

The Actuary

A man with dark, wavy hair, wearing a black tuxedo jacket over a white dress shirt and a white waistcoat, is captured in a dynamic pose. He holds a thin, light-colored baton in his right hand, raised towards the top left. His left hand is raised in a gesture, with fingers spread. He has a focused, intense expression, looking downwards. The background is dark, making the man stand out.

WHAT IS LEADERSHIP?

The answer can be personal and wide-ranging

CAE PROGRAM

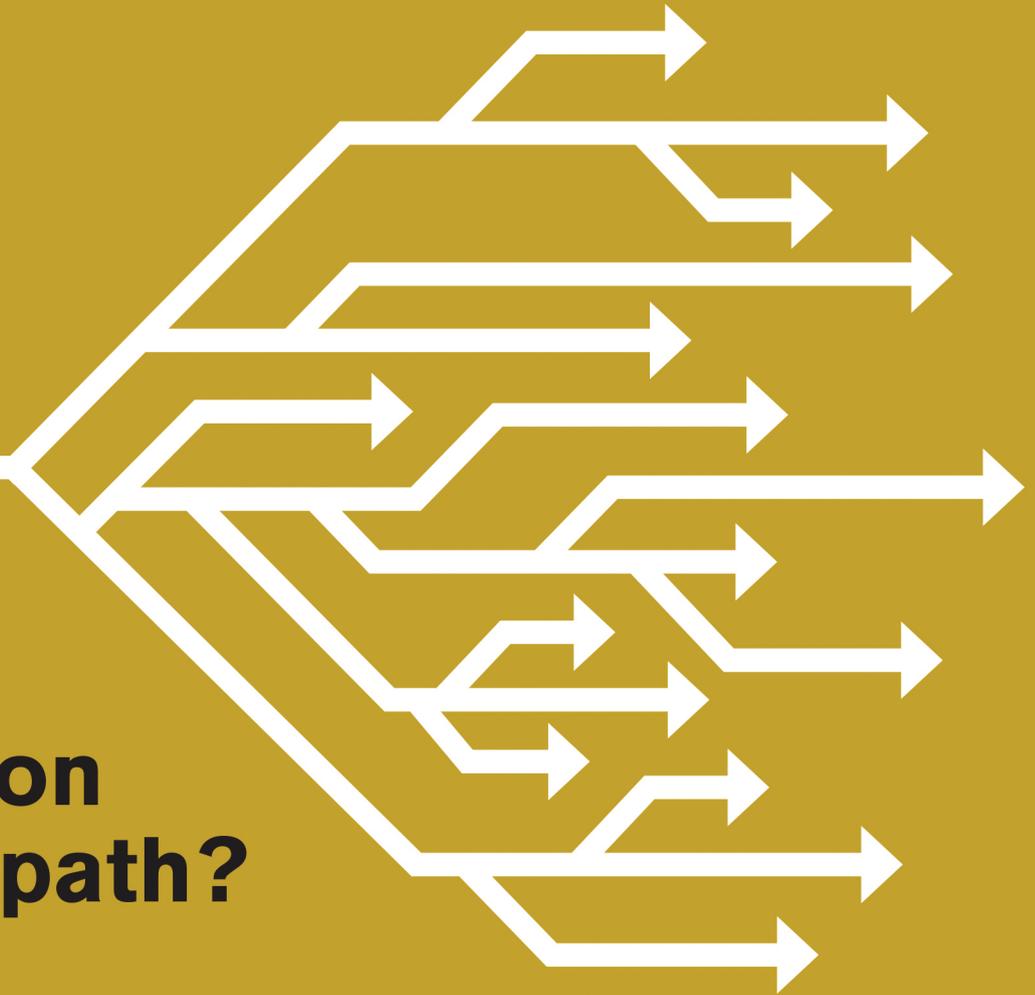
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Aug/Sept '14



COVER STORY

14 WHAT IS LEADERSHIP AND WHY DO PEOPLE PURSUE IT?

The answer to this question can be very personal and wide-ranging. The author contends that leadership is the collection and use of positive influence. What do you think?

By Nick Allen

FEATURE

22 WHAT IS THE SCOPE OF MODEL VALIDATION?

The first thing that comes to mind when one thinks about validating a model is whether the coding is correct. But what are the other important parts that should be included in the scope of model validation?

By Jim McClure

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The Actuary

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August/September 2014
issue of *The Actuary*

DEPARTMENTS

06 EDITORIAL

HAVE YOU HIRED ANY
65-YEAR-OLDS LATELY?

08 GUEST EDITORIAL

LENDING EXPERTISE TO HELP
NONPROFIT AGENCY

10 LETTER FROM THE PRESIDENT

MOST FREQUENTLY ASKED
QUESTIONS

32 EDUCATION

CAE PROGRAM PROMOTES
ACTUARIAL KNOWLEDGE AND
INFLUENCE IN ACADEMIA

36 BOOK REVIEW

THE IMPROBABILITY PRINCIPLE,
BLACK SWANS & SULLY
SULLENBERGER

38 SECTION HIGHLIGHTS

JOINT RISK MANAGEMENT
SECTION

39 NOTICE OF DISCIPLINARY

DETERMINATION

41 SOA AT WORK

42 BRINGING RESEARCH FRONT
AND CENTER

44 SOA RESEARCH—ASIA

INSURANCE OPPORTUNITIES

46 E-COURSES: GROWING YOUR
KNOWLEDGE

48 GOOD RESEARCH READS

50 PROFESSIONAL

DEVELOPMENT: YOUR
OPPORTUNITY TO GROW



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MIDWEST USA – LIFE MODELING ACTUARY & DIRECTOR

Life modeling actuary and Director immediately sought by Midwest USA insurance company for Position 58885. FSA credentials and MG-ALFA experience are a must. SAS or R programming skills ideal.

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For Position 59343, this Northeast USA insurance company is seeking a Vice President and Actuary. FSA with 10+ years of experience sought for disability income product management opportunity.

MIDWEST USA – SENIOR LIFE ACTUARY

For Position 59373, our Midwest USA client is searching for a senior life actuary. Compensation up to \$190k. ASA or FSA with 8+ years of experience. Group life and disability income experience preferred.

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FLORIDA – HEALTH INSURANCE PRICING ACTUARY

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HAVE YOU HIRED ANY 65-YEAR-OLDS LATELY?

BY JAMES RAMENDA

I ASK BECAUSE hiring older workers will be increasingly important to our economy for many years to come. We are at the nexus of the longevity boom and the baby boom. Also, we have been hearing for at least a decade that many people approaching traditional retirement ages have serious misconceptions about retirement, e.g., underestimating their expenses while overestimating their investment returns.

The oft-stated solution is that people will have to work longer to make up the retirement savings gap. It's a great solution: Working longer accumulates more savings dollars and also cuts the number of years of pure draw-down of savings. You don't need to be an actuary to figure this out. The problem is that it leads us back to the question in the title above.

So have you hired any 65-year-olds lately? Why not? Well, I suppose a "good news" answer might be that most of the 65-year-olds in and around financial services did well in their "normal" working years—well enough that they don't need a job of the type readers of this column may be offering. Also, the historical cohorts of normal-retirement-age workers were more

likely to have pension plans. The "bad news" answers would include a couple of other possibilities.

1. White collar workers who are getting into their mid-60s may find a significant mismatch between the jobs available to them and the type of compensation that will maintain the trajectory of their incomes, particularly if they have not kept current with technology. As a result, they are likely to be underemployed relative to their previous positions.
2. Mid-60s blue- and gray-collar workers may find the physical demands of continuing similar work as they did in their normal working years to be difficult.

The problem of an employment gap really concerns everyone, not just those older workers left in the lurch. If wages cannot support the lifestyles of a large segment of the population, the necessity of unplanned reduction in their spending will affect the overall economy. And taking marginal or part-time jobs may keep entry-level workers from getting employment, although economists differ on this point.

The U.S. Bureau of Labor Statistics also indicates that a pay gap of nearly 20 percent in wages between 65-and-older workers and the general population has closed to just over 10 percent in the past three decades. This is a far cry from the news stories about former executives flipping burgers. However, we may want to consider that the data to date is just beginning to include the baby boomers, so the cohort of the population that has perhaps most "under-saved" will be making up the bulk of 65-and-over labor market participants before long. The underfunding of their retirements may force them into lower-paying jobs.

For actuaries, this means we will be dealing with a different type of workforce, i.e., not bifurcated into employment years vs. early/normal retirement years, but a significant element of "late" (vs. normal) retirement that may include a different compensation level and economic behavior. It will affect our workplaces and certainly will affect the work of actuaries involved in benefit plans.

Another dimension of the retirement gap stems from the nature of the medical quest for longevity. Having been a caregiver to a 92-year-old parent, I've seen the health care system for the elderly up close and



James Ramenda

personal, including the medical wonders that have boosted longevity. However, as becomes obvious at advanced ages, the vast majority of these medical advances are targeted toward prevention and/or treatment of heart attacks, strokes and cancer. This is understandable; these are the leading causes of death and attacking these is naturally the goal of any individual, caregiver or health care provider.

Yet as I spent more time around assisted living and nursing facilities, it became painfully obvious in a very literal sense that progress with respect to musculoskeletal-related capabilities, and forestalling the effects of dementia and Alzheimer's, did not seem to parallel the increases in longevity. Indeed, at advanced ages, some of the effects of medication seemed to diminish activity and mental acuity in ways that compromised the quality of life, even as "vital signs" were kept in desirable ranges. It was particularly striking to see people

struggle with walkers, wheelchairs, etc., only to find they were there to visit their parents.

The actuarial aspect of this is unless medical science can achieve similar gains in areas like dementia, Alzheimer's, vision, hearing, arthritis, osteoporosis, etc., as it continues to achieve in the fight against heart disease and cancer, it may be impossible to assume a commensurately longer working life span (we'll leave the growing cost of long-term care for another day). If this is true, then pushing back retirement age in an actuarial model may simply not be a practical nor fair solution at some point. For example, moving the Social Security retirement age from 65-67, to perhaps 70 as is currently being discussed, may just be creating a waiting period for many people—a kind of deductible, really.

I believe we need to use data such as that underlying the retirement gap to inform medical research, specifically to guide it more toward sustaining mental and

physical agility, not just pushing the limits of longevity.

We've pushed longevity to 100 and beyond. Do we need to go beyond 110 before we think in these terms? 120?

A system in which retirees take care of retirees is not sustainable. It's been said that 50 is the new 40, but (keeping the same percentage) 65 is not the new 52. Nor will it be until we are routinely hiring 65-year-olds for other than part-time jobs. For that to happen, we need advances in working longevity to catch up with age longevity. ▣

James Ramenda, FSA, CERA, is senior vice president at SS&C Technologies, Inc. He can be reached at jramenda@sscinc.com.

SOA ELECTIONS 2014

CALLING ALL ELIGIBLE VOTERS

This year, elections open Aug. 18 and close Sept. 5 at 5 p.m. Central. Complete election information can be found at SOA.org/elections. Questions?

Send them to elections@soa.org.



LENDING EXPERTISE TO HELP NONPROFIT AGENCY

BY ROGER ROSALES

FOR A FEW YEARS NOW, there has been a push for actuaries to venture into nontraditional roles, especially with the new CERA credential. Industries all over the world are developing metrics to analyze risk. These range from health care to the airline industry to sports analytics to retail. This is a great opportunity for actuaries to showcase their expertise. Actuaries have been trained rigorously in risk management. What makes our profession unique is that we can take our technical expertise and turn our analysis into recommended business actions. This article sheds light on one successful example.

BACKGROUND

As part of my business leadership program, I embarked on a project to help a local nonprofit agency. I chose a behavioral health organization. The vision of this organization was to create a healthy community by providing mental health, addictions and supportive housing services. Its clients were typically low-income, un- or underinsured individuals, and who may also be homeless.

There were two main issues facing the organization. First, the net income on its income statement had been deteriorating since 2010. Management did not have the necessary

tools to analyze the situation. Second, the organization faced a customer service issue. There was often a four-week lag time between the time of initial contact and the first available assessment intake appointment.

THE ACTUARY STEPS IN

I made sure to review the SOA's Code of Conduct before committing to this nontraditional work. I knew I would represent our profession well by showing integrity, courtesy and cooperation, and exhibiting strong communication skills. I did spend the most time reviewing Precept 2 on Qualification Standards, but ultimately I felt I was qualified due to my actuarial credentials and my years of health work experience. If I felt I was unqualified to analyze a certain question, I would decline or delegate to another professional. You'll get to know Marian in the next paragraph.

With any project like this, it is important to interview the key stakeholders in the organization. I met with the executive director and the staff accountant to understand their successes and their failures. After gathering this information, I had to be honest with myself on how my actuarial skills could solve their problems. I knew I could definitely help with the financial piece because of my

work experience and through my actuarial exam knowledge. But I wasn't an expert in alleviating their customer service problems. There were "bottlenecks" throughout the intake process for the organization's clients. Those bottlenecks had to be identified and then had to be fixed. I scanned my network and called on a process improvement expert, Marian, to help on this project.

Lesson #1: Hold the initial interview, know your network, and don't be afraid to call on other experts to support you.

SOLVING THE PROBLEMS

The Income Statement Problem

In order for us to do analysis, actuaries need the data. Data is a very precious and sensitive asset for organizations. For us to get the data, we need to establish trust with the owners of that data. This is a very crucial step. I chose this organization because I already had a relationship with the executive director. This is why it is important for actuaries **to network outside our industry** and build those relationships. I was provided access to the organization's system and data. Getting the data is one thing, but understanding what the data means is another. I had to understand the terminology used in their world. Words such as *intake* and *assessment*



Roger Rosales

were somewhat new to me. Then I held more interviews with the staff to further understand the billing system and how the data flowed through it.

