



SOCIETY OF
ACTUARIES

ACTUARY OF THE
FUTURE SECTION

Actuary of the Future

ISSUE 39 • NOVEMBER 2016

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Actuary of the Future

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Get Started!

By Dave Snell

“The secret of getting ahead is getting started.”

—Mark Twain

Welcome to another issue of the *Actuary of the Future* (AOF) newsletter. In this issue, we have several articles to help you get started, restarted or maybe just nudged along to keep your momentum toward success as an Actuary of the Future.

We begin with an article from our outgoing chairperson, Woolford London, who summarizes some of the exciting AOF achievements of the past year—including webcasts, presentations and Candidate Connect events. This was a year of high visibility for AOF, as we networked with other sections and extended our visibility and effectiveness through several shared events. Next, our incoming chairperson, Bin Fang, discusses the plans for AOF in 2017. Bin writes about our large and growing LinkedIn presence and our partnerships with regional actuarial clubs and university actuarial programs. It is going to be another exciting year for our membership and for our profession.

Ryan Shubert shares his advice in his article, “Passing Actuarial Exams”—a topic of interest to many of our AOF members. One of the secrets he reveals is that of attitude. He says, “These exams are too expensive and too time-consuming for me to give anything less than my best,” and he advocates lists and time management among his many tips.

But what happens after you pass our actuarial exams? Mark Spong raises that question with his article, “Should I Get an MBA in Addition to an FSA?” In a concise but meaningful actuarial analysis, Mark takes the net present value of costs versus benefits and computes the required post-MBA salary bump that would be necessary to break even on this investment. He also points out the vast difference in the number of FSAs versus MBAs, stating that “Harvard MBAs alone outnumber FSAs.”

Yes, the future can be good for actuaries. But first, you have to get a job! We have two articles for you on that topic. Sally Ezra, of the actuarial recruitment firm Ezra Penland, tells us how to approach the phone interview. In “60 Minutes: The Phone Interview,” Sally shares her insider tips on how to “convey competence and a collaborative essence” that will give you an edge in this very important part of the job acquisition process.

Next, we have an interview with recruiters from the firm DW Simpson, conducted by Andrew Bourg. Andrew asks them about the actuarial job outlook in several fields, how that may be impacted by legislative changes, which social media accounts are most relevant (e.g., LinkedIn is good to share; Facebook public settings might involve risks), and where the jobs are moving geographically. They also discuss the issue of working remotely and the increased competition for internships and entry-level positions.

Many of us, though, are no longer seeking those entry-level positions. How should one prepare for a truly meaningful actuarial career? Richard Junker and Curtis Lee Robbins tell us how to do this in their article, “The Competency Framework: Design Your Future.” Richard and Curtis provide an excellent introduction to this powerful tool from the Society of Actuaries (SOA) that can help you plan your own future. I say introduction because they have so much to share about the capabilities and usage of the Competency Framework that this is only the first article in a three-part series. We all have heard the “Where do you want to be in five years?” question, but how many of us have any actual plan for that? Read their article and learn how to build the answers.

Jackie Mackay has a different perspective on the “where do you want to be” question. In her article, “Actuaries in the East: Student Initiatives for Change,” she relates how she wanted to stay in Atlantic Canada, but the four Atlantic provinces represented only 2 percent of the Canadian Institute of Actuaries (CIA) members. Instead of moving to the province of Ontario (which has almost half the CIA members), she chose to host an event that would bring students to her university (St. Francis Xavier University, in Nova Scotia) and invited the CIA president to come and meet them. Read how this student got funding from the SOA, CIA and CAS (Casualty Actuarial Society) and brought about the first actuarial conference of its kind in Atlantic Canada.

Next, Matthew Creech has contributed an article, “Stress Testing,” that describes this valuable collection of actuarial tools—including sensitivity testing, scenario testing and reverse stress testing. Matthew describes each of these, and he also suggests ways to use them to best advantage in helping management make more informed business decisions.

“These exams are too expensive and too time-consuming for me to give anything less than my best.”

