is even more critical to focus on and develop soft skills, since for many of us soft skills may not come naturally.

Making decisions can be difficult at times and can be even more challenging when you're dealing with all of the uncertainty actuaries have to deal with on a routine basis.

solving tend to be very resourceful, bringing in all of their past experiences and knowledge they have attained. They also tend to know where to go and who to go to for the information needed to resolve problems. Thinking outside the box is also critical, as it promotes creativity and innovation. We are better business partners when we can come up with creative solutions to resolve problems. If you're looking to improve your problem-solving skills, start by becoming a subject matter expert, as the more knowledge you bring to the problem, the easier it is to find a solution. Also, focus on solutions, not the problem, and always have an open mind, or you may miss out on some great solutions.

DECISION-MAKING SKILLS

Making decisions can be difficult at times and can be even more challenging when you're dealing with all of the uncertainty actuaries have to deal with on a routine basis. I often hear actuaries spew out a ton of data, so happy to share everything about their analysis; but when it comes to putting a stake in the ground and committing to an answer, they avoid it like the plague. If they do commit to an answer, it often comes with a list of caveats longer than a six-hour actuarial exam. Some caveats are necessary, but a good actuary can make decisions and stand confident behind his or her recommendations. How does one improve their decision-making abilities? Well, one of the biggest impediments I have found in making decisions is when we judge ourselves for past decisions we made that may not have worked out so well. This decreases our confidence in our ability to make good decisions. However, remember that decision was the best decision you could have made at that time, given the circumstances and all the information you had at that time; so let it go. The good news is just like recalling "bad" decisions decreases confidence, recalling "good" decisions

increases confidence. To increase your decision-making confidence and capabilities, write down 100 good decisions you have made over the course of your life. You may be surprised how good you are!

TEAM PLAYER

This is your ability to work effectively with others. It's about being personable and getting along with others, as well as being adaptable and flexible. It's about having a voice and sharing your thoughts and opinions. It's about being a hard worker and going all out for the team. Basically, it's about being that person others like to work with because you are easy to get along with and you add value. On a scale of 1 to 10, 1 being people absolutely hate working with you and 10 being people absolutely love to work with you, what rating would you give yourself? Now go ask five co-workers and your boss that same question. If the response is anything less than a 10, ask them to suggest a change you could make to get it one level higher. For example, if they say you are an 8, ask them to suggest a change you could make that would make it a 9. Just being aware of when others do not believe you are 100 percent being a team player will allow you to choose to adjust your behavior in the future.

TEACHING, MENTORING AND COACHING

Because our jobs are so technical, at a very early stage in our careers we are asked to pass our knowledge along to newer actuaries and students. Embrace these opportunities. When you're able to teach someone else a skill or concept, you get the added benefit of understanding that skill or concept better yourself. Plus, it feels good to help others. I have found when I mentor or coach someone, I get as much out of the experience, if not more, as the person I am mentoring or coaching. The best way to improve this skill is



to just do it. If a formal program doesn't exist, how about seeking out someone to mentor? Make sure you ask your mentee for feedback often regarding how it's going and what you can do to make the experience even better, as that will give you areas of improvement to focus on.

ASSERTIVENESS

Having worked in an actuarial department for over 25 years and having seen a lot of actuaries with some great potential, one of the biggest challenges I see for many young actuaries is putting themselves out there and communicating their opinion freely. When you are sent to a meeting, are you actively engaged in the conversation or are you afraid to speak up? Do you have the attitude of "less is more" and you only chime in when asked for your opinion? If you don't join the conversation, you will not get noticed and your company is missing out on your valuable insights. Usually what's stopping you is that little voice in your head saying something like "everyone is so much smarter than me" or "don't say anything to make me look stupid." Just by changing those thoughts to more supportive thoughts, you'll diminish the fear you're feeling (and it is fear!), and replace it with a more supportive feeling. This will lead to action (speaking up) instead of inaction (not speaking up). For instance, changing the thought to "I am confident in my knowledge and abilities," will give you a feeling of confidence, and you'll be more likely to speak up. So next time you're going into a meeting, go in confident with all positive thoughts, and then get out of your comfort zone and chime in. Soon you'll wonder what you were so afraid of.

SOCIAL/LIKABILITY

Don't discount this one. Out of everything listed above, this may be the strongest indicator as to whether you will get that

job, promotion or opportunity. Those who make decisions on filling certain roles want to work with and take care of the people they like. How do you show up each day at work? Are you sociable or do you stay in your cubicle glaring at people who attempt to talk to you? How polite are you? How often do you reach out to co-workers to ask them how they are doing or about their lives? How good of a conversationalist are you? I can give you many examples of someone getting an opportunity granted to them, only because the person making that decision liked them. Don't get me wrong, they were also competent and could handle the job, but the likability factor gave them the edge. What are three changes you can make to be more likable? Ask a co-worker. You may be surprised with what you find out.

I challenge everyone to pick a soft skill you want to improve and come up with a plan on how to do it. Take one of my suggestions above or just Google the skill and you will find a slew of articles on each one of these. If you're still not sure, how about checking in with our old archivals, the HR department, and see what training is available? I hope you give some serious thought to focusing on developing your soft skills, as I truly believe the benefits you will receive will be worth the effort. Good luck turning your soft skills into a hard-to-find asset. 📌

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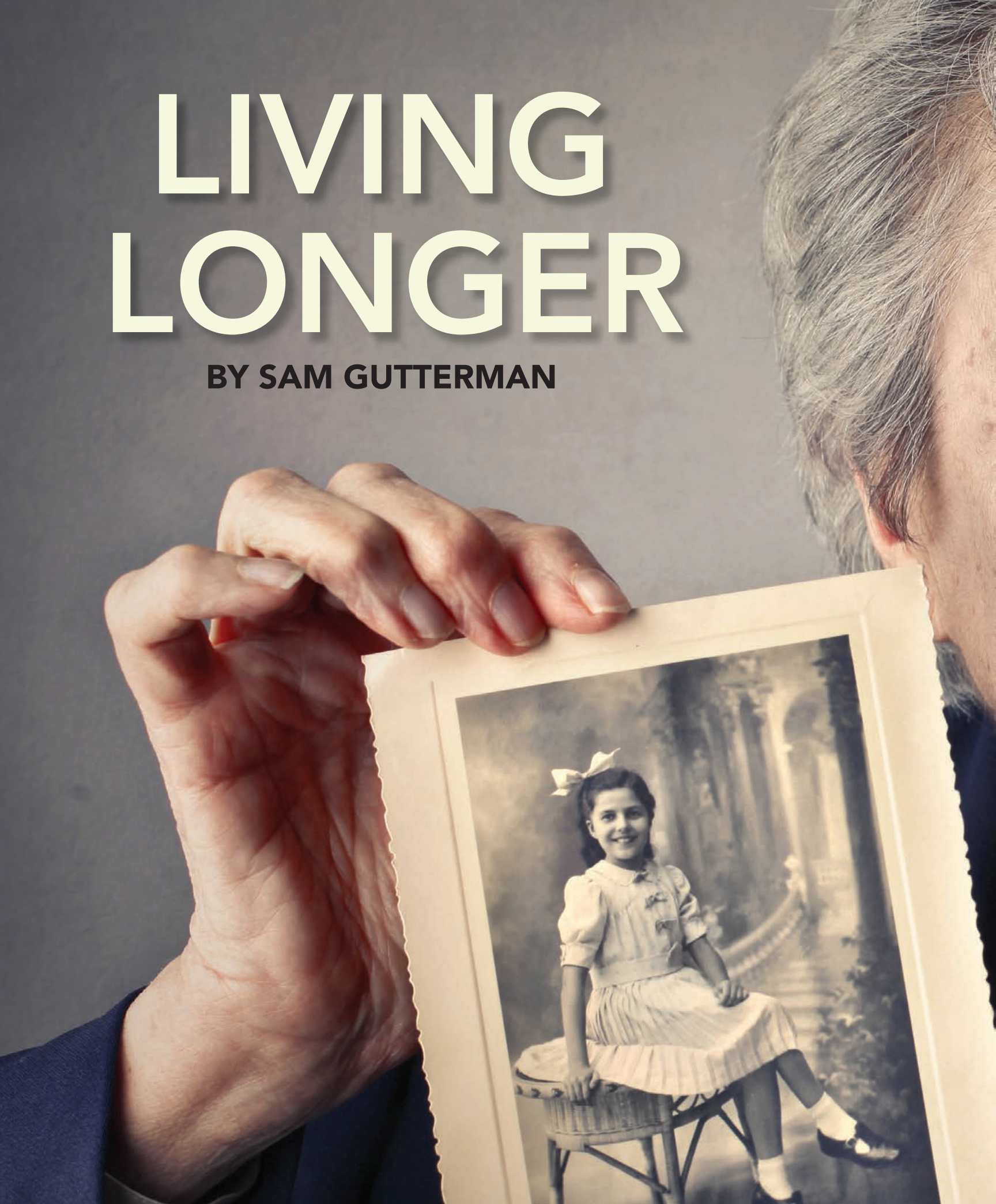


It's important to be part of the conversation.