After analyzing the past few years of the income statement, I realized revenues were the cause of the deterioration. What drives revenue up or down? One factor was simply the number of appointments and quality of those appointments. I developed a metric using the data and analyzed that metric by various categories. I discovered a few key trends, and the staff was able to capitalize on that new knowledge. In addition, the team now had a tool to manage a crucial part of the business.

The Customer Service Problem

In order to identify bottlenecks in any process, the entire process needs to be mapped. The process improvement expert, Marian, created a diagram for every step in the process. She then held interviews asking the time it took to complete each step. After creating the process map, Marian and I took a step back and analyzed where the bottlenecks were. We also identified if there were any inefficiencies in the process. Inefficiency costs any organization money and time. It is important to know where your inefficiencies are.

Lesson #2: Network outside the actuarial industry. Establish trust with the owners of the data.

THE DELIVERY

After all the analysis was complete, it was now time to communicate the results. A report was presented to the organization's leaders that included charts, data tables, process maps and a list of recommendations. The tool I developed was also left with the organization in order

for the leaders to refresh the analysis. The key recommendations included:

- Putting contingency plans in place if a client or the agency has to cancel the appointment
- Creating a new process to remind clients of their appointments following a weekend
- Adding a new program for drop-in appointments
- Creating new tools to help staff be more efficient when serving clients.

The communication of the findings and the recommendations is just as crucial as the analysis. Actuaries need to be able to communicate their technical analysis and get buy-in from the decision-makers. This is what the executive director had to say:

Roger and Marian's purpose was to analyze our service model to identify areas for improvement. I have been extremely impressed with the results of their work as well as their professionalism. They were successful in identifying several key areas for improvement as well as data points by which to measure against to ascertain our progress. We've already begun to see improvements in our model. Perhaps more importantly, Roger/Marian interacted with my staff in an extremely professional and effective manner. I am very grateful for the time and effort that they put into the project and I am only left with one regret—that it cannot continue.

Lesson #3: Continue to work on your communication skills to become an effective actuary.

MOVING FORWARD AND LESSONS LEARNED

It comes with great pleasure to announce that the organization's financial results have

greatly improved during the past few months. They are no longer seeing a deterioration but an increasing trend upward. For any actuaries out there looking to venture out into nontraditional roles, here are some key lessons:

- Review the Code of Conduct before committing to nontraditional actuarial work.
- Establish trust with the key decision-makers and the owners of the data.
- Hold those initial interviews to understand the needs of the situation.
- Self-regulate yourself on what you can do vs. calling on other experts to help you. Consider working in a group vs. just yourself.
- Simple metrics can go a long way and can be very effective.
- Actuaries are trained professionals, and our professionalism is a key strength.
- Understand the differences between a corporate, for-profit organization vs. a nonprofit organization. There is a different set of needs, but both types need to be financially sound.

Actuaries do have a unique skill set to offer our evolving, data-driven world. It is up to us to identify those opportunities and capitalize on them. Continue to build your actuarial brand, expand your network, and showcase what you as an actuary can do. I believe this will push our profession forward into new frontiers. ▣

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Letter From The President

MOST FREQUENTLY ASKED QUESTIONS

BY MARK J. FREEDMAN

DURING MY YEAR as president I have had the opportunity to talk with members at Society of Actuaries (SOA) meetings, at actuarial club meetings, and at their places of employment. I have also had the opportunity to meet with students and candidates at university events and at the SOA's Candidate Connect events. The most enjoyable part of these visits is when I stop talking and start listening to the questions that members, candidates and students ask me. I know many of you haven't had the opportunity to attend one of these events, and in this letter, I am offering my answers to the most common questions.

GENERAL INSURANCE

Students and candidates who might be interested in becoming general insurance (also known as property-casualty or non-life insurance) actuaries, invariably ask me, "Why should I take the SOA's General Insurance track instead of going through the Casualty Actuarial Society (CAS)?"

The answer is that the SOA's General Insurance track allows one to become a member of the SOA, which is the largest actuarial organization and offers one of the most valued actuarial designations in the world today. Being on the SOA track also gives candidates and members important flexibility at key points in their careers.

Previously, candidates have had to commit to studying general insurance as a specialty

at an earlier stage in their program or risk some time studying material that would not transfer between actuarial bodies. In the SOA's pathway, students can delay their specialization decision until they start taking fellowship exams. This is especially useful outside of North America, because there is not as large a distinction between the life and general insurance industries. It's an option that I find students understand and really appreciate when I explain it to them.

Also, the SOA's General Insurance track affords students the flexibility, later in their careers, to adjust areas of practice without having to take more exams to get a second credential. We all know actuaries who've shifted areas of practice over their careers as they've gained new experience, as new opportunities have come up, or as formerly "hot" topics have faded. For example, in the late 1970s, the advent of ERISA made becoming a defined benefit pension actuary an extremely popular choice. Today, defined-benefit pension plans are declining and many pension actuaries have transferred into other fields. It is quite conceivable that North American property-casualty insurers will consolidate more heavily in the future, lessening the demand for property-casualty actuaries. At that point, these actuaries might need to look for other opportunities. Those who hold the FSA will find it easier to shift practice areas in that type of circumstance. Both students and young actuaries appreciate the value of this option.

Many times students ask the follow-up question, "Will I be able to sign actuarial statements of opinion?"

There are really two distinct questions here, so the answer depends on whether the question is about (1) signing specific reserve opinions required by insurance regulators; or (2) signing statements of actuarial opinion relating to property-casualty practice, in general. I'll touch on each of these briefly.

- *Reserve opinions required by regulators.* The answer, today, is "no" in the United States (it varies in other countries). However, we are working through the proper channels in the United States and elsewhere to have our general insurance fellows recognized to sign such statements on the same footing as those who choose the CAS pathway. This is a very important effort and one we're very focused on. We're responding to requests made of us by the National Association of Insurance Commissioners (NAIC) and will provide any information they need for their assessment. We hope we can achieve their recognition soon.
- *Statements of actuarial opinion, in general.* You will be able to work on a variety of projects and, with relevant experience, you may become qualified to provide



Mark J. Freedman

and sign “statements of actuarial opinion” on property-casualty matters. For example, assume you become an FSA upon completion of the General Insurance track and are practicing in the United States. Then you must comply with the U.S. Qualification Standards. In that case, you will have satisfied the basic education requirement of the General Qualification Standard for issuing a statement of actuarial opinion on general insurance matters.

SOA members frequently ask me, “In order to get a critical mass of general insurance actuaries to volunteer for research and education, why doesn’t the SOA provide fellows of the CAS an FSA?”

In 2013, our board approved allowing associates and fellows of the CAS to become, respectively, associates and fellows of the SOA, and to waive certain examinations and other requirements toward membership in the SOA for those who have successfully passed substantially equivalent examinations or courses required by the Casualty Actuary Society. This opportunity is open until Dec. 31, 2015. We’re committed to building a global community of general insurance actuaries within the SOA. Working within the SOA—in addition to the other professional organizations to which they may belong—gives these members the opportunity to participate in the SOA’s research efforts, help create and drive professional development offerings, and help build the global actuarial profession and the general insurance specialty.

Currently, more than 75 individuals have taken advantage of this offer and we expect many more before the offer expires.

PUBLIC POLICY

Why is the SOA concentrating on public

policy when other organizations are already doing it?

As a member of the American Academy of Actuaries (the Academy), I am proud of the Academy’s public policy work. However, I am not so concerned with arbitrary boundaries and the political structure of our profession. I am sure that our employers and the public do not care about this either. All actuaries and all actuarial organizations can and must contribute.

The SOA’s strategic plan suggests that the SOA’s unique contribution is grounded in providing research and education, from a uniquely actuarial perspective, on the issues we face.

Then, there is a question about who will deliver our research to the public. The SOA is very interested in partnering with other actuarial organizations in productive, constructive and mutually helpful ways to

The most enjoyable part of these visits is when I stop talking and start listening to the questions that members, candidates and students ask me.

address these issues together. We do that already in our work with the Canadian Institute of Actuaries (CIA) to deliver research results in Canada and with the Academy in the United States.

A recent example is our study on the Canadian health care system. This was a joint research project between the SOA and the CIA. The report indicates that without significant government intervention, the health care system in its current form is not sustainable. We collaborated with the Canadian Institute of Actuaries in planning the project, selecting the researcher, overseeing the project, and

reviewing the final research report. The Canadian Institute of Actuaries took the lead in bringing the research to the Canadian media and policymakers. We received an excellent response to the work, including requests for further discussion from policymakers up to the provincial financial ministry level. Our collaboration resulted in timely, relevant research communicated effectively to the public policy decision makers. In my mind, that’s a prime example of what it means for a profession to serve the public interest. Another ongoing example is the work we do with Academy committees and task forces to deliver experience studies to the NAIC.

Sometimes, other organizations may not want to join us on a project for a variety of reasons. In those cases, we have an obligation not to leave good research “on the shelf.” An example of this is the SOA’s

independent, multidisciplinary Blue Ribbon Panel on Public Pension Plan Funding. The panel’s report has been very well received in the media, the profession, and by policymakers. We’ve made a significant contribution here and I’m very proud of the work that Bob Stein, the panel’s chair, and members of the panel did to prepare this report. It’s giving us what we had hoped for—a dialogue among public pension stakeholders that seek to improve public pension plan funding practices.

BUSINESS SKILLS

A question many employers of actuaries ask

me is, “What is the SOA doing to promote more business acumen for actuaries?”

First, communication skills are an integral part of the Fundamentals of Actuarial Practice and Decision Making and Communication modules as well as the Fellowship Admissions Course. In Fundamentals of Actuarial Practice, candidates have several assessments that require well-written memos. In Decision Making and Communication, there are instructions in several types of communication. Finally, at the Fellowship Admissions Course, candidates receive instruction on oral presentations and make a presentation.

Second, the SOA offers a range of online courses through “BizLibrary,” where members and candidates can take advantage of online coursework for continuing education in business skills including leadership, communication and management.

Third, the SOA just launched the Professionalism Ready-To-Go Workshop Kit. The kit includes a facilitator guide for actuaries and all of the materials needed to hold a professionalism workshop in-house.

Fourth, the SOA offers assorted general business type topics in all of its large meetings. While our technical sessions continue to be the most popular sessions at most meetings, many members are attending the business skills sessions as well and gaining valuable training.

INTERNATIONAL

Many members, especially those outside of North America, ask me: “What is the SOA doing on the international front?”

In 1988, the SOA launched a project with Nankai University to address the shortage of qualified actuaries in mainland China.

Now, there are many SOA members there as well as those in Hong Kong, Taiwan, Korea, Thailand, Malaysia and Singapore. We’re working this year to review and further refine our work with our members and candidates in China, to be sure we’re providing them with the services they need and deserve.

The SOA is recognizing the economic growth impacting the insurance industry and the resulting increased demand for actuarial services by working to reframe our relationships in Asia. Part of that work is strengthening the SOA relationship with the International Actuarial Association. A strong and vital International Actuarial Association is critically important to the actuarial professional today due to the relationships it is building with supranational organizations like the International Association of Insurance Supervisors and the assistance the International Actuarial Association provides to small national actuarial associations.

I have traveled to Asia this year to visit students, members and employers across the region. I visited a few universities and participated in a meeting of Actuarial Society of Hong Kong members. I presented at the fourth annual SOA Asia Pacific Symposium and at the Joint Regional Seminar held throughout Asia and sponsored by the SOA, Institute of Actuaries of Australia and the Institute and Faculty of Actuaries. I plan to participate in the East Asian Actuarial Conference in Taipei this fall.

EXAMS

Exams are always top of mind when talking with students. It is something they all have in common with each other and, of course, with SOA members. They aren’t too young to want to start trading “war stories.” The question they often ask is, “What was your most difficult exam experience?”

My worst exam experience was when I took Part 7. I had just recently moved into my own apartment, but the SOA still had my parents’ address, since I figured my parents would get the mail faster while I was working. I coached my parents incessantly about what to do when the results came. I said that when I pick up the phone, they should not “chit chat,” but just say “8” or “2”—whatever my score was. They said they understood. I even made them practice time and time again.

One day at the office, I picked up my phone and said “Mark Freedman.” My dad said, “Hi. How are you doing?” I was already mad at him, since he never called me at work to chat. I asked, “What do you have to tell me?” He said, “I have good news and bad news.” “What’s the bad news?” I asked. He said, “You didn’t pass.” I replied harshly, “What’s the good news?” He said, “You got a 5.” I hung up the phone and was angry at my dad for about a week. For my next exam, I changed my mailing address!

CONCLUSION

I will continue to travel and meet members, candidates and students and look forward to seeing some of you. In the meantime, if you have questions please contact me at mfreedman@soa.org. 

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WHAT IS *Leader* SHIP

and Why Do People Pursue It?

The answer to this question can be very personal and wide-ranging. The author contends that leadership is the collection and use of positive influence. What do you think? **By Nick Allen**

*H*ave you ever stopped and thought about what leadership is, and what it means to have it? I've pondered those questions myself and found the concept difficult to grasp. The problem is that leadership is neither a milestone nor an endgame. It is one path out of several possible paths in the journey that defines your career. With each passing choice during your

career, the results of that choice will inherently affect the level of leadership you have chosen to cumulatively pursue. If you make noble decisions that positively affect your organization's results, the perception of your ability to lead increases. If you make a decision using unethical means, the perception of your leadership abilities may decrease, even if your company's results were positive.