Finally, we close this issue with a review of a new actuarial textbook that is actually fun instead of tedious to learn from. Three professors at Maryville University, in St. Louis, just finished an electronic format book on Excel, and I had the pleasure of reviewing it. Yes, there are a plethora of books on Excel already, but this one is aimed at actuaries, and it does an excellent job of focusing on the Excel features most useful to us. I am hoping that this book will be generally available by the time you read my review of it. It's worth your time. ■



Dave Snell, ASA, MAAA, is a former chairperson of the Actuary of the Future Section. He is the technology evangelist at RGA Reinsurance Company, in Chesterfield, Mo., and can be reached at dave@ActuariesAndTechnology.com.

The graphic features a light gray diamond-patterned background. At the top, three circular icons are connected by horizontal lines. The first icon is a document with the label 'Exams' below it. The second icon is a line graph with an upward arrow and the label 'Research Support' below it. The third icon shows two stylized human figures with the label 'Professional Development' below it. In the center, the text 'Volunteer Now' is written in a large, clean font, with 'Help Support the Actuarial Profession' underneath it in a smaller font. Below this, a paragraph of text encourages becoming an SOA volunteer today, listing various opportunities and directing to SOA.org/volunteer. At the bottom center is the Society of Actuaries logo, which consists of a shield-like shape and the text 'SOCIETY OF ACTUARIES'.

Exams — Research Support — Professional Development

Volunteer Now

Help Support the Actuarial Profession

Become an **SOA volunteer today!** You will gain new experiences while expanding your network. You will also learn about volunteer opportunities on research support (health, life, pensions, and general insurance), exams, professional development and much more. There are volunteer activities specific to Canada and international too. Visit SOA.org/volunteer to learn more!

Chairperson's Corner

By Woolford London

"The future's so bright, I gotta wear shades."

—Timbuk 3

As we wrap up 2016, the United States has a new president, Britain has left the European Union and cars are starting to drive themselves. Evidence of risk continues to surround us and to highlight the importance of the actuarial profession in these uncertain times. The question facing the Actuary of the Future (AOF) Section exists in perpetuity: "What are we doing for our section and the profession? And are we discussing the things that will move our profession forward in this day and age?"

During the past year, the Actuary of the Future Section has made a concerted effort to extend goodwill toward rising actuarial students, with the goal of helping them to secure their place in our important industry. In the spirit of moving the section forward, here is a sample of the activities we engaged in over the past year.

SOCIETY OF ACTUARIES (SOA) CANDIDATE CONNECT

We caught wind of the SOA's Candidate Connect late in 2015, understanding that both our groups share many of the same goals. Leveraging the membership of both groups, we're able to get pertinent information to a larger group of actuarial students than ever before! We're very excited about this partnership. During 2016, AOF council member Andrew Bourg presented at a Candidate Connect event in Chicago, and we're currently negotiating to present at a separate event in Hartford. The webcast "How Do I Get a Job?" based on the AOF presentation at the 2016 Health Meeting, was very well received by Candidate Connect members. Possibilities for this partnership are endless.

UNIVERSITY CONFERENCES

We ended 2015 participating in an actuarial conference on the west coast of the United States. During 2016, we kept the ball rolling by participating in an actuarial conference on the east coast of Canada. AOF council member Emily Hsu and past

chairperson Ben Keslowitz represented the section at St. Francis Xavier University in beautiful Halifax, Nova Scotia. In addition, Emily was also present at the Actuarial Students National Association Convention in Niagara Falls, Ontario. Finally, the section hosted fantastic Q&A sessions with the University of Texas, the University of Georgia, Maryville University, Robert Morris University and Columbia University. If you're reading this and wondering how your university can get in on this action, simply reach out to any AOF council member.

SOA MEETINGS

During 2016, we continued to host valuable and informative presentations at various SOA meetings. Often cohosted with our partners in the Predictive Analytics and Futurism Section or the Technology Section, we covered topics involving Excel expertise, professionalism, programming languages and the aforementioned "How Do I Get a Job?" I'd like to highlight one of the more interesting sessions we hosted at the 2016 Health Meeting, titled "Actuarial Entrepreneur: Pet Health Insurance" (Laura Bennett and Lori Weyuker). This session won the Outstanding Session Award at the meeting and was thoroughly enjoyed by all who attended. Continue to look for sessions hosted by the AOF at upcoming SOA meetings.