LIVING LONGER

BY SAM GUTTERMAN





MORTALITY HAS A BIG ROLE IN SOCIAL SECURITY ACTUARIAL PROJECTIONS. WHAT DOES THAT MEAN FOR A POPULATION THAT IS LIVING LONGER?

Too often professionals become entrapped by practices they have grown accustomed to or developed in intellectual silos. We all benefit by periodically taking a step back to study developments and practice of others. The practice of, insight into, and information used by our peers in other firms, practice areas and countries can provide us fresh ideas and perspectives we can build on further. Yes, North American actuaries, we aren't the font of all the world's wisdom!

Cutting-edge, macro-level insight into mortality projection issues is no exception—this was evident in the 2014 Living to 100 Symposium panel presentations of leading social security actuaries from Canada, the U.K. and the United States.

Topics covered ranged from age-gender trends to smoking and obesity, and how they are

considered in the development of mortality projections.

Mortality is a crucial ingredient in the estimation of the future course of a social security program, as it is for many financial security programs with which actuaries are involved. The actuarial assessment of a financial security program benefits from a comprehensive understanding of its dynamic demographic drivers and the effects of the characteristics of its participants on their mortality.

The transparency of the assumptions they use facilitates the public and professional scrutiny social security programs are constantly under and provides confidence in the objectively developed projections. This necessarily leads to the use of sound methodologies and ultimately to more soundly based public policy decision-making. Almost universally, those involved in social security projections are well respected in their professional communities.

The three panel members—Jean-Claude Ménard, chief actuary of the Canada Pension Plan; Adrian Gallop, of the insurance and social security area of the Government Actuary's Department in the U.K.; and Steve Goss, chief actuary of the U.S. Social Security Administration—provided mortality intel they have found useful.

PROJECTION METHODOLOGY

Each of these actuaries follows a rather similar overall projection methodology:

1. Estimate current mortality rates by gender and age (and cause of death for the United States). This is not simply the mortality experience for the most recently available year; the rates are based on an average of reported rates for the country over several years. This is needed as there is a lag in obtaining current national mortality experience and fluctuations in year-to-year experience. In addition, these rates are usually trended until the valuation date.
2. Estimate both current and ultimate mortality improvement factors by gender and age group. In the United States, these also vary by major causes of death.
3. Interpolate the mortality improvement factors by gender and age group (and cause for the United States) between the estimated current rates and when the ultimate factors are applied. The year at which the ultimate improvement rates go fully into effect ranges from 20 to 25 years.

However, different techniques and considerations are applied for each individual step. The views and research of a variety of individual and technical panels of experts are considered, particularly in the selection of improvement factors. In the end, the last factor added to the mix of considerations in each case is professional judgment, weighing the expected effect of all of the factors involved.





Period Life Expectancy at Age 65 at Selected Years

YEAR	CANADA			U.K.			U.S.		
	MALES	FEMALES	FEM-MALE	MALES	FEMALES	FEM-MALE	MALES	FEMALES	FEM-MALE
1941	12.8	14.1	1.3	11.4	13.4	2.0	12.2	13.8	1.6
1951	13.4	15.0	1.6	11.7	14.3	2.6	12.8	15.2	2.3
1961	13.6	16.3	2.7	12.0	15.3	3.3	13.1	16.1	3.0
1971	13.9	17.6	3.7	12.2	16.1	3.9	13.1	17.1	4.0
1981	14.7	19.0	4.3	13.0	16.9	3.9	14.2	18.6	4.3
1991	15.6	19.7	4.1	14.1	17.9	3.8	15.2	19.2	4.0
2001	17.0	20.4	3.4	15.9	19.0	3.1	16.1	19.1	3.0
2011	19.0	21.9	2.9	18.2	20.7	2.5	17.2	19.5	2.3

Two overall approaches have been taken to develop mortality projections: (1) statistical projections (that is, relying on time series or regression extrapolation); and (2) by-cause projections (at least for the next, say, 20 years). It is interesting that all three social security departments make use of both techniques in one way or another. Nonetheless, all three panelists focused significant attention on their efforts to understand the underlying drivers of long-term mortality experience, considering the expected significance of changes in mortality in the selection of the projection factors used.

Although there are differences in the detailed steps involved and factors considered in the projections for each country, there appears to be a consensus among social security actuaries that future mortality improvement will likely not be as large as it has been in some past periods of exceptional improvement. This is in part because of changes in demographics, prevention activity intensity, health care technologies and medicines, introduction of more extensive public health coverage, supply of services and quality of health care. Nevertheless, the U.K. ultimate

improvement factors are broadly similar to the rate of improvement experienced over the last 70 to 100 years, with American and Canadian ultimate factors decreasing on a percentage basis as attained age increases.

The methods and assumptions used in these projections are subject to regular peer reviews and adjustment based on new data, the objective of which is to maintain their high quality and to incorporate, as much as practical, the best possible approaches and information sources. For example, Canada

All three countries have seen significant mortality improvement for more than a century, seemingly with no end in sight.

is subject to triennial reviews by a panel of actuaries, and the American projections have been subject to ideas and opinions of quadrennial technical panels consisting of actuaries, demographers and economists. The U.K. regularly convenes a panel of experts to provide input into the demographic aspects of social security projections, while U.S. Social Security mortality projections have recently

been shown to be consistent with opinions of independently developed expert opinion of medical staff of likely mortality trends by age and condition conducted at Johns Hopkins University.

MORTALITY EXPERIENCE, PROJECTIONS AND OBSERVATIONS

All three countries have seen significant mortality improvement for more than a century, seemingly with no end in sight. The extent and patterns of future improvement will play a highly significant role in upcoming

debates concerning how best to address financing challenges facing all social security programs, especially as and after the baby boomers retire.

Historical mortality experience of their respective countries was contrasted with those of other countries. Key metrics focused on were primarily life expectancy

at birth and at age 65, as well as mortality rates at key age ranges. For example, the table on page 23 provides life expectancy at age 65 by gender.

Goss pointed out that life expectancy at birth, a widely used indicator of the overall health of population, can be a misleading metric in the assessment of the soundness of a social security program, as well as other systems studied by actuaries. This concern is due to the fact that it is unlikely that the sizable improvements in mortality at younger ages in the first two-thirds of the 20th century that contributed to a large portion of the improvement in life expectancy at birth can be repeated in the future. In addition, the effect of changes in mortality by age on social security projections can differ substantially.

As seen in the table on page 23, over the last few decades each country has seen a reduction in the differential between

male and female life expectancy at most ages, with the historical advantage of females in longevity being reduced since the 1980s when this difference had peaked. This reduction was in part because of the dramatic reduction in smoking and cardiovascular diseases, especially by males over the last several decades. Although each of the three panelists projected some continued reduction in mortality experience between the genders, none projected the differences to be eliminated completely.

All three projected continued mortality improvement in their countries. However, as Goss noted, it is unlikely that several key contributors to reductions in mortality over the recent decades will be able to be matched in the future. The chart below indicates the ultimate improvement factors (weighted by gender) used for the three countries. The improvement rates for the period between 2009 and 2030 are generally between recent historical averages and the ultimate improvement rates.

Ménard developed this comparison of projected annual reduction in mortality rates for the three countries between 2009 and 2049.

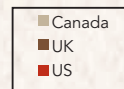
AGES	CANADA	U.K.	U.S.
15-54	1.02%	1.35%	0.80%
55-64	1.12	1.43	1.23
65-74	1.21	1.50	1.06
75-84	1.16	1.72	0.92
85-89	0.89	1.83	0.53
90+	0.57	1.61	0.49

Common to all three countries and contributing most to the mortality improvements of the last 30 years has been a drastic reduction in deaths due to cardiovascular and related diseases—as a result of improvements in prevention and treatment of this family of diseases, as well as more effective control of its direct risk factors. This reduction has driven overall improvement in all economically developed countries. Nevertheless, even if it is believed that this rate of improvement in this cause of death will continue, due to its decreasing share of total mortality, corresponding reductions will not have as significant an effect on overall future mortality improvement, without help from other sources.