Given some of these assertions, my pursuit of answers on leadership led me further down the road to another important question: Why do people pursue leadership? The answer to that question can be very personal and wide-ranging. For some, being a leader is a means to getting a higher paycheck. For others, manifestations of leadership opportunities satisfy an internal need to maintain control. Others, like a group of people who have studied independently

enthusiastic, hard-working actuary who wants to do well at work the right way but facing a few hurdles. Here are a few tips to help you in your pursuit of maintaining integrity, quality work and enthusiasm:

- If you are an honest person and you find yourself not acting with integrity: Ask yourself who you are surrounded by and how they affect your judgment.

Why do people pursue leadership? The answer to that question can be very personal and wide-ranging.

for a series of examinations that takes years to complete, may simply be seeking endorsement and recognition for their hard work and dedication (know anyone?). For most, it may be a combination of all these things. Through this last line of questioning, though, I realized that the answer is irrelevant. Whatever it is that an upward-thinking, career-minded person is seeking, leadership is the answer. I concluded with a very simple thought that encapsulates what leadership is and why we pursue it: *Leadership is the collection and use of positive influence.* I believe that an actuary who seeks an honest living with accountability, responsibility and a bit of dough, should live by this definition from this point forward.

THE THREE FUNDAMENTALS OF LEADERSHIP

If you're still reading this article, I'm assuming you are a high-integrity,

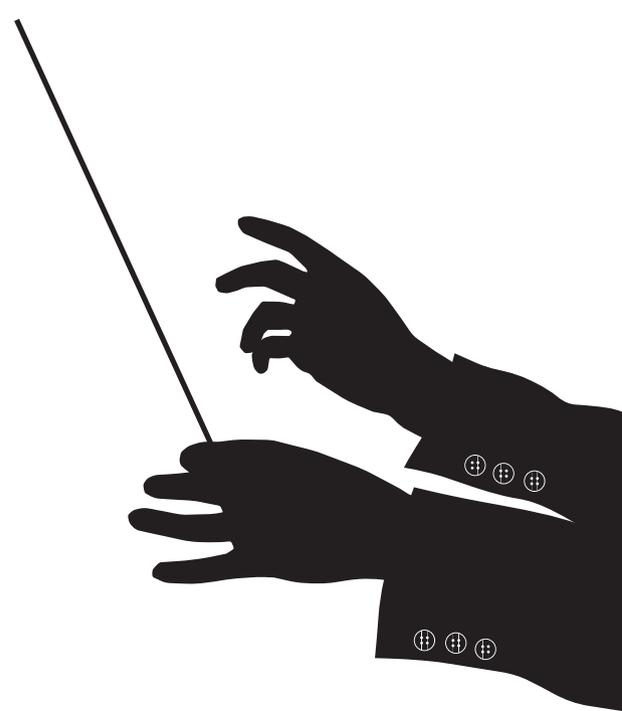
- If you are technically strong, but find you're not producing high-quality work: Be honest with yourself on whether your job is too easy (being bored makes for sloppy work) or too hard.
- If you are an enthusiastic person but find you are not exactly happy-go-lucky at work these days: There may be something at your job bothering you ... a manager, the subject matter, etc. Isolate what it is that's steering you away from your naturally happy state and change it.

I have been in a couple of situations where my job was under my skill level, and it made me miserable. "This job stinks" was my favorite thing to say when I sat down at my desk at 8:30 a.m. I later learned that the problem was not the job—it was me. It was the equivalent of reading middle school books at a college reading level, and

I didn't have the guts to stand up and say that I needed to be intellectually stretched in order to be stimulated. Employers are not mind readers, and while they have an obligation and interest to get the most out of you, they cannot do so if you do not let them know what you're capable of. If you share your capabilities with your employer but nothing is done to support you, then it may be time to move on to another job or company. That requires guts too, but is part of the leadership path when we continue to define it as the collection and maintenance of influence. Almost everybody has to cross this bridge at some point in their careers, but rest assured that leaving your employer for those types of reasons is neither shameful nor a display of disloyalty. If employers fail to do their part in showing loyalty to the employee by failing to develop the employee's career, the loyalty bonds cease to exist.

How does one nurture the opportunity to grow within a new role? First, get off on

the right foot. People tend to charge into new roles with every intention of bringing with them lessons from past jobs, and loads of well-intentioned ideas on how to make things better; but it's important to remember that some of the lessons you are bringing with you are universal, and some will be exclusive to your prior role. I'm talking about the powerful inertia of culture. Here's an example: You may come from an organization that is politically charged and requires a certain ballet of words and actions in order to get things done. Your new environment could be full of straight shooters, and if you use your lessons on how to take action using a political mindset, you could come off as shrewd or disingenuous. In the opposite scenario, going from a world of straight talk into a political den, you could come off as brash or insensitive. Remember that if you have good ideas, they aren't going anywhere. Personally, I learned it was important to allow myself time to acclimate to new surroundings. Leadership is about playing the long game. It could



Being a Leader

BE CONFIDENT. You are an actuary. You are known for being a subject matter expert. Even if you simply meet basic expectations, you will be fulfilling the needs of your organization, and that's valuable. Imagine the possibilities if you're always bringing your A-game.

BE COOL. It's best to stay even-keeled at work. Your employees are going to make mistakes, so you might as well prepare yourself for that. Be confident in knowing that the things you can control are under control. The things you can't control aren't worth the frustration.

BE HONEST. Not everyone likes the truth, but everyone respects it. Nobody respects liars or half-truthers, and the dark side of those folks is most visible when they are trying to sell ideas that are self-serving. Own the flaws in your ideas rather than covering them up.



take a year to gain an understanding of how human and intellectual capital transactions are carried out in a new organization, and I certainly needed that year. If you play poker, it's called "slow-playing" your hand. If you have a huge poker hand and you slow-play it until the end of the game, you'll maximize the pot and your winnings. This same strategy gives you time to find out the state of your workplace culture and how you can operate within it to make your ideas become realities. Move too quickly, and you risk creating cultural shock waves that could end in you being ostracized. Don't change your personality, just adapt to your surroundings.

DEVELOPING LEADERSHIP QUALITIES

Adapting to your surroundings is a leadership tenet that transcends organizations, career types and even time.

I asked friends who have been working 20 years or longer about how the principles and responsibilities of being a leader have changed since they became leaders. Based on those conversations, I think the qualities of people ascending into leadership positions have stayed overwhelmingly similar; the responsibilities changed.

Preferred leaders are fun to work for, are talented salespeople, and are groomed for leadership over time—qualities that still hold true today. Whereas the absolute focus in leadership from 25 years ago may have been organizational growth, now the focus has shifted for many toward administrative business (reporting, compliance, operations, etc.), as well as growth requirements.

Having fun at work is about seeing your ideas blossom, growing as a contributor, closing on deals, and supporting your individual goals, as well as the goals of your

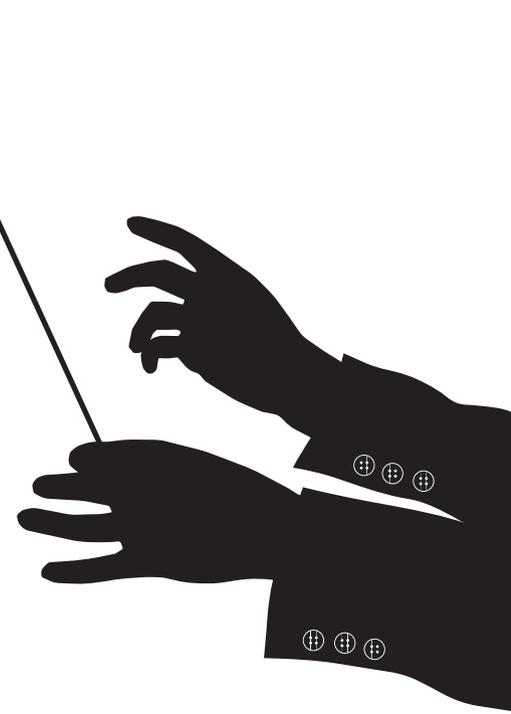
team and organization. If you can help your team members realize those same results, you will find your employees having much more fun at work. It's human nature to enjoy **WINNING**—winning business, winning recognition, winning responsibility. If you want to celebrate successes, use the ideas of your capable team members, and give them credit for it with the career or financial incentives they deserve. We always hear about people with staffing responsibilities who don't do enough to reward their teams for quality work. Lots of employees respect their managers as good-hearted folks, but do not respect them as leaders because they appear to be either afraid to go to bat for their high performers, or don't know how to. It takes guts to assert your influence and boost your team. Those conversations at review time aren't easy, but it's the path of leadership. If you aren't willing to talk hard truths with your manager and/or team members, you will quickly find that your team will not be willing to work with you to achieve your common goals. In short, mutual respect and esteem will get your teams to do what you want them to do (and vice versa) in the long and short term, and will act as a catalyst for trust and team building.

Another key quality is sales talent, and it is not necessarily a reference to how well you can sell products to your clients or customers. More often, it is an allusion to how well you can sell ideas within your workspace, specifically to those with decision-making authority. We know it's important to slow-play your ideas in a new business unit, but what about when you have been at the same place for a long time? When I was a little younger, I craved attention when I had a big idea. The problem was that my ideas tended to venture outside the scope of my job and into the interests of other business units. It's not truly a flaw because a good idea is a good

idea, whether or not it affects your direct business unit. The only caveat is it limited my ability to stay focused on responsibilities in my wheelhouse. I then learned to ask myself, “What am I going to do with this idea that would positively affect my business, but that I couldn’t do by myself because of the sheer scope of it, all while trying to avoid stepping on anyone’s toes?” The answer was simple: Get managerial buy-in. It’s a tricky process, but when I discussed this issue with an influential prior manager of mine, he advised me to find out the needs of my manager and his manager. If you know what their needs are, you can build your ideas in the context of those goals. It’s such an obvious answer that the needs of the organization go beyond my own. At that point, I had gotten by on a “me-first” mentality whereupon if I did well

of that idea, leadership is a step effortlessly taken, and more responsibility follows.

Finally, there’s readiness. I think readiness is a function of how well you can be fun and sell ideas. As you were (or are) taking your exams, you will become experts in your area of practice. We have all had leaders or managers with a depth of expertise that we have been in absolute awe over. If you step back and look at those leaders, which of them moved on to highly coveted roles, and what do they have in common? Friends, there are very few of those coveted roles, and I can tell you that the vast majority of them are filled by people who have a diverse personal portfolio of expertise. In other words, if you want one of those top spots, avoid being typecast. At the highest levels of leadership, especially in nontraditional



Ideas and creativity promote growth, and if you remain tied to the sale of that idea, leadership is a step effortlessly taken ...

at my job then I should be given what I need to continue succeeding. Now there is not an idea that I come up with that I don’t first ask myself if it fits in with my leaders’ big picture. If it fits well, I push the idea hard. And if the idea gets shut down, it’s because of reasons or circumstances I wasn’t aware of or have no control over, and that’s OK. The more ideas you have that fit into your managers’ plan, the more influence you will gain, and the more leniencies you will have on ideas that are slightly off topic. If your idea is way out there relative to where your leaders are standing, pass it on to someone you trust to do it well, and move on. Ideas and creativity promote growth, and if you remain tied to the sale

actuarial roles or in organizations that do not have many actuaries, it is easy for the people around you to get put into a box as a pricing or reserving actuary, which limits you to projects of a narrow actuarial scope. I’m not saying you can’t make a career out of having extraordinarily deep expertise in one area of actuarial practice, but we’re talking about leadership here. Making decisions at the highest levels of leadership requires broad thinking, and you will quickly limit your peak if you limit your scope. Here are a few suggestions for developing readiness:

- If available at your organization, take advantage of a rotation program, and



make sure to include nontraditional actuarial roles.

- Never turn down a project that is within your ethical standards for taking on. Each project and customer internal or external is different, and situational thinking will develop your choice-making abilities. Remember, leadership is a series of choices, so having the opportunity to make more of them will only hone your craft.
- Lastly, stretch your capacity. If you love your job, put some extra time in. Find out how you can manage a staff of employees if that's something you're interested in. Write an article or a research paper, volunteer for your trade organization, and go to networking events.

I don't think I'll be surprising anybody when I say the bigger typecast problem actuaries have is our stereotypical image: anti-social, math geek, etc. So what does it say about you when you are out defeating your own stereotypes? People at work introduce me to others as "the actuary who can talk to people" all the time, and I'm comfortable with that. If you have a sense of humor, you'll see this is an extraordinary compliment from a person who sees you above the stereotypes—you're winning the battle!