Finally, the Actuary of the Future Section has launched a series of podcasts, which can be accessed on our section page on the SOA website (www.soa.org/aof/).

While we had to forgo our annual beanbag toss tournament this year, we hope to resurrect the tradition in time for the next SOA Annual Meeting. For those of you who are new to the section, beanbag toss is a fun lawn game that is frequently played at barbecues and during tailgating events—it's a great game that everyone can play! The social aspect of the game provides a great chance to network and learn all about what the AOF Section does and how we influence our profession's future.

Also, look for the return of the Actuarial Speculative Fiction Contest. ■



Woolford London, ASA, MAAA, is outgoing chairperson of the Actuary of the Future Section and an actuarial programmer at GGY. He can be reached at woolfordlondon@ggyaxis.com.

Incoming Chairperson's Message

By Bin Fang

I am honored to have the opportunity to serve our members as the chairperson of the Actuary of the Future (AOF) Section Council for 2017. In the past year, we had a fantastic group of council members, friends of the section, board partners and Society of Actuaries (SOA) staff working seamlessly together. On behalf of the entire section membership, I wish to especially thank our outgoing council members, Woolford London (past chairperson) and Dave Snell (tireless technology evangelist), for their hard work and dedication. They have volunteered their time and been instrumental in delivering outstanding value to our members, and we cannot thank them enough!

For 2017, Paul Andrejko will serve as our vice chairperson. We've also welcomed our newly elected section council members, Emily Hsu, Xiaochuan (Mark) Li, Derek Ray and Laura Wiland.

The existing relationship and network built with other SOA sections, college actuarial programs and employers are invaluable assets, and this council will continue building the momentum on innovation and career development, including identifying current actuarial employment trends and new opportunities in the actuarial field, developing business and leadership skills required to succeed in the actuarial profession, and coaching networking and professional development skills.

Our mission is to "identify and promote new opportunities, skills and new ways of thinking to help actuaries excel on their career journeys." In support of this mission, we have a variety of initiatives under way, including the following: We will plan series sessions at the SOA meetings and actuarial conferences, and we will reach out to potential students with an expanded list of college actuarial study programs. Stay tuned!

SECTION COUNCIL INFORMATION

Our council members have traveled west and east and put great effort into campus presentations at various universities since 2015. In September, Paul Andrejko, Melissa Carruthers and Woolford London visited Columbia University and had a successful event with the local students. In October, Andrew Bourge gave a keynote address at the Roosevelt University Career Fair related to the future of actuarial science. We will announce additional stops in the near future.

SOA is partnering with the Actuaries' Club of Hartford & Springfield to host the SOA Candidate Connect event in Hartford, Conn., on Nov. 11. The event is tailored for pre-ASA actuarial candidates and students, providing them with information, inspiration and networking opportunities. I have volunteered to host the session. Please stop by for a "meet and greet" if you are in the area.

Social media has created new ways of communicating and sharing information with others. As you may know, the AOF Section is on LinkedIn! We have more than 100 members and are growing. Whether you are a recent graduate looking for career direction or a seasoned actuarial professional expanding your career trajectory, there will be someone to mingle with. In addition, AOF podcasts are coming, and our members will be first in line.

In closing, I encourage all members to continue to support our work; through emails or direct calls, please contact us with any suggestions or ideas you may have. Some of you have already shared excellent ideas or suggested specific tasks, and some have inquired about participating on a more regular basis as a friend of our section or potential council member. We look forward to your continued support and involvement with our section throughout this year and into the future! ■



Bin Fang, FSA, MAAA, Ph.D., is incoming chairperson of the Actuary of the Future Section. He is a director and an actuary at AIG. He can be reached at 281.254.9362 or bin.fang@aig.com.