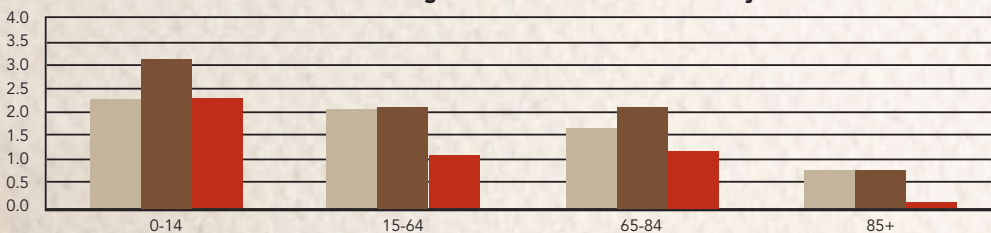
Steve pointed out several factors he has considered in development of mortality projections, all of which are relevant to Canada and the U.K. as well.

- **Smoking.** Smoking prevalence has dropped significantly in many countries, due to higher taxes, regulation and health warnings. Nevertheless, because of the long lag time between smoking inception and consequential death, we have so far

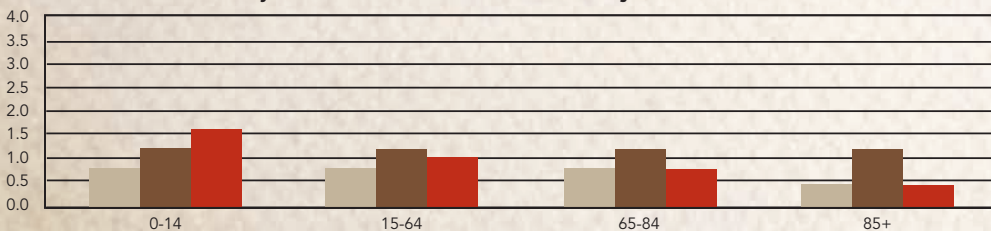
Rate of Improvement in Annual Mortality Rates



1982-2007 Average Annual Reduction in Mortality



Projected Annual Reduction in Mortality for 2030-2080



only seen improved mortality results in males, with future improvements for female mortality just beginning to be seen.

- **Obesity.** The last 40 years have seen significant increases in obesity for all age groups and both genders. This cannot be good for future mortality levels, particularly with the long lag between obesity exposure and consequential death. The United States has been the leader in having the largest obesity prevalence.
- **Medical technology.** It is not clear how much improvement in mortality will result from the application of future medical technology enhancements.
- **Cost pressure.** Continued cost pressure on health care systems to apply best practice cost control techniques may lead to reductions in lower overall quality of medical care.
- **Medical spending.** As the growth in funding for medical-related research has decelerated, the resulting reduction in new treatments and drugs down the road may have a negative long-term drag on mortality improvement.

In sum, it may be difficult to match the effect of sources of historical mortality improvement that have included the introduction of antibiotics, increases in standards of living and education, public health programs such as improved sanitation, and vast spending on medical technology, medical care and drugs. Some country-specific observations that were made included:

- Canadian mortality experience, although at a middle-of-the-OECD (a group of 30 economically developed

countries)

level at middle attained ages, has recently been more favorable than other countries at the oldest ages. This age advantage is wonderful, although if recent favorable trends continue it may prove costly for both Canada's social security and private pension programs. Canadian mortality rates have for the most part been better than those of the United States. Over the last few decades, Canadian mortality levels have, except for the very young, been significantly better than both the U.K. and the United States.

- Mortality for those disabled has been significantly greater than the non-disabled. For example, for Canadians 55 to 59 years of age, experience has been five or six times that of those who are not disabled.
- Ménard observed that marital status is an important variable affecting mortality, although it is more significant for males than for females. This is consistent with experience in most countries.
- Mortality rates of Canadians with larger retirement income are better than corresponding mortality of those with lower income. This mortality relativity is consistent with observations in the other two countries.
- Certain cohorts in the U.K., especially those born during the period between 1925 and 1938, have experienced significantly better mortality compared to those born both before and after



that period. This type of cohort effect has not been observed to nearly as great an extent in the other countries. Although Canadian experience appears to suggest some cohort effects for males, none has been evident in the United States or for Canadian females.

- U.S. mortality experience is likely to continue to be affected by smoking and obesity, with somewhat offsetting mortality results (increases due to increased obesity may be offsetting in part the favorable results from the decrease in smoking). Goss pointed out that it was quite difficult to project improvement for "other" specific causes, as new issues affecting mortality are bound to arise, although not all are currently evident.

In spite of the in-depth insights of our social security actuaries, mortality projections remain controversial and will continue to be discussed and debated by demographers, economists and other actuaries.

CONSIDER THESE RESULTS, BUT USE WITH CAUTION

At times over the last couple of decades, many actuaries have focused their attention on investment returns, with scant attention paid to mortality, as it seemed to be stable and predictable. Many are now awakening to the importance and issues associated with this demographic assumption.



Not only are the methods and resulting projections used by social security actuaries in developing their social security projections, they have also been of value

mortality of Canadians of older ages. In addition, American pension actuaries are looking at new mortality tables, and U.K. actuaries are now

also affect expected benefits for private financial security systems.

Especial care is needed if the population to which experience is to be applied is not the population from which experience is available.

to actuaries in other fields. For instance, I am aware of actuaries practicing in life insurance, annuities, pensions and long-term care insurance who have based their improvement assumptions on the mortality projections published by social security actuaries. All actuaries who rely on mortality estimates should keep up-to-date with developments in this area, while at the same time recognizing the limitations they need to keep in mind in applying these methodologies and projections for their own use.

Examples of applications include:

- **Life insurance.** Mortality improvement is being considered, not only for pricing and reserving for payout annuities, but also for pricing and reserving of life insurance. In addition, refinements in risk classification for new issues continue to be important in competitive positioning.
- **Long-term care insurance.** Some of the largest sources of reserve strengthening for long-term care insurance have arisen from switches to more current mortality tables.
- **Pensions and annuities.** Canadian pension and annuity actuaries are experiencing challenges associated with significant improvement in

updating their mortality projections on a regular basis to stay on top of mortality improvements.

Although the mortality rates of the overall population and their projection are appropriate for projections of social security, they may not be appropriate to be applied without adjustment for areas other than those intended. The primary reason is because of difference in the segments of the population covered. It has to be remembered that social security programs cover almost all of a country's population, while those of most actuaries address programs or programs with selected sub-population groups.

It is clear that mortality can differ substantially by segment, whether as a result of selection by means of underwriting of life or long-term care insurance, self-selected by industry employed or anti-selected by insured or annuitant/pensioner, particularly if they are given choices between options (including opting out of the program) that are not financially equivalent. Each panel member indicated that mortality in their country has varied by socioeconomic characteristics—in social security programs this implies that those receiving higher periodic benefits will likely also receive them for a longer period of time. This differential by size of benefit may

Even mortality improvement can vary. For example, although a population of non-smokers may experience at a far lower level than current smokers, their rate of mortality improvement may not be as significant, because they won't benefit from smoking cessation. Gallop indicated that large differentials existed within regions of the U.K.—a fact that may be ignored by many actuaries if the population segment being assessed is not nationally representative.

TAKEAWAYS

Takeaways from the panel include recognition that the study of mortality from many sources remains important for both social security projections and many other applications; and the size and shape of mortality projections will likely remain dynamic and controversial. Especial care is needed if the population to which experience is to be applied is not the population from which experience is available. ▣

For more information on the presentations from the 2014 Living to 100 Symposium, visit the online monograph at livingto100.soa.org.

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Special thanks to the panelists who also reviewed and helped finalize this article for publication: Jean-Claude Ménard, chief actuary of the Canada Pension Plan, jean-claude.menard@osfi-bsif.gc.ca; Adrian Gallop, of the insurance and social security area of the Government Actuary's Department in the U.K., adrian.gallop@gad.gov.uk; and Steve Goss, chief actuary of the U.S. Social Security Administration, stephen.c.goss@ssa.gov.



LIVING to 100

SOCIETY OF ACTUARIES
INTERNATIONAL SYMPOSIUM

2014 Living to 100 Symposium Monograph

Presentations from the 2014 Living to 100 Symposium are now in an online monograph at livingto100.soa.org. The symposium brought together thought leaders to discuss the latest theories, research and implications on longevity and quality of life. Topics discussed included:

- The evolution of retirement;
- Work flexibility for a graying workforce;
- Business implications of living longer;
- Lifestyle and longevity; and
- Mortality trends and projection methods of older age.