We talked about my three fundamentals of leadership: integrity, quality work and enthusiasm, and how to assess yourself within those fundamentals. You should be operating within those concepts on a daily basis, and if not, I would strongly encourage you to change something about the position you are in. Actuaries whose day-to-day lives run counter to those fundamentals risk having careers that are toxic, dangerous,

and maybe unidentifiable within five years. We also discussed the qualities that great leaders have, and how you can exercise your mind into improving those qualities and your decision-making abilities. Strong fundamentals lead to good decision-making. Good decision-making leads to better projects. Better projects open the door to your good ideas. When you discover how those ideas can fit into the big picture of your leaders, your good ideas get realized, and you have gained influence. When you have influence, you can use it to make positive changes within your organization by getting your team on board and empowering them to contribute meaningfully. Remember to not confuse influence with manipulation. Project opportunities will reoccur and become more diverse—remember to say **"YES!"** to these opportunities. Above all, elevate the team above each individual contributor, including you. Doing so will allow you to focus on developing valuable ideas for your organization and not waste time "finding" leadership. If you are making honorable choices that create wins and uplift your team members, leadership will come to you. ■

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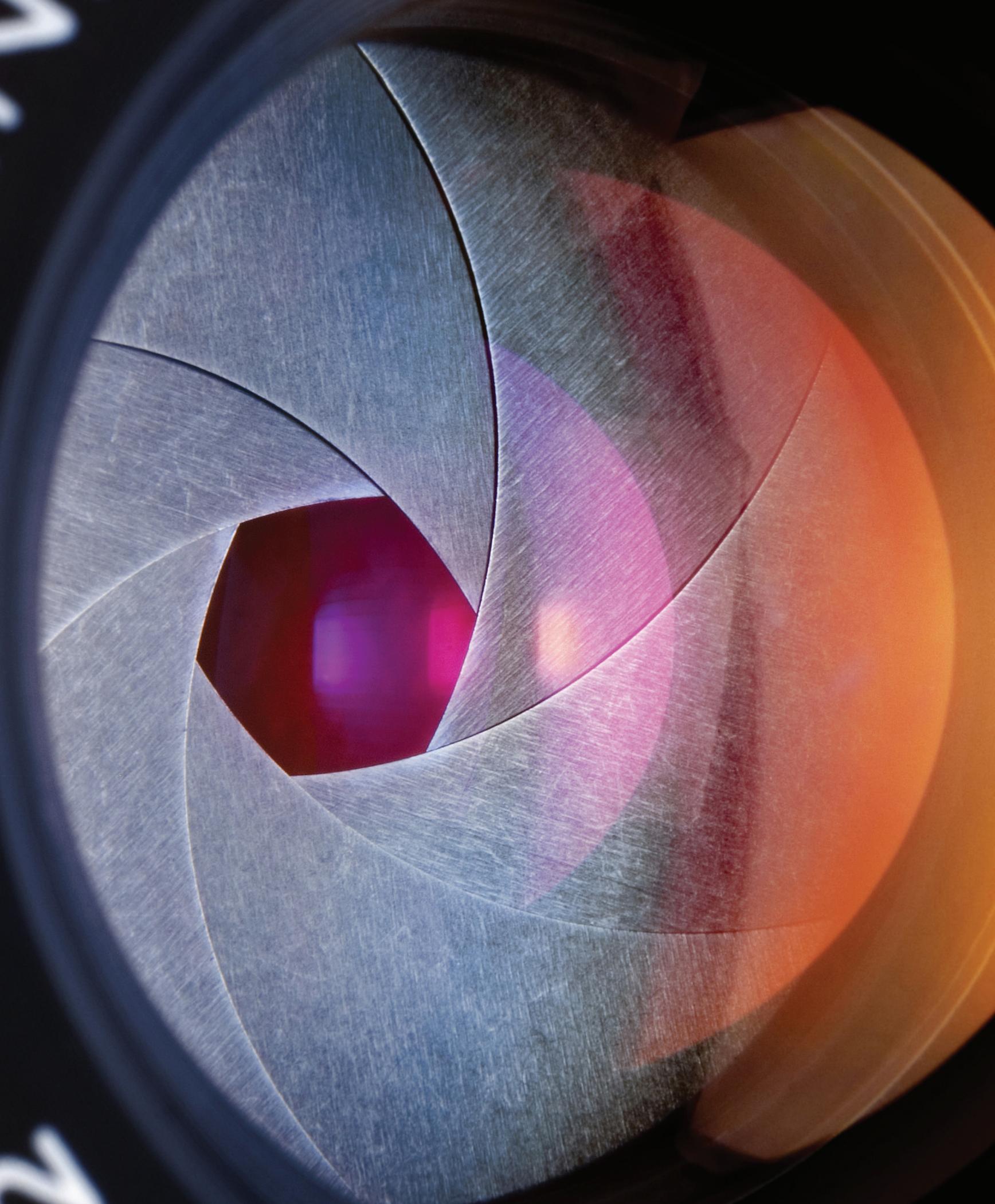
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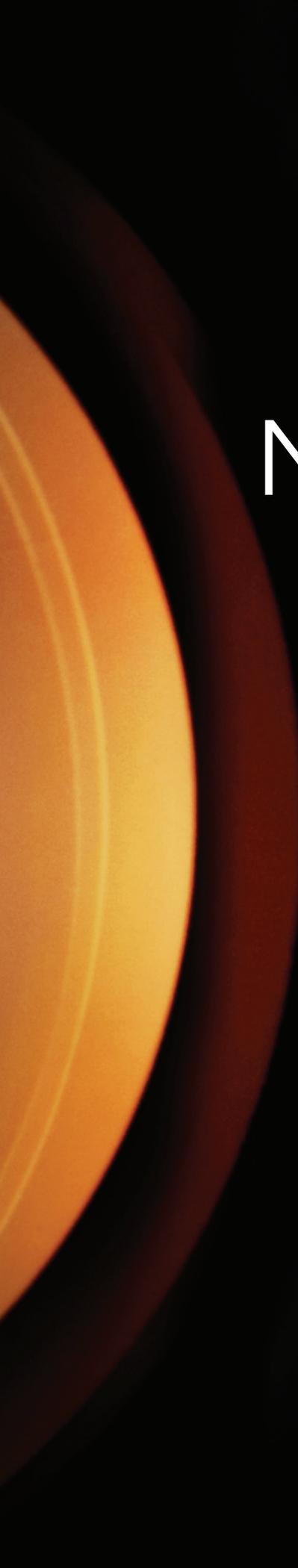
His
quality of life



Who will provide the healthcare that our ageing populations need, and the quality of life they expect? You know the issues better than the back of your own, elegantly ageing hand. And so do we. For example, right now in the US we're working with clients to combine their expert market knowledge with our risk assessment capabilities. The result? Affordable private insurance that will not only provide retirees with comprehensive medical cover for the rest of their lives – but peace of mind for everyone concerned. Especially him. **We're smarter together.**

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WHAT IS THE SCOPE OF MODEL VALIDATION?

The first thing that comes to mind when one thinks about validating a model is whether the coding is correct. But what are the other important parts that should be included in the scope of model validation? By Jim McClure



What is the first thing that comes to mind when you think about validating a model?

work for a European company with a U.S. Life and Annuity division, which means we fall under the requirements of Solvency II (SII) and its model validation requirements. Our company has taken this requirement and expanded it to all our models, not just the ones specifically targeted for SII. That means in addition to our economic capital and market-consistent embedded value models, we are validating models for pricing, valuation and hedging, to name a few.

What is the first thing that comes to mind when you think about validating a model? Most people think about whether the coding in the model is correct. Some of the questions one needs to answer include:

- Does the code meet requirements set by any regulatory authority?
- Does the code follow best practices?
- Can the code/results be replicated in Excel or other software packages to ensure confidence?
- Are there limitations in the code? A short example is introducing simplifying code due to long run time.
- Does testing include stress and unit testing?
- Does the portion of model require static or dynamic validation?

These bullet points are just a taste of all the questions that should be asked as part of reviewing the *application code*.

Other than the code, what are other important parts that should be in the scope of model validation? Clearly *assumptions* are an important part of any model. How the products/plan codes are mapped in the model is equally important for achieving

efficient and reasonable results. I will refer to that as *plan code mapping* henceforth. Given that you mapped plan codes, are the *product features* coded in the model correctly? Lastly, one of the key items that many actuaries overlook is *controls* on the model.

ASSUMPTIONS

What are we concerned about with assumptions? The assumptions in the model need to be loaded or input correctly. The assumptions should be reviewed for datedness. Has an experience study been completed in the last couple of years? If not, the validation should point this out.

Larger companies may have dedicated staff that complete experience studies to develop assumptions. Assumptions should be reviewed and formally approved by some type of committee; we refer to ours as the Underwriting Committee. Some assumptions will lack credible experience, so expert judgment among the committee members is essential.

PLAN CODE MAPPING

Plan code mapping is a part of modeling where the model developer is attempting to speed up run time, and does this by mapping similar administration plan codes to a single model plan. Here is a sample of some of the questions to expect from a model validation reviewer:

- Are product features preserved by the mapping?
- Is the mapping periodically reviewed? Sometimes modelers map a new plan code to older plans until sales hit a threshold to justify coding an additional model plan. Is there tracking in place to alert the modeler



when the threshold has been met?

- If modeling assets, is the asset mapping reviewed with the same vigor as plan code mapping?

PRODUCT FEATURES

Review of the product features is crucial to confirm your model is representing some form of reality of how products actually work. When looking at product features it is important to consider policyholder behavior as well. Some of the questions that should be asked are:

- Is there an understanding of what product features are not modeled? Why?
- Are simplifications in the model for features documented?
- Does the model cover features in the products like guarantees?
- For annuities with guarantees, there should be testing of in- and out-of-the-moneyness.

It is important to have organized folders that store all the policy contracts and other material for easy reference. In addition, it can be very helpful to create a matrix of benefits and policy features that lay out the differences between variations of policies. This matrix can also be referenced for plan code mapping when mapping state variations to the standard policy.

CONTROLS

Some models are used for financial results and fall under Sarbanes-Oxley (SOX) or Model Audit Rule (MAR), and likely have the needed controls in place. For other models like pricing and hedging, most of the time controls are overlooked. What kind of controls should be in place?

- Is data accurate going in and coming out of the model?
- Is access to models limited to the appropriate people?
- Are results independently reviewed? (separation of doer vs. reviewer)

Replicating
the model in
a spreadsheet
is another
great piece of
documentation
to save.

- Is there a model change management process in place?

This is just a short list of controls that should be in place. Controls should be periodically reviewed. As your business grows or retracts, some new controls are needed, and some become stale and can be retired.

From my actuarial audit background I cannot stress enough the importance of creating a process map. Taking the process map to a sit-down with internal audit and/or risk team (second line of defense at some companies) can be beneficial in locating control gaps.

In the end the scope of model validation should include:

1. Application code
2. Assumptions
3. Plan code mapping
4. Products features
5. Controls.

Now that I have described the scope of model validation, where should one begin validating the model?

Let's walk through an example model and cover the five sections of model validation. My example is just a generic valuation model that could be for annuities, life or health insurance. Starting with *application code* you have to determine where your model starts and ends. For a valuation model you start with assimilating administrative system data, loading into valuation modeling software, running valuation, and summarizing the results in a spreadsheet where the final report or result is summarized. In a process like this,

I would consider it a must to review the code from end to end. A helpful tip: Start by drawing a process map. See page 27 for a process map for a generic valuation model in the suppliers, inputs, process, outputs and customers (SIPOC) format auditors are familiar with. The process map will help for two purposes. One, you can make sure you cover the whole model in your validation. It is very easy to overlook inputs to your model other than the in-force data. Secondly, it is a great piece of documentation for you, for the validation file, and for auditors. For the coding that pulls data from an administration system you may use an IT specialist or actuarial programmer to review the program coding for pulling in-force data from these systems. Next, the most significant part of the application code review would be in the model itself. To do this type of analysis, a validator either reviews all the coding in the model manually or, better yet, replicates the model in a spreadsheet. If using a spreadsheet, you will have to break complicated models into manageable pieces to test. Replicating the model in a spreadsheet is another great piece of documentation to save.

What types of testing should be considered? Below is a series of testing that is common for testing actuarial models.

- **Unit testing**—Testing code at a policy or cell level. A model reviewer completes this testing before running larger product groups, legal entities or full blocks. One example is testing a formula that uses in-the-moneyness to determine utilization of a benefit for valuation. When a policy is in the money does it actually exercise the benefit successfully and accurately?