The Living to 100 Symposium featured actuaries, demographers, physicians, academics, gerontologists, economists, financial planners, researchers and other professionals. This monograph will help to continue the conversation about how to address living longer, the impact to social support systems and the needs of advanced-age populations.



Visit livingto100.soa.org to learn more.





BUILDING A NERVOUS SYSTEM

FOR INSURANCE PRODUCTS

By Mark Griffin and Kelvin Cheng

A COMBINATION OF RISK ANALYTICS AND PROCESSES CAN PROVIDE A BROADLY UNDERSTOOD NERVOUS SYSTEM FOR AN INSURANCE PRODUCT.

Insurance chief financial officers (CFOs), finance departments, analysts and others have had a long-standing aversion to assumption changes and reserve restatements. On top of this backdrop, the approach of principle-based reserving, Own Risk and Solvency Assessment (ORSA) disclosure, and the ongoing maturation of “control environment” concepts such as Sarbanes-Oxley and COSO (updated and expanded in 2013), create a need for actuaries to build consistency and discipline around the monitoring of insurance product assumptions. More than ever, this performance evaluation and assumption-resetting process will have an audience that includes senior management, boards, auditors, rating agencies and regulators, requiring that it be understandable and transparent to many, including those without deep statistical training. Such a combination of risk analytics and processes can be thought of as an insurance product’s nervous system.

Consider insurance product assumptions as falling into two categories: market and product. Risk management by financial institutions has been primarily focused on the impact of systemic market risks under the first category. The volatility of interest rates, which began in the early '80s, foreign exchange volatility in the mid '80s, and the 1987 stock market crash provided the impetus for modern-day

risk management. Subsequent market volatility has justified this development and intensified the focus.

MARKET ASSUMPTIONS

Our “information age” provides historic market data as well as forward-looking market views that can be used by all financial institutions for setting market assumptions and performing risk analysis. Because market levels represent a consensus, the credibility of market assumptions is not in question. Assumptions are easily monitored as new market data emerges. A common set of techniques and best practices—originally duration and convexity and more recently value at risk (VAR), conditional tail expectation (CTE), etc.—can be used to manage market risk across a wide range of financial institutions.

INSURANCE PRODUCT ASSUMPTIONS

Setting and updating product assumptions are much more challenging than market assumption as there is no fully credible data repository to look to. Even in situations where industry-level data is available, it may not be current and may be only partially relevant. This inherent challenge in setting initial assumptions means the process and analytics involved in updating assumptions are doubly important. Unfortunately, in situations where product assumptions have to be changed and reserves must be significantly increased, the impact on the company’s market capitalization often far exceeds the dollar

impact of the revision. The capital markets become concerned that other negative revisions are lurking, or that they should attach a degree of conservatism to all of the company’s reserves. The capital markets have less transparency into product data and calculations than they do into market data and analysis, and therefore must place more trust in an insurance company’s internal math. Sudden reserve increases based on product assumption changes weaken that fragile trust.

STANDARD DEVIATION EXAMPLE

To demonstrate how a nervous system could be defined, we modeled two hypothetical portfolios of T10 life insurance policies with the following characteristics:

- Portfolio A: 1,000 policies with average face amount of \$500,000, all age 40.
- Portfolio B: 5,000 policies with average face amount of \$100,000, all age 40.

If one assumes (more on this later) that the probabilities of death are known absolutely, and that the deaths are independent, the standard deviation of net claims from such a portfolio is calculated as follows:

$$\sqrt{\sum (\text{Net Amt at Risk})^2 \cdot q_x \cdot (1 - q_x)}$$

Our hypothetical portfolios produce the following results. (See Chart I.)



CHART I

HORIZON	PORTFOLIO A			PORTFOLIO B		
	EXPECTED MORTALITY COST (\$K)	ST. DEV. OF MORTALITY COST (\$K)	COEFF. OF VARIATION (%)	EXPECTED MORTALITY COST (\$K)	ST. DEV. OF MORTALITY COST (\$K)	COEFF. OF VARIATION (%)
1 MONTH	14.2	84.0	594%	14.2	37.6	266%
3 MONTHS	42.5	145.6	343%	42.5	65.1	153%
12 MONTHS	169.9	291.3	171%	169.9	130.3	77%
36 MONTHS	587.8	541.3	92%	587.8	242.1	41%

The lower standard deviation of Portfolio B reflects its higher “granularity” than Portfolio A. Given the construction of the hypothetical portfolios, the standard deviation of Portfolio A is higher than Portfolio B by a factor of the square root of five. If one were to graph plus and minus one standard deviation, expressed as an actual-to-expected ratio against time, the result would be a narrowing “confidence band” over time. This phenomenon is sometimes referred to as the “diminishing funnel of doubt.” (See page 32.)

The same analysis at age 50 shows expected mortality cost roughly tripling, while the standard deviation doesn’t quite double, leading to coefficients of variation down almost by half.

The calculation and communication of these statistics at product inception help management and other interested constituents to understand how much

natural variation (or “noise”) should be expected from any given book of business. The same statistics can form the basis of an early warning system to identify where assumptions should be reviewed and revised if variation is greater than a level of noise commensurate with the granularity of the block and passage of time.

The analysis should appeal to actuaries who typically track actual-to-expected ratios, as well as finance departments and external analysts who think more in terms of raw dollars. Auditors will be interested in a consistent application of the process. Boards will be interested in all of these perspectives.

NERVOUS SYSTEM EXAMPLE

As an example of a consistent, disciplined nervous system, variation of one or more standard deviations would automatically trigger a review, whereas variation of two or more standard deviations would

mandate a change in assumptions. The same standard can be applied at various time horizons. The “review” and “revise” trigger levels should be chosen to provide both an effective early warning indicator, as well as to balance the probability of an incorrect rejection of a correct assumption with a reasonably quick recognition of an incorrect assumption. There will always be a trade-off between these goals.

The analysis and process can be applied consistently across the insurance organization as part of a transparent assumptions policy. In our term insurance example, one could apply the approach to subsets of the block. Subsets will tend to have larger relative standard deviations but may show evidence of flawed assumptions at different parts of the age spectrum, by policy duration, or by underwriting class.

OTHER EXAMPLES

Withdrawal assumptions should be monitored in a similar way. The nervous system described is not as well-suited to the type of multidimensional withdrawal assumptions frequently used for financially oriented products, which often incorporate prevailing economic conditions. Applying the same principles and analytics to assumptions based on multiple factors is beyond the scope of this article, but an area where research would be welcomed.

CAPITAL

AS SHOWN in our two hypothetical portfolios of term life insurance policies, standard deviation is more effective in capturing projected variation than using expected values. In 2005, the Canadian regulator, the Office of the Supervisor of Financial Institutions (OSFI), introduced new mortality components in the MCCSR capital requirement. To reflect volatility risk, the new component utilized the standard deviation of the following year’s death claims as one of its inputs. Standard deviation, and related measures, are used in many economic capital models.

CHART II

HORIZON	EXPECTED RESERVES RELEASE (\$M)	ST. DEV. OF RESERVES RELEASE (\$M)	COEFFICIENT OF VARIATION (%)
1 MONTH	0.59	0.33	57%
3 MONTHS	1.78	0.58	33%
12 MONTHS	7.00	1.14	16%
36 MONTHS	20.83	1.91	9%

The form of nervous system and assumptions policy outlined can easily be applied to annuitant mortality experience in a block of payout annuities. As an example, we modeled a hypothetical portfolio of 5,000 payout annuity policies, paying \$1,000 per month, all age 65, single life. Using reserves as the “amount at risk” in the formula, the hypothetical portfolio produces the results shown in Chart II.

The same analytics can be applied to a defined-benefit pension plan.

Repeating the analysis for age 75 produces a much higher expected reserve release, a marginally higher standard deviation (in this case the “severity” of a death is the reserve release, not a relatively fixed dollar amount as in the term example), resulting in coefficients of variation reduced by roughly a third.

As shown in both examples, for a particular vintage of policies, the dollar standard deviation will go up over short periods of time, while the coefficient of variation will go down, both roughly in proportion to the square root of time.

The standard deviation approach can be applied consistently to low- and high-frequency risks. It is not necessarily an indicator that the next “black swan” is around the corner, but it is a disciplined approach to the data that has been observed.

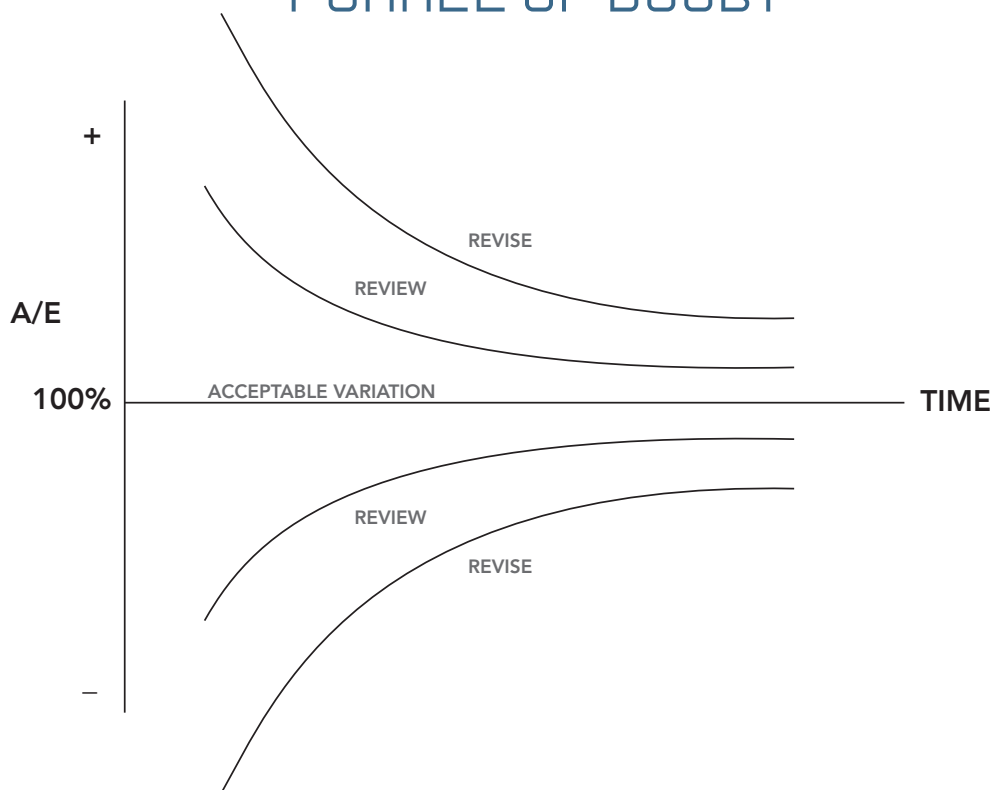
SEVERITY

For mortality and withdrawal decrements, severity tends to be known, and we are therefore concerned only with measuring the expected variation in frequency. In many insurance situations, assumptions must be made with respect to frequency and severity. In these situations, one approach would be to apply the same analytics and process to frequency and severity assumptions separately. As part of the same pragmatic approach, narrower “review” and “revise” thresholds might be applied to the sum of the frequency standard deviation and the severity standard deviation.

VERSUS PRAYER

Historically, the question of whether experience that varies from the assumption constitutes noise has been handled in two ways. In many situations, the question is hand-waved away for as long as possible in the hopes that it will subsequently disappear. As described earlier, this “pray silently for reversion” approach can eventually lead to large and sudden reserve increases, and a reduction of trust from the capital markets in the opaque processes within an insurance company,

THE DIMINISHING FUNNEL OF DOUBT





REINSURANCE

THE TERM INSURANCE EXAMPLE provides insight into how such a tool could be used by a direct life writer to assess different mortality retention strategies. Measures of variation are invaluable to reinsurers for pricing portfolio stop-loss treaties, and for differentiating between noise and valuable experience resulting from treaties.

not to mention the relationship between the company's finance department and actuarial areas.

VERSUS CREDIBILITY

Credibility theory is often used by actuaries to set pricing assumptions and has also been used to assess what constitutes noise. Credibility thresholds tend to be calculated at a high confidence level and over long, fixed time horizons in order to translate into a "rule of thumb." As an example, the rule of thumb that 1,000 claims are necessary for full credibility originated in a 1962 paper by Longley-Cook.¹ The conclusion is only appropriate in the set of circumstances described in the paper, although it is often used without awareness of the context in which it was derived. (As an aside, perhaps all rules of thumb developed before the age of computing power should be reassessed.) It is interesting to note that in response to the approach of a principle-based environment and other developments listed at the beginning of the article, the scope of the actuarial standard of practice (ASOP) on credibility has been recently expanded to include life and pensions.

Credibility theory is not broadly understood. Wikipedia currently defines it as a branch of actuarial science. Also, actuaries use the word credibility itself in a different way than the general population, adding obfuscation. One of the two methods of credibility theory, Bühlmann-

Straub, uses the standard deviation of the "population" as an input.

Both a standard deviation approach and a credibility approach are subjective. As the Federal Reserve states in its Bulletin on Model Risk Management:

Statistical tests cannot unambiguously reject false hypotheses or accept true ones based on sample information.

Relative to the credibility approach, a standard deviation approach is easily applied at different confidence intervals and time horizons, making it a more effective nervous system to differentiate between noise and important variation. Also, the broader understanding of the standard deviation trigger mechanism (effectively the "front end" of an assumptions policy) by an audience well beyond statistically trained actuaries and risk managers is critical to wider adoption and ultimate success.

QUARTERLY RESULTS

As examples of the need for standards of practice in this area, the recently completed quarterly public insurance company investor calls have included:

- A CEO assuring analysts that the weaker mortality result was not systemic
- A very large reserve increase resulting from an assumption change
- A CEO describing the reserving discipline his actuaries will have going forward.

GOING FURTHER

A thorough assumptions policy (as an element of model governance) should extend beyond the early warning system outlined in this short article. As an example, a natural sequel would be a disciplined and consistent process to change an assumption, once the nervous system indicates the need. Going even deeper, the topic of parameter uncertainty (we do not know the decrements absolutely) should be addressed within reserving and/or economic capital models.

The analytics described here, while simple, represent a confluence between risk management, finance and product development into a properly controlled and transparent principle-based environment, a challenge many of us will face. **A**

END NOTE

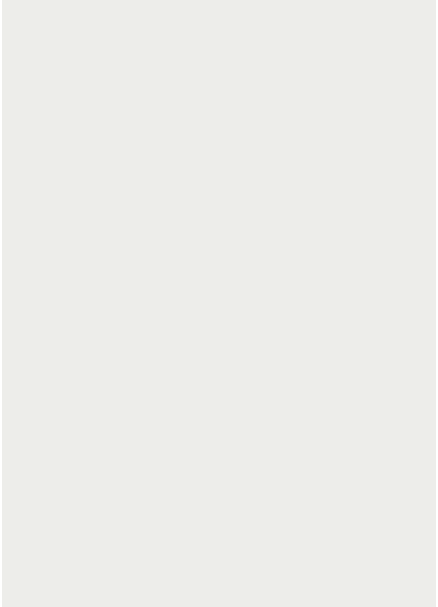
¹ L. H. Longley-Cook, "An Introduction to Credibility Theory," PCAS, XLIX (1962), 194.

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UNDERSTANDING IS KEY TO FOSTERING GOOD RELATIONSHIPS

BY GREG HEIDRICH

Supporting the growth and development of the actuarial profession around the world is a core part of the work of the Society of Actuaries (SOA). Partnering with other actuarial organizations—whether in North America or around the globe—to foster and support the profession is key to our mission.

To better understand the actuarial organizations with which we work in a complex and challenging environment, the SOA Board launched a relationships task force in early 2014. The purpose of the task force is to identify, plan and facilitate ways to build our relationships with other actuarial organizations. SOA leadership and the task force felt that an important way to build relationships was to go back to the basics of communication—talk, listen and exchange information.

We hope that through dialogue with the leadership of these groups, we can build a better understanding of their organizations' strategic directions and goals. As part of this, it is important to examine the varying status and depth of our interorganizational relationships, the changing roles of these organizations, and how our relationships are affected by internal and external factors and actions.

Since the beginning of this project earlier this year, the SOA Board has met with

the leadership of the Canadian Institute of Actuaries (CIA) and the Institute and Faculty of Actuaries (IFoA) and will continue to meet with others in 2015. These discussions take the form of extended open dialogue and exchange of ideas between leaders of these organizations and our Board. Basically, we want to better understand our fellow actuarial organizations' perspectives and identify the most effective ways we can work together. This can range from projects such as expanding joint research, developing new ways to expand opportunities for the profession, exploring joint continuing professional development offerings, benchmarking our respective education systems, and more.