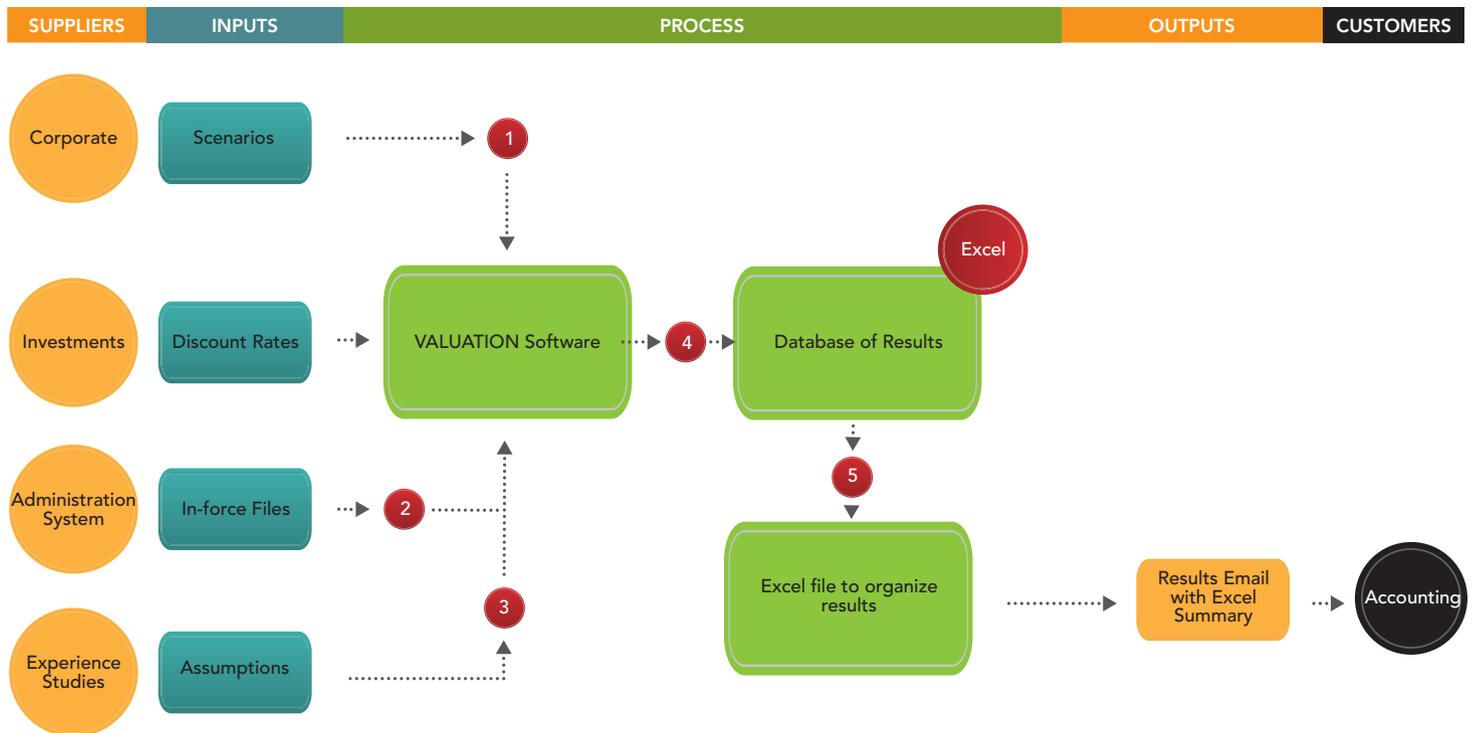


- **Regression testing**—Usually completed after unit testing, consists of running larger product groups, legal entities, or full blocks of business. Test to make sure the results are in expected reasonable ranges. A common mistake is to not have set prior expectations for reasonableness before running and reviewing the results.
- **Static validation**—A comparison of the in-force produced by the model at the time of valuation against the actual in-force for the modeled plans at that same date. Some of the items to check include number of policies, cash values, account values, premiums, face amounts, etc. A

preferred source for control reports is from the administration system. An alternative source for actuals could be obtained from your accounting area from what they use as control reports.

- **Sensitivity testing**—In the valuation model example, if you run a sensitivity on interest rates rising/falling 100 basis points in a single year, do the results still look reasonable? This is a typical example of sensitivity testing. Other sensitivity examples are having mortality swings 5 percent up/down, lapse rates up/down 10 percent, and the market movements are up/down 20 percent. It is recommended to combine sensitivities as well. If the market

Valuation Model Process Map



CONTROLS:

1. Review scenarios, complete battery of tests on new scenarios.
2. Check policy count, account value/face amount, against administration. System control reports.
3. Confirm experience study report results on new/updated assumptions are in model correctly.
4. Check results by legal entity and compare to prior quarter for reasonableness. (consider direction and magnitude of change)
5. Check policy count, account value, face amount, whatever makes you comfortable that all policies/blocks of business are covered against system control reports.



drops 20 percent, also try the lapses moving in an inverse relationship and increase 20 percent. Combinations of sensitivities should make sense with what happens in reality.

- **Stress testing**—Some actuaries call this trying to break the model using extreme assumptions or scenarios. An example is running the valuation model with 0 percent lapses and 100 percent lapses. Do the results seem reasonable, or do you get unfathomable returns? The logic behind this type of testing is if the model still produces reasonable results for extreme cases, the model will likely produce reasonable results for all the variations between the extreme stress points.
- **Back testing**—I have seen many definitions of back testing, but I prefer the one where you load in actual current experience for assumptions, re-run a prior period model and see if

the projections match current period actuals. Some refer to this as dynamic validation interchangeably.

Most models have some sort of coding simplifications. An example for modeling annuities: In current modeling software it may be prohibitive to implement stochastic-on-stochastic modeling for hedging assets/liabilities. To test this you may have to let the model run the real stochastic-on-stochastic scenarios for a week or more and compare results to your hedging simplifications. Validating a simplification comes down to the materiality of the difference versus the time constraints to report results. Let's say you are doing valuation work and it takes a week to run a model. You find an error and it takes another week to run your model; you are obviously not going to meet reporting deadlines. It is not wrong to have simplifications in your model, as long as you understand the materiality of the



difference from coding perfectly. It is not acceptable to have simplifications and not have any inkling if they are reasonable. You will find actuarial judgment is a key part of this analysis.

How should an actuary go about reviewing *assumptions*? First, the actuary should check the assumptions for reasonableness. The actuary could compare the company assumption versus Society of Actuaries studies. If the company takes part in surveys, the survey results are generally shared. Some of these surveys develop industry assumptions by compiling studies across companies. This is a good basis to use for reasonableness checks of assumptions. Second, actuaries can review the experience studies themselves. If you have a dedicated staff working on experience studies, scheduling a walk-through of the process to perform the study can build confidence that the resulting assumptions are adequate to use. Sometimes, though, you may find that the studies may not have enough credibility, and you may find that you have to use more actuarial judgment on the reasonableness on the blending of company experience with industry experience. I cannot stress enough the importance of validating the credibility behind your assumptions. Be sure to ask questions of the experience study staff when assumptions change drastically from study to study. There can be other influences at work that drive assumption changes. For example, the swing in the economy can affect lapse rates in a material way. You may have to suggest revamping an assumption structure to make assumptions dynamic. This is especially important when you run thousands of

scenarios through a model and the effects of the interplay between assumptions and scenarios can produce unexpected, extreme results. For example, dynamic lapse assumptions can be formulaic to adjust to inputs from scenarios, like market movements in the S&P or bond markets. In our valuation example, a reviewer should check the assumption tables that are input in the process map to the model against the assumptions produced in the experience study reports that were approved for use.

The best way I have found to test *plan code* mapping is to view all the plans in a spreadsheet and create a mapping grid. You can quickly tell how all your administration plan codes align with the modeled plan codes. Then load in all the specifications for the products and make sure that the mapping makes sense. In another annuity example, you want to check that return-of-premium (ROP) riders are mapped to other similar plans with the same or similar ROP design. Mapping a product with an ROP to a product with a nursing home rider or any other unrelated benefit rider would obviously be wrong and you would visibly see that in the grid created. Be sure to include the amount of account value for annuities, or premium/face amount for life products with each administrative plan code. This will be used not only for checking the size of the plan mapping, but also as a control to confirm all account value is mapped within the model. It is common to map new plan codes to other similar plan codes in your model. Be careful—once the new plan grows to a substantial size, it may no longer be a nice simplification, but a material risk difference. It can look pretty silly when

How should an actuary go about reviewing assumptions? First, the actuary should check the assumptions for reasonableness.



Checklists Can Be A Plus

Says Atul Gawande in his book, *The Checklist Manifesto*, “The Contribution of a checklist is not the checklist itself but the discipline that the checklist brings to the management of any operation.” Read Jay Jaffe’s book review in the April/May 2014 issue of *The Actuary* at SOA.org/actuarmag/.

you are mapping a plan with more account value than the plan you are mapping into. A good practice is to have a quarterly production report to use to track the growth of new plans. Once the new plans hit a threshold for material size, then it makes sense to code the model plan code in the model.

To review the *product features* it is really helpful to have the product specifications. Working with the actuarial pricing team or representatives from the administrative system teams can save lots of time gathering the product information. If you are lucky enough, someone may have a product grid that lines product families together, which can really expedite your review. Otherwise, you may have to get samples of all the policy contracts. Take advantage of the plan code mapping grid mentioned earlier to include the product features; it will keep the product information organized. Then start testing the product features beginning with the larger plan codes by premium or account value.

A third use of the process map is to review where all the *controls* are, or in some cases are not, in the model process. There should be control points at the beginning of the process when pulling the data from the administration system, at the point they are loaded into the model, and when the output

leaves the model. Items like policy counts, account value, face amount and premium should match exactly at each control point. Other controls should be in place for checking the reasonableness of results. In the process map on page 27, the red circles represent controls. At the bottom of the map there is a description of each control. For some products, if the market goes down, the reserve goes down in a similar manner. A quarter-over-quarter trend control should be in place to monitor the model for inconsistent trends in results. When I was a valuation actuary I liked having rule-of-thumb ranges. If the relationship between the market change and the reserve change is in the rule-of-thumb range, then control earns a success; otherwise a fail. Failures then require investigation of the model for potential errors.

After reviewing your model for all these sections (and making any fixes), a model change process should be in place to ensure the integrity of your model going forward. An article on model change processes and best practices sounds like a good idea for a follow-up article. **A**

Jim McClure, FSA, MAAA, is manager, Model Valuation, at Transamerica Capital Management. He can be reached at Jim.McClure@transamerica.com.

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CAE PROGRAM PROMOTES ACTUARIAL KNOWLEDGE AND INFLUENCE IN ACADEMIA

BY PEGGY L. HAUSER

ARE YOU FAMILIAR with the Society of Actuaries' (SOA's) Centers of Actuarial Excellence (CAE) program, a university actuarial science program that has met rigorous criteria? I had the opportunity

to chair a task force last year that was asked to analyze the CAE program and recommend to the SOA board of directors a path forward for the program. We briefed the board about the initial CAE program development and its experience to date. We surveyed the academic community (both CAE and non-CAE schools) and CAE volunteers. We found that the CAE program has been very successful and want to spread the word to other members of the SOA.

Schools must meet eight criteria to be awarded the CAE designation; four criteria are quantitative and four criteria are qualitative.

to chair a task force last year that was asked to analyze the CAE program and recommend to the SOA board of directors a path forward for the program. We briefed the board about the initial CAE program development and its experience to date. We surveyed the academic community (both CAE and non-CAE schools) and CAE volunteers. We found that the CAE program has been very successful and want to spread the word to other members of the SOA.

The board established the CAE program in October 2008, along with CAE grants for education and research, and a Ph.D.

stipend program (which was later renamed the James C. Hickman Scholar program). The final touches were put on the CAE program in early 2009 and the first CAE application cycle took place in fall 2009.

When the board voted to implement the CAE program it was part of a package of goals that included the following:

- Strengthen the role of academia within the actuarial profession
- Facilitate research that advances the profession
- Foster tighter relationships between academia and business community
- Create and support Centers of Actuarial Excellence.

Six application cycles have taken place since fall 2009. Twenty-five schools have

been designated Centers of Actuarial Excellence: 15 schools in the United States, eight in Canada, and two in Hong Kong. Currently these are the only countries in which the CAE designation is available.

Schools must meet eight criteria to be awarded the CAE designation; four criteria are quantitative and four criteria are qualitative. The quantitative criteria touch on a distinct major, sufficient curriculum coverage, graduate counts and faculty composition. The qualitative criteria evaluate the quality of graduates, integration with business, connection to industry, and research.

BENEFITS OF BEING A CENTER OF ACTUARIAL EXCELLENCE

Enhanced Recruiting and Elevated Program Status

Overall, CAE schools are very positive about the CAE program and its benefits. Ninety-two percent of the schools indicated that the award of CAE status had been somewhat or very beneficial to their program. Schools cited the greatest benefits of the designation



Peggy L. Hauser

As a university outside North America, the main benefit of being a CAE is to show to my university that my actuarial programme is up to world standards.

Increased our credibility and leverage with the administration and led directly to the creation of a new tenure-track position that would not have been created, or would have been created only many years later.

The CAE designation has been recognized by the rest of the university community as a clear affirmation of the quality of our program. We are often referred to as the “diamond” of the business school programs.

to be improvements in attracting students and employers to their program and strengthening the status of their program within the university, including securing additional faculty positions.

Although perhaps not completely driven by the CAE program, actuarial science programs have grown since 2009. Not only CAE schools but also non-CAE schools have reported increases in enrollment (91 percent of CAE schools and 94 percent of non-CAE schools with an actuarial science program). One survey comment describes the impact of the CAE designation on its enrollments.

It has helped us to attract more and better quality students. As our university is a private and small one, CAE seems to have helped us to attract good students and also to place our juniors in internships.

CAE schools reported that they derived positive effects from the criteria they satisfied to be designated as a CAE. The CAE criteria helped them both to maintain their program standards and to encourage further program development. One of the original goals of the CAE program was to improve the standing of actuarial science within university programs, and it appears CAE has succeeded on this front, based on comments from the survey:

Provided a stamp of excellence to the program. Assured internal and external parties that we have an excellent program at [U.S. CAE university]. An excellent selling point internally when the actuarial program has to ask for funding for things like staffing; externally when seeking students and donations from outside companies. Overall provided a pride to the department and the college.