Relationship-building is best done through direct conversation and exploration of issues. Discussions provide insights that aren't available through reading reports or press releases or listening to speeches (as important as those can be). Good working relationships are built through conversation, empathy and understanding of each other's purpose and intent. These structured discussions are intended to provide opportunities for the relationships between the SOA and other actuarial organizations to grow and prosper. From these conversations we hope to identify specific plans and steps we can take to develop our work together.



Several outcomes of the project are already visible. Our Board members and leadership (including those who may serve in our most senior leadership roles in the future) are developing a deeper and more nuanced understanding of how these other organizations see their own challenges and those facing the profession. Dialogue between meetings is increasing. As a direct result of these conversations, we have important bilateral projects under discussion and consideration. We've received (and accepted with pleasure) a return invitation from the IFoA for SOA leaders to visit their council for similar conversation. In short, we see this effort as providing valuable returns—building relationship capital, if you will—with promise for more in the future.

In their speeches at the SOA's Annual Meeting in October, outgoing President Mark Freedman and incoming President

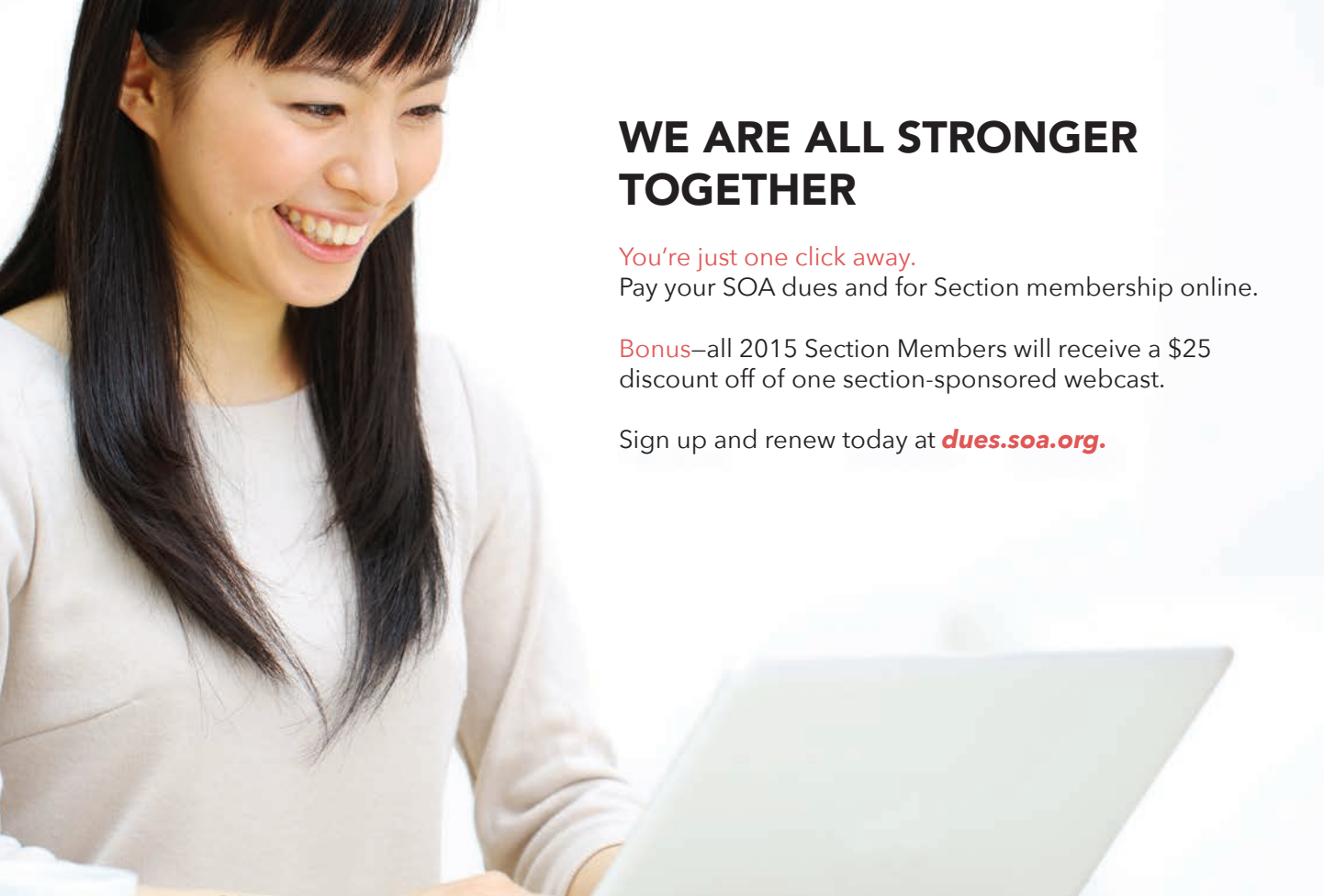
Errol Cramer spoke of the importance of relationships and collaboration within the profession. Errol and Mark both pointed out that the way in which the SOA approaches these issues is important, given that our members comprise approximately 40 percent of the world's actuaries. Annual meeting keynote speaker, former Secretary of State Madeleine Albright, provided a compelling case for the significance of global events to people in every profession and the importance of building global relationships. Our work on the relationships project is an important manifestation of the

work we are doing to meet the challenges identified by these leaders and fulfill the expectations of our many stakeholders.

As the world becomes more challenging and as new opportunities arise for actuaries, we need to find ways to build the relationships needed to address these issues. Our plan is to continue to invite the leadership of different actuarial organizations to talk with our Board about their strategies and about how our organizations can work together for our respective members, candidates, the

profession and the public. We will accept any and all invitations from others to engage similarly in conversations with them. Establishing relationships and strengthening these ties will foster an atmosphere that is conducive to growth, camaraderie and partnership not only for the SOA and our members, but for the global profession as a whole. **A**

Greg Heidrich is executive director of the Society of Actuaries. He can be reached at gheidrich@soa.org.



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THE EVOLUTION OF OUR RESEARCH

BY R. DALE HALL

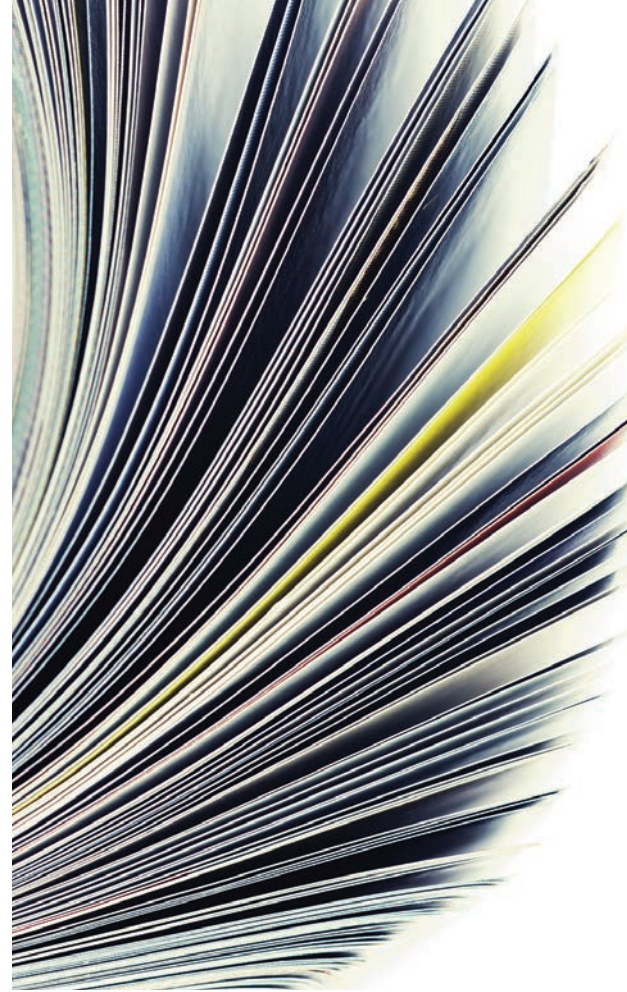
As we conclude the year and prepare for 2015, let's take a moment to review 2014 and look at the agenda for next year. The past 12 months have been quite busy in developing and completing a new evolution of how our organization identifies and creates new research to benefit both the actuarial profession and the public. I am proud to see the ongoing efforts from Society of Actuaries (SOA) volunteers and staff in creating necessary research to help advance our profession.