CAE GRANT AWARD HISTORY (2010-2013)

YEAR	PROPOSAL TITLE	SCHOOL	GRANT TYPE
2010	Technology Enhanced Learning in Actuarial Science Classes	University of Wisconsin–Madison	Education
	Improving the Risk Models of Financial Institutions	Georgia State University	Research
2011	Multi-faceted Study of Risk Management for Insurance	The University of Iowa	Research
	Integrated Risk Management in a Changing World with Applications to Insurance Enterprises	University of Waterloo	Research
2012	Industry Partnership Program at University of Michigan	University of Michigan–Ann Arbor	Education
	Actuarial and Econometric Analyses of Systemic Risk in the Insurance Industry	Temple University	Research
2013	Actuarial Study of Dependent Risks: Analysis and Applications	The University of Hong Kong	Research
	An Undergraduate Research Program in Risk and Actuarial Science	University of Illinois–Urbana-Champaign	Education

Centers of Actuarial Excellence

- Chinese University of Hong Kong
- Concordia University
- Drake University
- Georgia State University
- Illinois State University
- Pennsylvania State University
- Robert Morris University
- Simon Fraser University
- St. John's University
- Towson University
- Temple University
- Université Laval
- Université du Québec à Montréal
- University of Connecticut
- The University of Hong Kong
- The University of Iowa
- University of Illinois at Urbana-Champaign
- University of Manitoba
- University of Michigan
- University of Nebraska–Lincoln
- University of St. Thomas
- University of Toronto
- University of Waterloo
- University of Wisconsin–Madison
- Western University (formerly University of Western Ontario)

In addition, the CAE criteria have proved to be useful guidelines for program development. In fact, several schools reported that they enhanced their programs in pursuit of CAE status. Some of these schools subsequently earned the CAE designation after those enhancements.

CAE GRANTS

An additional benefit of the CAE designation is access to CAE education and research grants. The SOA board in 2008 also approved creation of a CAE Grants program. Schools that have attained CAE status are eligible to compete for SOA-sponsored grants in research and education. These grants allow universities to make significant investments in education methods or materials, research and the profession. Each year the program offers to award one education and one research grant. Generally, award amounts and durations can range between \$50,000 and \$100,000 per annum over a period of three to five years. The CAE Grants Committee looks for grants with specific application to actuarial work. In each case, the output from the grant must be something that can be shared with the wider actuarial and academic community.

The table on page 33 shows the grant proposals that have been awarded funds since the program's inception.

CAE FACULTY CONFERENCE

Another benefit of the CAE designation is the opportunity for CAE faculty to attend the CAE Faculty Conference. In early 2010, after the first wave of schools had been awarded the CAE designation, the SOA sought opportunities to connect directly with CAE faculty members in a meaningful way. The first CAE Faculty Conference was held that summer in

Chicago and has been held there each year since.

The conference gives two faculty members from each CAE school a chance to network and exchange best practices, and gives the SOA an opportunity to present current initiatives and to speak with these key stakeholders about the needs of the profession. Time is also allotted for presentations from recent CAE grant recipients on their respective projects. Survey comments about the faculty conference include:

The CAE Faculty Conference has given us an excellent opportunity to share ideas and experiences with fellow CAE schools. The presentations have been informative and the dinners, lunches and breaks have been especially informative.

The value of face-to-face discussions on important CAE topics cannot be overemphasized. These are truly unique events and [U.S. CAE school], for one, is very thankful that the SOA provides us with these opportunities. PLEASE KEEP IT UP!

CAE STUDENT SUMMIT

Recognizing that the SOA's connection with students at CAE schools is equally important, the SOA launched the first CAE Student Summit in August 2012. Similar to the faculty conference, two students from each CAE school are invited to attend as the SOA's guests.

The student summit event has proven to be an exciting gathering of top-tier actuarial students. Activities include a presentation

from the SOA president, a featured actuary panel discussion, and activities for networking with fellow attendees. As a follow-up, staff provides the attendees with a slide presentation that highlights their experiences at the summit and addresses SOA initiatives. The students are asked to present the slides at a meeting of their school actuarial clubs. Survey comments related to the student summit include:

A boost to the morale and professional alignment of the students who participate. It spills over from them to their peers.

Students are very proud to attend the student summit as representatives

of the university. It provides great opportunities for them to communicate with fellow actuarial students from other universities, to learn from experienced actuaries from industry, and to know of the most recent developments in this profession.

The student summit was held again in August 2013, and a third summit will take place in August 2014.

CAE PROGRAM MEETING GOALS

Finally, we asked both CAE and non-CAE schools whether the CAE program was meeting its goals to enhance actuarial knowledge and expand the profession’s influence in academia. Over 80 percent

of respondents from CAE schools agreed that the program was meeting its goals. Both CAE and non-CAE schools cited the influence with university administrators of having clear standards for actuarial science programs as a positive factor.

If you are interested in learning more about the CAE program, including the criteria schools must satisfy, please check the SOA Web page at <http://www.soa.org/Education/Resources/cae/default.aspx>. **A**

Peggy L. Hauser, FSA, MAAA, is senior vice president, Actuarial Services, at Univita Health, Inc. She can be reached at phauser@univitahealth.com.

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Book Review

THE IMPROBABILITY PRINCIPLE, BLACK SWANS & SULLY SULLENBERGER

BY JAY M. JAFFE

DAVID J. HAND has written a new book about improbability¹ (yes, improbability, not probability). Hand is a statistician and Ph.D. from Oxford University. At the opening of the book Hand describes the Improbability Principle succinctly: *Extremely improbable events are commonplace.* The remainder of the book explains why improbable events occur more often than people, including actuaries, assume and/or believe.

Without getting into the details—and for those you’ll have to read the book—Hand explains the Improbability Principle in terms of several laws:

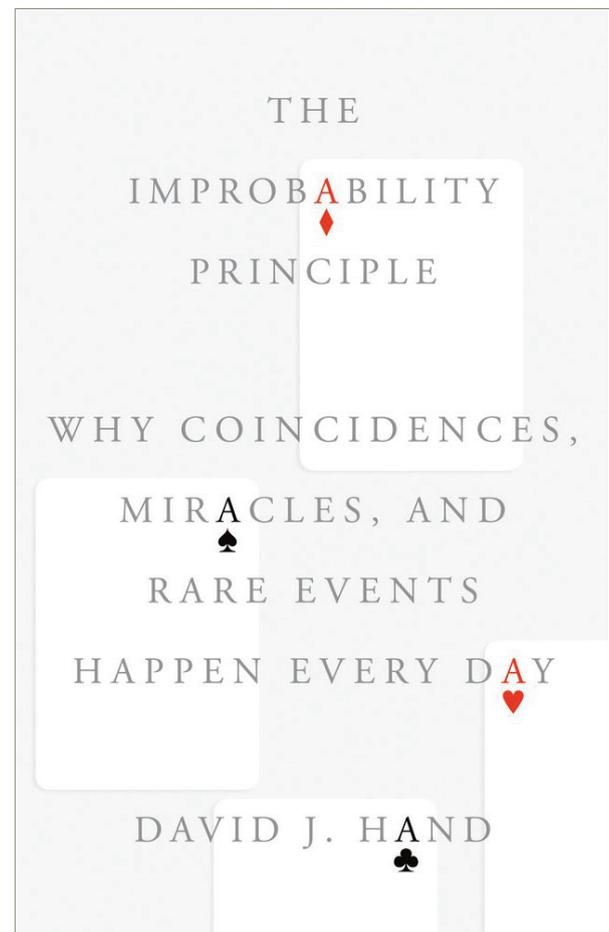
- The law of inevitability
- The law of truly large numbers
- The law of selection
- The law of the probability lever
- The law of near enough.

Each law by itself is interesting to review, and collectively they help to explain and understand the Improbability Principle. The book should help actuaries consider low-probability events in a different light and rethink how we advise our clients and employers. By the way, Hand has several references to actuaries in the book.

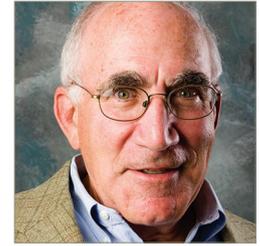
Every actuary should easily grasp the relevance and implications of Hand’s principle to our daily work: Even events with a low probability of occurrence need to be included in our models. The difficulty we face is how to explain to our audiences why and how we’ve included these very unlikely events in our models.

A few years ago Nassim Taleb popularized the black swan theory. The black swan theory is described by Wikipedia as “... a metaphor that describes an event that comes as a surprise, has a major effect, and is often inappropriately rationalized after the fact with the benefit of hindsight.” Taleb’s black swans are little more than improbable events.

Personally, I have never thought that describing improbable events as black swans was appropriate because before Taleb’s book my wife and I witnessed a



large flock (sometimes called a wedge) of black swans resting on the Derwent River in Tasmania. Maybe we were just lucky (i.e., experiencing an improbable event) to see the majestic black swans, but Taleb’s metaphor for describing difficult-to-predict



Jay M. Jaffe

events seems to ignore the fact that, as Hand explains, if you're around long enough even the improbable happens and needs to be factored into how one lives and works.

The handling of improbable events differs by profession. For example, aeronautical engineers work in a world of multiple fail-safe systems to recognize that no matter how hard they try to build a perfect plane, they can't achieve their goal. They also create procedures to prepare pilots for inevitable failures or emergencies and make it possible for Sully Sullenberger to land a plane on which multiple systems failed after encountering a flock of Canada geese (a rather mundane species as compared to "my" black swans).

In actuarial terms improbable events are those events that occur at the tail end of a distribution of occurrences and are extremely important because they are often the ones that have the most impact on actuarial models. We know that when low-probability, tail-end events occur, sometimes the ferocity of such events is mind-boggling and the financial and other consequences of such events can be devastating. Therefore, in our work we cannot dismiss such events as irrelevant but, instead, we need to find ways to make appropriate allowances for the reality that over time we'll encounter improbable events.

Once we recognize the reality of improbable events, our next task is to communicate how we treat such occurrences in our models. Fortunately, Hand's book can help us find ways to explain to our clients and employers why we must deal with improbable events regardless of what they are called. Our obligation is to make sure that our services don't ignore the improbable; but, at the

same time, we have to balance creating work products which, on the one hand, are either completely immune from or, on the other hand, give overly conservative weight to improbable events. This is a tremendously hard balancing act!

My observation is that many people tend to ignore improbable events for three reasons. First, the events we're describing are rare and it is difficult to imagine them happening. Hand describes this attitude as an application of Borel's Law:

Once we recognize the reality of improbable events, our next task is to communicate how we trust such occurrences in our models.

Sufficiently unlikely events are impossible!

Second, including improbable events in a model becomes problematic because it is difficult to attach a believable value or a consequence to an improbable event. Third, when improbable events are incorporated into an actuarial model with adverse impact, often the decision is made to ignore the highly improbable because the results are "out of bounds" as compared to models used by competitors or others in a similar position.

The decision to ignore improbable events is, to some extent, understandable since even experts cannot assign an exact probability nor place a firm cost to these unlikely possible events. Moreover, Hand's book demonstrates that the actual probability of many events is counterintuitively much greater than assumed.

But if improbable events are ignored in financial models, sooner or later there are likely to be dire and sometimes even

fatal financial consequences. Actuaries need to find ways to recognize seemingly improbable events if for no other reason than we work directly in areas where improbable events definitely occur. In the insurance business each natural disaster by itself is an improbable event, but we know natural disasters regularly occur. And how about the reality that even in today's sophisticated aviation

environment, though the odds are very small, two commercial planes collide in midair or on the ground (and planes will collide again in the future in spite of all the precautions that are being taken)?

Hand's book will make it easier for actuaries to incorporate the two seemingly opposite concepts of probability and improbability in our work. Ironically, once we become more expert at improbability, it is more probable that our probability-based models may become more accurate. ▣

Jay M. Jaffe, FSA, MAAA, is president, Actuarial Enterprises Ltd. He can be reached at jay@actentltd.com.

END NOTES

¹ *The Improbability Principle: Why Coincidences, Miracles, and Rare Events Happen Every Day.* Scientific American/Farrar Straus and Giroux, Feb. 11, 2014, 288 pages.

Note: The Kindle edition of this book is available from online booksellers.



Barry Franklin

Section Highlights

JOINT RISK MANAGEMENT SECTION

BY BARRY FRANKLIN



THE JOINT RISK MANAGEMENT SECTION (JRMS) is jointly sponsored by the Society of Actuaries (SOA), Casualty Actuarial Society (CAS) and Canadian Institute of Actuaries (CIA). The JRMS seeks to further the science of risk management by promoting practical and technically sound research to help risk management professionals meet emerging challenges, through which efforts the profile of the actuarial profession is enhanced.

As risk management practitioners we live in interesting times, and as we survey the horizon it seems they are bound to become even more interesting in the future. Between evolving regulatory requirements, continual improvements in (and increasing

expectations of) risk modeling, unrelenting global financial headwinds, and the incredible pace of technological advances, it is sometimes difficult for today's risk manager to know where to focus attention. The JRMS has several new endeavors that are designed to help JRMS members stay informed.

Most exciting is the launch of free e-books for JRMS members through EBSCO's digital library. This exclusive benefit enables members to access and electronically "check out" selections from hundreds of relevant business and risk management titles on a temporary basis. This new benefit is just one more way your membership in the JRMS pays off.

On the research front, the JRMS has launched a call for essays on how to read an Own Risk and Solvency Assessment (ORSA); it is hoped that publishing a collection of such essays will provide a useful road map for insurance executives to effectively navigate an ORSA report and find the information they require. Along the way, such a resource might also help practicing actuaries produce more user-friendly reports for their audiences.

If you have ideas for practical research or other suggestions for the JRMS to provide support to risk management practitioners, please send your comments to dschraub@soa.org. 

Barry Franklin, CERA, FCAS, MAAA, is senior vice president and chief risk officer at Zurich North America and the chairperson of the JRMS. He can be reached at barryfranklin@Zurichna.com.

NOTICE OF DISCIPLINARY DETERMINATION

ON MAY 30, 2014, the Society of Actuaries (SOA) convened a Discipline Review Committee for the purpose of reviewing a disciplinary sanction imposed by the Joint Discipline Council (JDC). The matter related to the conduct of Neil J. Savasta, the actuary responsible for the actuarial valuations of a governmental entity's post-retirement benefits obligations for the periods ending June 30, 2008 and June 30, 2009.

The JDC determined that Mr. Savasta materially violated Precepts 1, 3 and 4 of the *Code of Professional Conduct* and determined that his membership privileges in the SOA and other actuarial organizations to which he belongs should be suspended for five years. The SOA Discipline Review Committee reviewed the JDC's determination and affirmed that a five-year suspension was appropriate for the circumstances.

In performing the actuarial services for his client, Mr. Savasta did not comply with applicable Actuarial Standards of Practice (ASOPs) and materially violated the *Code* in the following respects:

- **Precept 1:** As the only qualified health actuary at his company, Mr. Savasta did not adequately review or supervise the 2008 and 2009 valuations of his client's obligations under Governmental Accounting Standards Board Statement No. 45 (GASB 45). Although it was the first valuation prepared by him in accordance with GASB 45, Mr. Savasta failed to familiarize himself with the requirements of the standard. Therefore, the JDC concluded that Mr. Savasta did not ensure that his work and the work performed under his supervision were performed with skill and care, as required by Precept 1 of the *Code*. In this respect, Mr. Savasta had previously been counseled by the Actuarial Board for Counseling and Discipline in 1998

to ensure that work performed by him or under his supervision be performed with skill and care.¹

- **Precept 3:** Mr. Savasta failed to ensure that the actuarial services performed by him and under his supervision met the applicable ASOPs, including ASOP Nos. 6, 35, and 41. He therefore materially violated Precept 3, which requires an actuary to observe applicable standards of practice that have been promulgated by a recognized actuarial organization for the jurisdictions in which the actuary renders the services.²

With respect to ASOP 6, *Measuring Retiree Group Benefit Obligations*, then in effect, the valuations were deficient in the following respects:

- Inappropriate use of a single per capita claims rate for all ages (Section 3.4.7);
- Inappropriate use of a single healthcare cost trend rate for all years (Section 3.8.1.a);
- Inappropriate use of a single retirement age assumption at age 65, considering the plan permitted retirement as early as age 55 and had a significant number of retirees under the age of 65 (Section 3.8.2.c); and
- Failure to provide key plan data with sufficient clarity that another actuary could make an objective appraisal of the reasonableness of the actuary's work (Section 4.2).

With respect to ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, then in effect, the use of a single retirement age was not a reasonable assumption (Section 3.3.5.a). With respect to that assumption, Mr. Savasta had not familiarized himself with the provisions of the client's pension plan and was not aware if it provided pension benefits (Section 3.5.1.c).

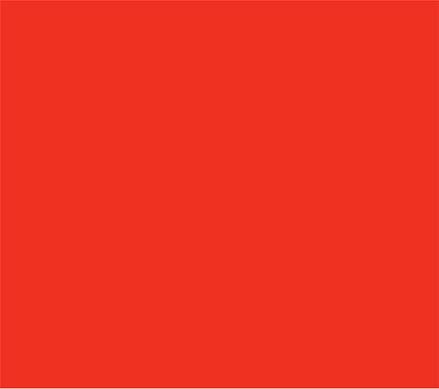
With respect to ASOP No. 41, *Actuarial Communications*, then in effect, the communication of the valuation results did not identify the actuary responsible for the work (Section 3.1.4). Mr. Savasta had previously been counseled by the ABCD on this same issue in 1998.

- **Precept 4:** The JDC determined that, for the various reasons stated above, Mr. Savasta had failed to take steps to ensure that his actuarial communications were appropriate under the circumstances, in material violation of Precept 4.³

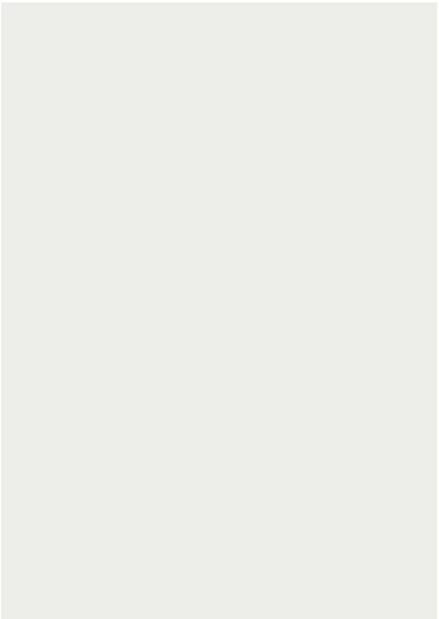
All members of the SOA are reminded of their responsibility to follow the *Code of Professional Conduct*. **A**

END NOTES

- ¹ **Precept 1:** An Actuary shall act honestly, with integrity and competence, and in a manner to fulfill the profession's responsibility to the public and to uphold the reputation of the actuarial profession.
- ² **Precept 3:** An Actuary shall ensure that Actuarial Services performed by or under the direction of the Actuary satisfy applicable standards of practice.
- ³ **Precept 4:** An Actuary who issues an Actuarial Communication shall take appropriate steps to ensure that the Actuarial Communication is clear and appropriate to the circumstances and its intended audience and satisfies applicable standards of practice.



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- 42 BRINGING RESEARCH FRONT AND CENTER
- 44 SOA RESEARCH—ASIA INSURANCE OPPORTUNITIES
- 46 E-COURSES: GROWING YOUR KNOWLEDGE
- 48 GOOD RESEARCH READS
- 50 PROFESSIONAL DEVELOPMENT: YOUR OPPORTUNITY TO GROW



BRINGING RESEARCH FRONT AND CENTER

BY GREG HEIDRICH

Research is a fundamental part of what the SOA does. It's an integral piece of our mission statement, "The SOA, through research and education, advances actuarial knowledge and improves decision making to benefit society."

Now, more than ever before, we are focusing on our research activities and stressing the importance of how critical it is that we work on projects that look into the future, that advance our profession, and inform and benefit society.

It's important that our members, our stakeholders and other organizations and businesses know what we're doing in the research arena. So we're shining a spotlight on it now as we migrate into the areas of public policy and other relevant topics ... topics that people really care about today.

In the experience studies world, there are major regulatory changes that are beginning to happen with state insurance regulation in the United States. We need to be there, front and center, to be an integral part of these opportunities to demonstrate how actuaries can be significantly involved in this important work.

How do we step ahead? Thoughtfully, strategically and steadily.

We've been gradually adding pieces to our research area. We now have in-house modeling research capability that didn't exist before. And we just added a researcher in Canada to work in partnership with the Canadian Institute of Actuaries on retirement-related research. In addition, we now have a staff health actuary to produce research in this important area and have increased our experience studies actuarial staff.

To bring all these pieces together, we recently hired Dale Hall, managing director of Research. Dale is doing a great job to bring together the various resources and opportunities we have to highlight the contributions of actuarial research.

Dale will be writing regular columns in *The Actuary* to highlight the important work that is in progress at the SOA. In this issue, he talks about ASIA insurance opportunities. In future issues of our magazine, he'll address new health research and other projects that we'll be spearheading.

We're going front and center with our research endeavors, getting involved in issues that face the public and publicizing member expertise in as many ways as possible. With your knowledge and actuarial expertise, we're making



a significant impact on the actuarial profession and with regard to significant societal matters. Important work is being done here and we're sharing it. **A**

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

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SOA RESEARCH— ASIA INSURANCE OPPORTUNITIES

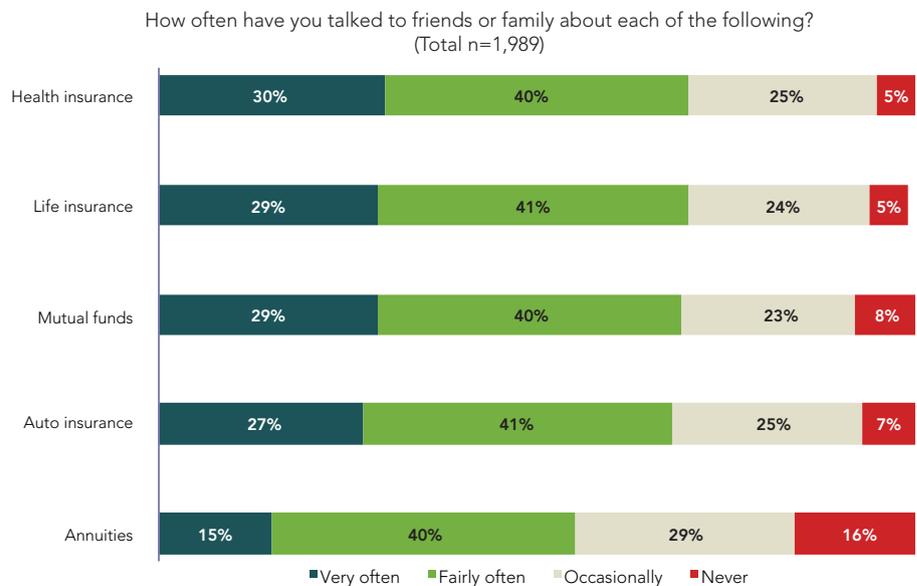
BY R. DALE HALL

As part of the Society of Actuaries' (SOA's) broader work supporting the global actuarial profession, we have a growing number of research projects specifically addressing opportunities and insights for our membership in Asia. While the SOA does develop many North American focused studies, several other projects and efforts also help provide a global perspective to the actuarial profession.

For instance, every three years the SOA hosts the Living to 100 Symposium, which brings together actuaries, demographers, physicians, academics, gerontologists, economists, financial planners, researchers, and other professionals from around the world, to discuss research and insights on health, retirement and aging. We released the 2014 Living to 100 Monograph, which highlights the challenges and solutions for longevity risks. Additionally, we are working on a research paper that compares and contrasts the process for creating regulatory experience studies in the United States and Taiwan. Results will be presented with our academic partners in Taiwan at the 2014 East Asian Actuarial Conference in October.

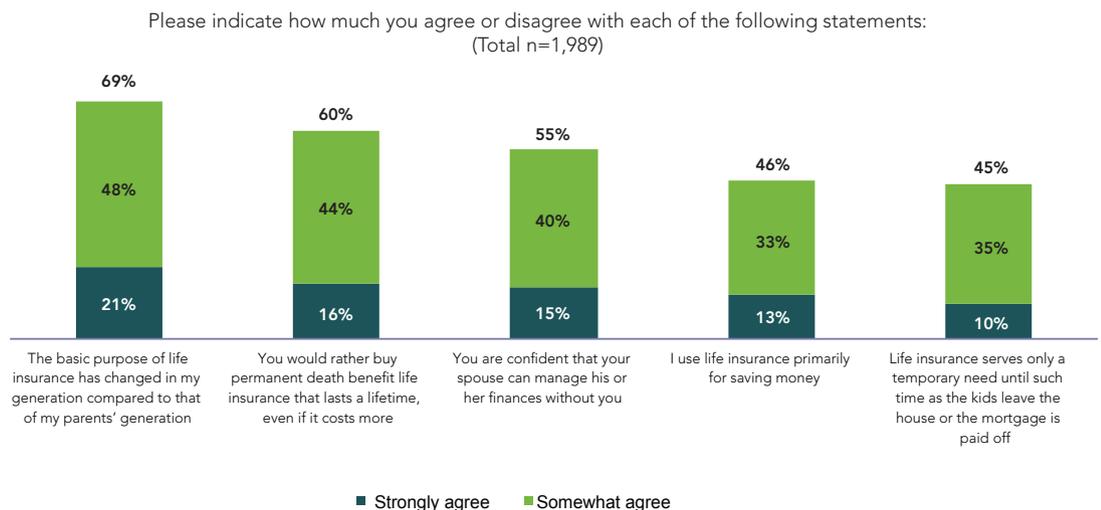
The SOA has also released a new report and survey that examines the China middle market in terms of life insurance opportunities. The report compares the different consumer segments—those uninterested in life products, the “life protectors” (those with an appreciation

Chinese consumers report fairly high levels of knowledge about life insurance.



Greenwald and Associates, 2013

Most agree that the role of life insurance is changing. Fewer than half see it as serving a temporary need.



Greenwald and Associates, 2013

of the value of life insurance and its role throughout one's lifetime) and "life investors" (those who view life insurance as a temporary need and retirement saving as a primary focus).

This report, "The Changing Middle Market for Life Insurance in China," written by Walter H. Zultowski, Ph.D., provides the following:

- Perspectives on the changing middle market for life insurance in China
- An understanding of the market segments that currently exist in this changing marketplace
- Suggestions as to how companies may best market to these different segments.

The report's accompanying survey looks at Chinese consumers' knowledge about life insurance, and how they maintain a sense of skepticism toward certain ways of how life insurance products are sold.

Not only does this report provide a new perspective on how to reach the Chinese middle market on life insurance projects, it also helps establish an important connection to our members throughout the world. It's an important research project that shows many global similarities, but also acknowledges major differences and nuances to international life insurance markets.