Earlier this year, the SOA-commissioned Blue Ribbon Panel on Public Pension Funding helped foster a dialogue about pension plans with the public, regulators and policymakers. We saw important development of experience studies on life, health and retirement topics, including the release of an updated private plan mortality tables and mortality improvement model. Our U.S. retirement research focused on the effects of provisions from the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Highway and Transportation Funding Act of 2014 (HATFA-14). The creation of the SOA Regulatory Research Advisory Council also set a new precedent for how we plan for future research and how this information can be provided to regulators to inform them of major issues and challenges.

We have also identified new approaches to how we publish research. For example, we hosted a call for papers to gather the latest insights on predictive modeling and had a quick turnaround to publish the collection of papers. We have incorporated this lean, time-sensitive approach as one way to evolve how we identify, complete and disseminate research for our members. We have also added several new capabilities and data resources to support research projects. We have partnered with the Canadian Institute of Actuaries to pursue Canadian pension research, engaging a Canadian actuary to help conduct this vital work.

On the health front, we added a new staff health research actuary to help develop and manage health research projects for our members and the public. We secured an agreement with the Kansas Insurance Department for access to their health care cost data. This health project will help develop research analysis on the evolution of U.S. health care under the Affordable Care Act, and it also sets the stage for future research projects with other states on health care data.

Looking ahead we will continue to explore new ways to mine for research, and there are certainly recent data developments that will help with health and pension analyses.



While this past year has been a time of new research work, the coming year will certainly keep a strong momentum. Stay tuned for more research updates with experience studies, original research reports and much more. **A**

R. Dale Hall, FSA, CERA, MAAA, is managing director of Research at the Society of Actuaries. He can be reached at dhall@soa.org.

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PARTNERSHIPS FOR CANDIDATES

BY XIAOYAN ANDERSON



The Society of Actuaries (SOA) Candidate Connect program continues its mission to attract and retain the brightest minds in the actuarial profession. The SOA hosts Candidate Connect events, conducts social media outreach (including Facebook—www.facebook.com/SOACandidateCommunity), launched a new e-newsletter and maintains strategic partnerships with other actuarial student organizations. Through all of these efforts, SOA Candidate Connect has been able to reach, inform and engage a broad spectrum of students and candidates planning to make the actuarial profession part of their future.

The SOA organizes and sometimes hosts Candidate Connect events, inviting local actuarial clubs and organizations to

participate in the events to help local candidates connect with the actuarial communities in their area. These connections are great opportunities to network, exchange information, and can potentially lead to internships and employment opportunities. The SOA worked with the Actuaries Club of Philadelphia, the Actuaries' Club of Hartford & Springfield and the Chicago Actuarial Association in 2013 and 2014 to host three Candidate Connect events.

“The cooperation between the SOA and the local actuarial clubs works very well and has many advantages for all involved. I would like to see more cooperation opportunities like the Candidate Connect event in Hartford,” said Lawrence Slone, 2013-14 president of the Actuaries' Club

of Hartford & Springfield. “The SOA would be better served by having the local clubs reach their members with greater industry news and events, while the local clubs would be better served by being able to provide national speakers and content to their members,” said Slone.

The SOA also participates in events hosted by actuarial clubs to reach out to local candidates. In September, SOA Candidate Connect had a booth at the 2014 Actuarial Society of Greater New York (ASNY) Career Fair, which had 750 actuarial candidates in attendance. The SOA staff and volunteers were on hand to help address questions about the exams, the SOA and the profession.

At the beginning of October, the SOA, for the first time, partnered with the Gamma Iota Sigma (GIS) international risk management, insurance and actuarial science collegiate fraternity to be a gold sponsor at the GIS 43rd Annual International Conference. The GIS event in Dallas, Texas, attracted over 500 student representatives from colleges and universities throughout North America.

As part of an ongoing partnership with the Actuarial Students National Association (ASNA) in Canada, the SOA will be a diamond sponsor at the 2015 Annual ASNA Convention under the title “Insuring the Future,” that will take place

in Montreal in January. "The SOA has been an avid supporter of student initiatives. During the planning of the ASNA 2014 Convention, the SOA played a pivotal role in designing and hosting ASNA's actuarial case competition by providing intellectual and financial support to the organization," said Monojit Samanta, 2014 ASNA Convention co-chair. "This year, the SOA upgraded its relationship by becoming a diamond sponsor and is actively helping ASNA expand its operations. Through its various efforts, the SOA has proved to be a resourceful partner to candidate

communities and continues to build on its relationship with them," Samanta added.

The SOA's presence at these physical events wouldn't be possible without the volunteer SOA members who are on-site to provide local and personalized insights relevant to the candidates. The ultimate goal of the SOA Candidate Connect events is to help candidates gain insight into the actuarial profession; help them build their professional network by connecting them with other candidates, SOA leaders, practicing actuaries and potential

employers; and prepare candidates to become the best actuaries they can be. Consider volunteering for a local event to help spread the word about the SOA and its efforts with helping candidates enter the profession. For more information about candidate activities, visit SOA.org. **A**

Xiaoyan Anderson is the candidate relations specialist for the Society of Actuaries. She can be reached at xanderson@soa.org.



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The Financial Modeling e-course seeks to expand the knowledge first learned in the MFE course in both theoretical and practical aspects.

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HEALTH FOUNDATIONS

The Health Foundations e-course discusses the health care system at a micro level. It begins with an exploration of health care terminology and coding. The module moves on to discuss sources of data with regard to medical treatments and claims experience. The next step is to learn about the administrative systems that bring the data sources together. The module ends with examples illustrating how these elements combine to help provide solutions to actuarial problems.

INTEGRATED DECISION-MAKING PROCESS (IDMP)

The Integrated Decision-Making Process (IDMP) provides a foundation for making decisions related to complex business problems that require the involvement of many stakeholders and decision makers. IDMP presents a decision-making process that is specific enough to provide solid guidance when making decisions yet general enough to be applicable in a wide variety of situations.



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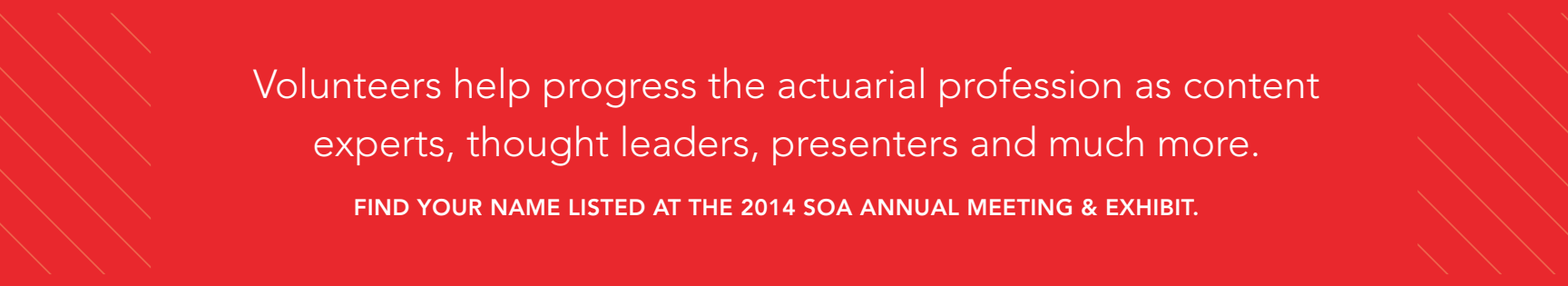
This e-course is designed to build upon the information presented in the Design and Pricing (DP) and Company Sponsor Perspective (CSP) examination syllabi and the Health Foundations module in the Group and Health FSA Track. Basic concepts that were presented in the exams will be integrated and expanded upon in this e-course. You will learn practical techniques involved in managing the financial control cycle of a health care company—from trend determination to pricing and reserving to analysis of historical results to forecasting future experience.

STRAIGHT TALK: EFFECTIVELY COMMUNICATING WITH A NON-TECHNICAL AUDIENCE

In today's business environment, professionals of all disciplines are turning to actuaries to clarify risk-related issues. You can no longer assume your role as an actuary is to only crunch numbers. The reasoning behind actuarial calculations and the business decisions resulting from actuarial analysis are valuable to today's organizations. This e-course will provide you with tips, guidelines and activities designed to help you communicate effectively with professionals across all disciplines. It also provides video examples demonstrating effective communication. This course will focus primarily on oral communication although many of the concepts can be applied to written communications as well. **A**



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GOOD RESEARCH READS



COMPLETED EXPERIENCE STUDIES

INDIVIDUAL ANNUITY STUDY

The Individual Annuity Experience Committee has completed an experience study of individual payout annuities, covering calendar years 2005 through 2008. The study includes immediate annuities, annuitizations and life settlement options. The overall by amount A/E ratios, based on the Annuity 2000 Basic Table, for all data combined were 0.895 for males and 0.932 for females. These compare to values of 0.929 for males and 0.977 for females in the 2000-04 report and imply yearly 0.8 percent mortality improvement for males and 1.1 percent for females over the 4.5 years between the two studies.