More opportunities are in store in the future for the SOA and our members to

help develop vital research benefiting the actuarial profession and the respective stakeholders. We're looking forward to contributing to the development of this vital international research. **A**

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Knowledge On The Go

Insightful podcasts are now available to listen to **anywhere!**

The Society of Actuaries is offering topical podcasts for those interested in insight and perspectives from **fellow members**. The podcasts are **free** to download and can be listened to from your computer or any portable audio device. Check back often as new podcasts are released.

www.SOA.org/podcast

E-COURSES: GROWING YOUR KNOWLEDGE

THE SOA IS PROUD to offer 20 e-courses worth more than a combined 80.00 continuing professional development (CPD) credits. E-course topics range from professionalism and communication to social insurance and enterprise risk management, and can be completed in as little as two hours. Whether you're changing fields, in need of some refreshers or looking to improve your communication skills, get the knowledge you desire by registering for an e-course today. See our full listing at www.soa.org/ecourses.



FINANCIAL ECONOMICS: FINANCIAL MATHEMATICS

This e-course focuses on the financial mathematics branch of financial economics. You will learn about derivative securities and options, modeling returns, and option pricing and hedging.

FUNDAMENTALS OF ACTUARIAL PRACTICE (FAP)

This e-course is set in the context of the control cycle. It encompasses real-world applications and uses examples to demonstrate actuarial principles and practices. You will also have opportunities to apply these principles and techniques in traditional and nontraditional actuarial practice areas. With the fundamentals

in your toolkit, you will be better prepared to apply your learning to new areas of practice that may emerge during the course of your actuarial career.

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.

PRICING, RESERVING AND FORECASTING

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. **A**

analyst

specialist

manager

consultant

director

strategist

leader

executive

Already an FSA? CERA with Four Exam Hours More

On July 1, 2013, changes to the Society of Actuaries' fellowship exam structure will allow current Fellows of the Society of Actuaries (FSAs) to obtain the Chartered Enterprise Risk Analyst® (CERA) credential with just four additional exam hours.

As the most comprehensive and rigorous risk management credential available, the CERA offers an enhanced enterprise-risk-based curriculum that better prepares professionals with the in-depth knowledge and expertise they need to play more strategic roles across more industries—including risk managers, chief risk officers and CFOs.

To become a CERA, Fellows need only complete the four-hour Enterprise Risk Management (ERM) exam, along with the ERM module if it was not part of their FSA pathway.

Get on the path to the future of risk management.

See what the future holds at CERAnalyst.org.

CERA
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CREDENTIAL

GOOD RESEARCH READS

COMPLETED EXPERIENCE STUDIES

POST-LEVEL PREMIUM PERIOD LAPSE AND MORTALITY STUDY

This project is the latest research on mortality and lapse experience at the end of the level premium period. This report updates the initial 2012 study but contains enhancements such as additional lapse and mortality credibility, monthly lapse and mortality analyses, an analysis of issue age and face amount within a given premium jump, and a predictive model on the T10 duration 10 shock lapse.

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

COMPLETED RESEARCH STUDIES

SELECT PERIOD MORTALITY ASSUMPTION SURVEY

Performed by Al Klein and Michelle Krysiak of Milliman Inc. and sponsored by the Product Development Section and the Committee on Life Insurance Research, this study identifies pricing assumptions that are being used during the select period and provides insight into the nature of the assumptions underlying the mortality assumptions themselves.

EVALUATING APPROACHES FOR ADOPTION OF MEDICAL TECHNOLOGIES

This project created a tool that allows actuaries to derive an understanding of the



evidence for medical technologies that are provided through health plans. The study, conducted by Robert Lieberthal, Tony Amos and Jessica Lopatto of the Jefferson University of Population Health, provides educational and background material regarding the evaluation of medical technologies tailored for actuaries. In addition, the study produces a structured tool to allow actuaries to organize the existing body of evidence for any medical technology.

2013 EMERGING RISKS SURVEY RESULTS

Results from the seventh Emerging Risks Survey, conducted by Max Rudolph of Rudolph Financial Consulting, LLC., indicate that new risks are gaining increased attention among risk managers around the world. Most notably, rapidly changing regulations and risk of cyber-attacks may be slowly replacing the risk of oil price shock and other economic risks, which were of major concern just six years ago when the survey was first conducted.

LAND THIS PLANE: A DELPHI STUDY OF LTC FINANCING SOLUTIONS

In this report overseen by the Long-Term Care (LTC) Think Tank and authored by John O'Leary, a wide range of LTC financing issues and potential solutions are explored. Employing the Delphi method, the study gathered the opinions and thoughts of a diverse multi-disciplinary group of LTC experts and stakeholders. Issues examined include key macro issues such as the role of government, the role of private insurance, the need for social insurance, the regulatory environment, and the future of Medicaid. The study also delved into a range of insurance product concepts that may provide more affordable LTC financing options.

MODELING OF POLICYHOLDER BEHAVIOR FOR LIFE INSURANCE AND ANNUITY PRODUCTS

Authored by a joint PwC and LIMRA research team and sponsored by the Financial Reporting Section and

Committee on Life Insurance Research, the report examines the current state of the life insurance and annuity industry with respect to: (1) available policyholder behavior experience data sources, (2) credibility of current experience data, (3) assumption structure and modeling, and (4) current challenges in the area of policyholder behavior modeling. In addition, the research examines developments in other industries and disciplines that could help actuaries better understand policyholder behavior.

MODEL VALIDATION FOR INSURANCE ENTERPRISE RISK AND CAPITAL MODELS

The authors of this report, Markus Stricken, Shaun Wang and Steve Strommen,

examine model risk and validation in this paper sponsored by the Joint Risk Management Section. The first part of the paper identifies and describes five distinct elements of model risk and then outlines a model validation process with specific steps to address each element. The second part discusses the challenges faced when performing model validation in a dynamic environment. Finally, a case study is provided describing the ways models and model risk play a role in the development of a life insurance product.

BEHAVIORAL DECISION-MAKING IN RETIREMENT

In this paper, sponsored by the Pension Section Research Committee, author Jodi DiCenzo provides a thorough review

of survey and empirical research on behavioral decision-making in a retirement context. The increased individual involvement in planning and providing for retirement has generated significant research by behavioral economists and others. The work in this area has provided an understanding of retirement-related decision making that often differs from decisions predicted by traditional economists. **A**

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



Equity-Based Insurance Guarantees Conference

CELEBRATING OUR 10TH ANNIVERSARY

NOV. 17-18, 2014
Renaissance Chicago Downtown Hotel
Chicago

The Equity-Based Insurance Guarantees Conference, sponsored by the Society of Actuaries and Annuity Systems Inc., is designed to give risk management, product development and valuation professionals an understanding and appreciation of how to better quantify, monitor and manage the risks underlying variable annuity and equity-indexed annuity products. The 2014 conference will celebrate the 10th anniversary of this successful industry meeting and its influence on the practitioners and market practices in relation to how the products and their underlying risk-management practices have evolved. Attend this conference and gain tangible solutions to your day-to-day risk management, pricing, valuation and product development challenges.

Learn more at SOA.org/calendar.

 **ANNUIITY SYSTEMS INC.** **SOCIETY OF ACTUARIES**

PROFESSIONAL DEVELOPMENT: Your Opportunity to Grow

When is the last time you attended a meeting or seminar, or tuned into a webcast? As an SOA member, there are a number of events you can attend, in person or from your computer. Here are just a few of the upcoming meetings and webcasts coming your way that can help you:

- Stay up to date with current trends in your area of practice,
- Continue to make meaningful contributions to your company, your team and the profession, and
- Develop or fine tune new knowledge and skill areas.

MEETINGS AND SEMINARS

ERM SYMPOSIUM

Sept. 29–Oct. 1

Chicago

The purpose of the ERM Symposium is to provide thought leadership to professionals and practitioners working in Enterprise Risk Management, including discussion of risk topics and challenges across a broad spectrum of industries.

INVESTMENT BOOT CAMP FOR PENSION ACTUARIES

Oct. 14

Toronto

This interactive day will cover a range of topics starting with fixed income and derivative markets and their application to pension liabilities, moving to discussions of other asset classes and finishing with instruction about current pension investment strategies.

SOA 2014 ANNUAL MEETING & EXHIBIT

Oct. 26–29

Orlando

Join nearly 2,000 actuarial professionals in Orlando for the SOA 2014 Annual Meeting & Exhibit—an event showcasing our progress. Progress in the profession, progress in business and progress in society.

VIRTUAL SESSIONS/WEBCASTS

GENETIC ALGORITHMS: WHAT THEY ARE, HOW TO APPLY THEM TO SOLVE PROBLEMS AND HOW TO CREATE YOUR OWN

Sept. 23

Who should attend? Forecasting & Futurism Section and Health Section members, and those generally interested in data science business impact.

AN INSIDER'S VIEW ON CHANNEL EXPANSION

Oct. 7

Actuaries who need a better understanding of retail financial services product distribution, whether they work directly in or with distribution or are involved in developing pricing assumptions for distribution costs and behavior, should attend.

READY TO REGISTER?

Visit SOA.org/calendar for the full complement of meetings, seminars, virtual sessions, webcasts and more. We look forward to hearing from you!



ERM

ENTERPRISE RISK MANAGEMENT SYMPOSIUM

**New time of year: Sept. 29 – Oct. 1, 2014.
Swissotel Chicago, Chicago, IL**

The ERM Symposium is designed to strengthen the standards of ERM practice, grow and develop the current and next generations of ERM practitioners, and facilitate incorporation of best practices from other industries.

The purpose of this symposium is to provide thought leadership to professionals and practitioners working in ERM. Sessions will include discussions on risk topics and challenges across a broad spectrum of industries, as well as support in the development of professionalism and best practices among ERM practitioners without regard to industry, sector or geography.

Learn more at SOA.org/calendar.



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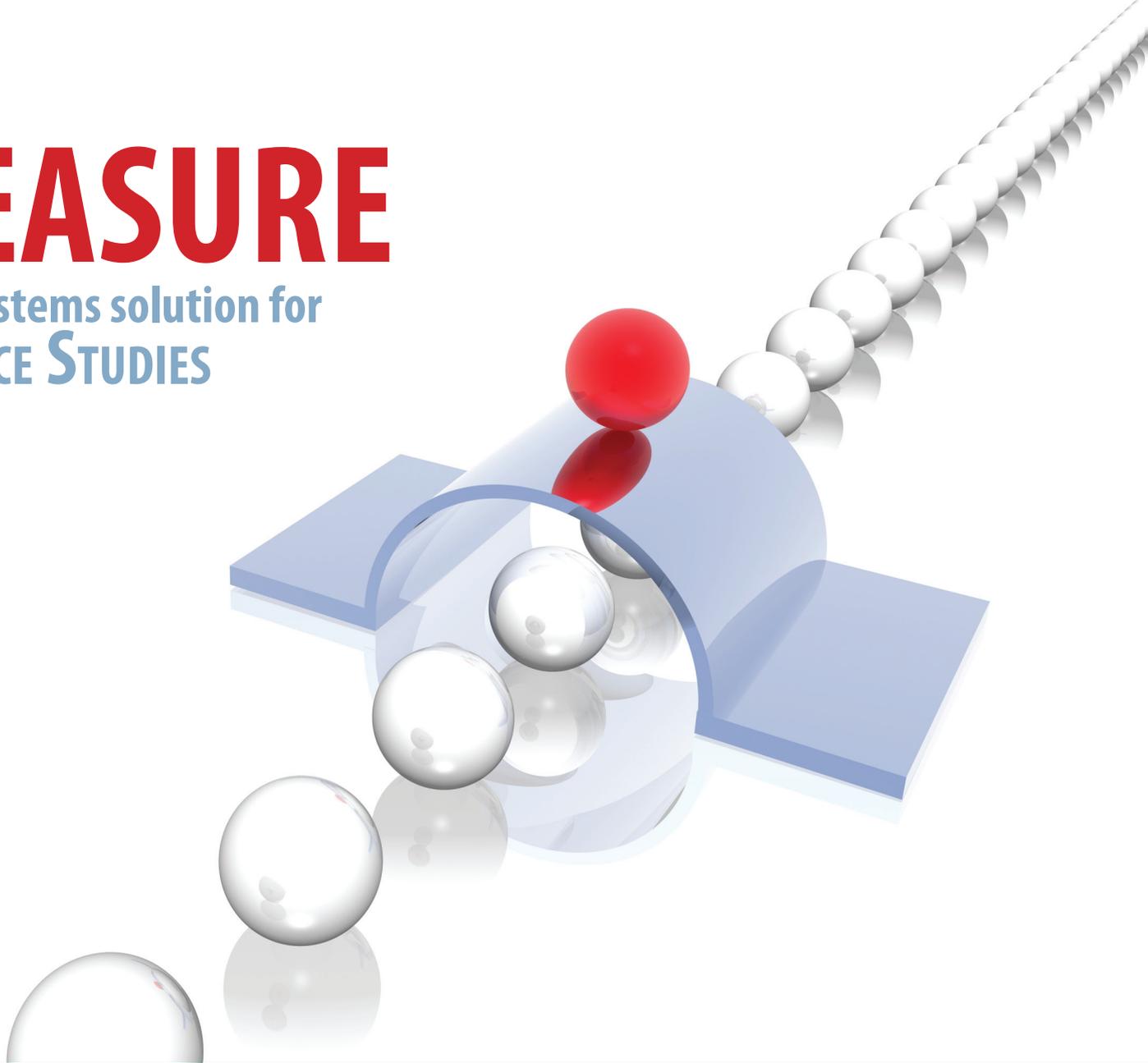
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Measure automatically performs best-in-class experience studies for a wide variety of decrements and policyholder behaviors. Our clients use Measure to set assumptions and gain insight into sources of profitability, monitor distribution channel effectiveness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

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**Contact us for more information about how
MEASURE can meet your experience analysis needs.**



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