To view a complete listing, visit SOA.org/Research and click on Completed Experience Studies.

COMPLETED RESEARCH STUDIES

UNDERSTANDING THE CHANGING MIDDLE MARKET FOR LIFE INSURANCE IN CHINA

A new report examining the Chinese middle market for life insurance has been released. Supported by the Marketing and Distribution Section and the International Section, plus the Research Expanding Boundaries Pool, this research provides insight into the financial situations and needs for life insurance among middle market families. A Chinese translation of this report is also available.

COMMUNICATING THE FINANCIAL HEALTH OF PUBLIC PENSION PLANS

The focus of this report is to address the need for a concise but comprehensive and detailed report summarizing the financial health and prospects of state and municipal

plans. The overall objective is to provide information to assess potential changes to the structure of these plans. Sandy Mackenzie, the author of the report, has also created prototype reports on two example state pension systems.

SUSTAINED LOW INTEREST RATE ENVIRONMENT: CAN IT CONTINUE? WHY IT MATTERS

Authored by Max Rudolph, this report describes the impact on insurers and products when interest rates remain low for an extended period of time. It also describes strategies for addressing such scenarios and aims to help readers make conscious decisions based on an entity's risk profile, culture and appetite for risk.

STRETCHING THE CORRIDOR: THE EFFECTS OF EXTENDED RATE STABILIZATION ON DEFINED-BENEFIT PLAN FUNDING REQUIREMENTS

A new report by the SOA's data-driven in-house research team examines the effects of extending interest rate stabilization provisions used in the determination of funding requirements for U.S. private sector single-employer, defined-benefit plans. When established in 2012, the stabilization provisions were expected to temporarily liberalize funding requirements by modifying the interest rates used to calculate plan liabilities. The Highway and Transportation Funding Act of 2014 (HATFA-14), signed into law on Aug. 8, extended the period of expected liberalization and increased the degree of flexibility that sponsors have. The report

goes on to demonstrate the implications of further extensions, including a fundamental shift in how plan funding is targeted.

2014 LIVING TO 100 MONOGRAPH NOW ON SOA WEBSITE

If you were not able to attend January's Living to 100 Symposium, the papers presented are now available in the 2014 Living to 100 Symposium online monograph. The topics covered include marriage and mortality, longevity drivers, behavior and causes of death, mortality trends and

projection methodologies, and implications for aging populations.

REGULATORY RISK AND NORTH AMERICAN INSURANCE ORGANIZATIONS REPORT RELEASED

This report contains a comprehensive look at regulatory risk and is based on a compilation of interviews with regulators and industry leaders, discussions with industry government relations personnel, and personal experience of the authors —Tom Herget and Dave Sandberg. The report identifies regulatory structures and

influences in North America; provides examples that illustrate regulatory risk; and suggests mitigation ideas for both insurers and their regulators.

To view a complete listing, visit SOA.org/Research and click on Completed Research Studies. **A**

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WEBCASTS

THE ACTUARY'S ROLE IN FINANCE

TRANSFORMATION WEBCAST

Dec. 15

Learn about the actuary's role in these large projects, the data and technology issues at their core and the part model governance plays in a successful outcome.

PODCASTS

DR. MARK MCCLELLAN—NOTED AUTHORITY ON HEALTH CARE—SHARES HIS VIEWS ON ACOs

Listen in to this two-part podcast and get Dr. Mark McClellan's perspective on the changes in health care delivery and how they affect quality and affordability. He also shares his insights about the transformative role of Accountable Care Organization (ACO)s and how they are helping to reshape the financial aspects and delivery of health care. This podcast is a follow-up to Dr. McClellan's keynote address at the SOA Health Meeting in June 2014.



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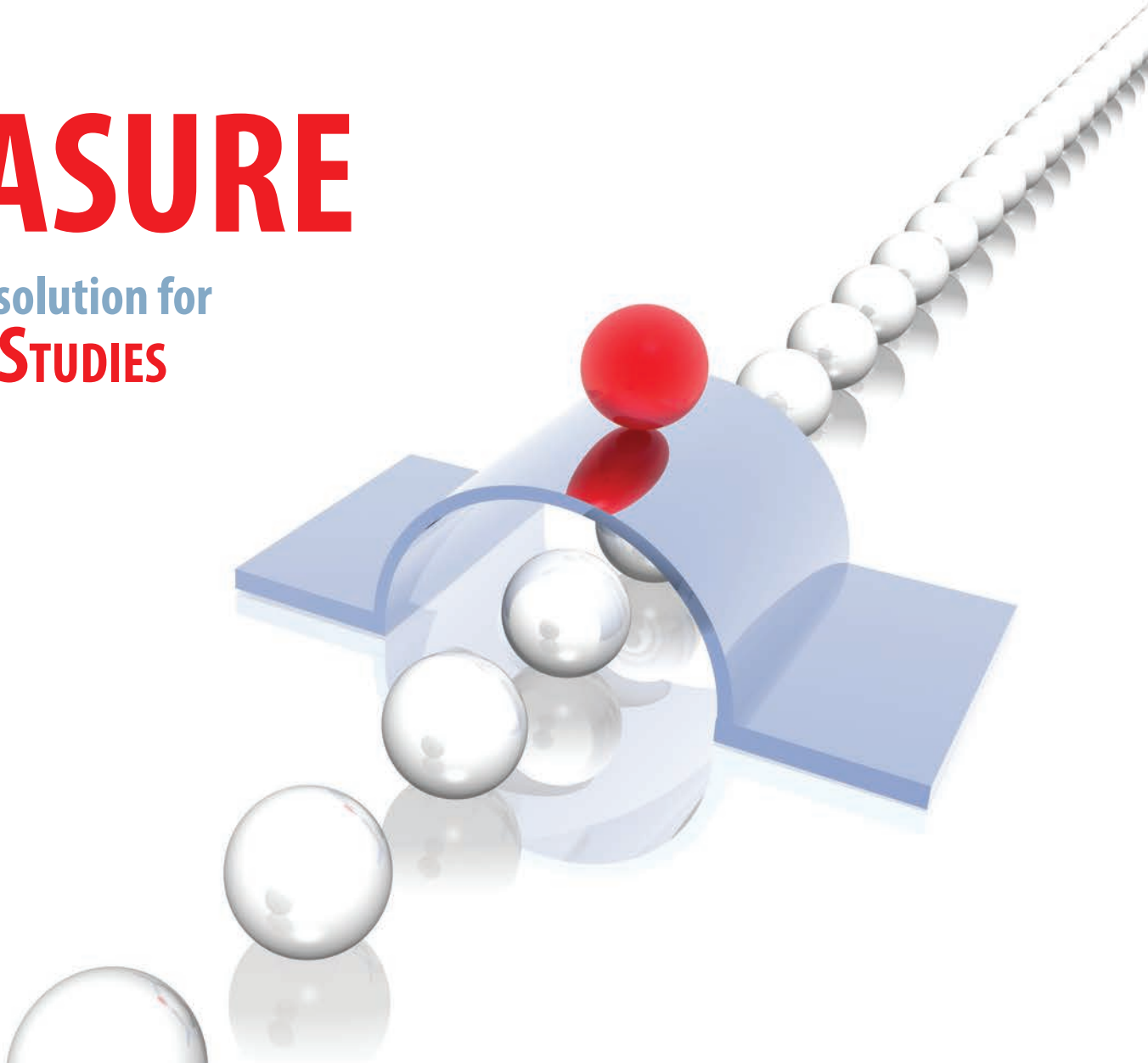


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MEASURE

PolySystems' solution for
EXPERIENCE STUDIES



Measure automatically collects data and performs best-in-class experience studies across a wide variety of decrements and policyholder behaviors. Our clients use Measure to track experience trends and set assumptions, gain insight into sources of profitability, monitor distribution channel effectiveness and meet regulatory experience reporting requirements.

Measure's greatest value is that it offers the production quality controls you need for your experience studies, while giving you the flexibility you want. Users can define custom keys which are then available for grouping results in summary reports and included in detailed policy level output. Measure also creates audit reports for tracing exposures and expected rates on individual policies through the study period and control reports for tracking policy inventories.

Measure works with life, health and annuity product types and can be easily added to existing PolySystems valuation and projection setups or run on a standalone basis.



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