SOA Explorer Tool

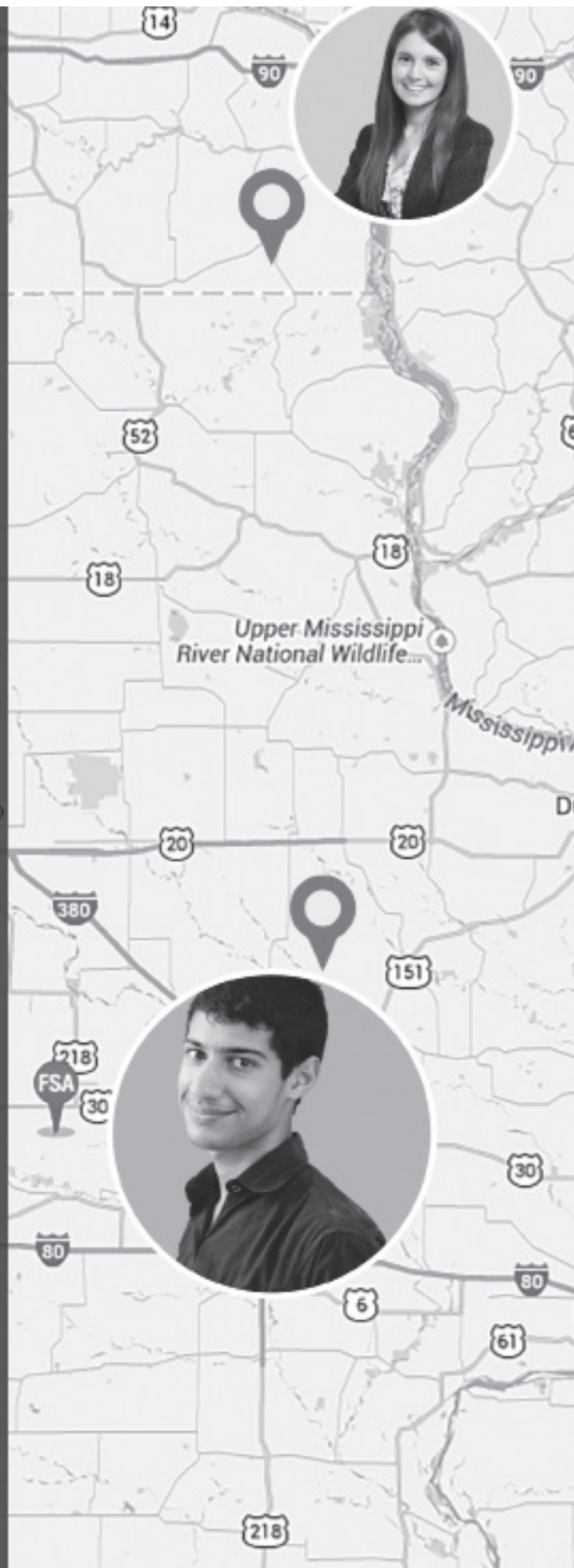
Find Fellow Actuaries
Around the Block or
Around the Globe

The SOA Explorer Tool is a global map showing locations of fellow SOA members and their employers, as well as actuarial universities and clubs.

Explorer.SOA.org



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Passing Actuarial Exams

By Ryan Shubert

For the last few years, my friends have jokingly teased me about being a nerd. At least I think they were joking. To elaborate, I'm a recent graduate with my degree in actuarial science. I started my actuarial exam-taking journey shortly after graduating from high school. In the summer before my freshman year at Maryville University, my brother—who would go on to get his ASA designation later in the same year—gave me perhaps the best piece of advice an aspiring actuary can get: “Start studying for exams immediately.” So I did.

After six months of studying, I was able to pass Exam FM with a “perfect” score of 6 just one semester into my college career. I started to think that this whole actuary thing was going to be a piece of cake. Needless to say, I was quickly humbled, due to my less-than-perfect failing grade on Exam P. After getting over my initial disappointment, I tried to reflect on what I needed to do to pass next time. It was pretty clear that the thing I was missing was time. All I needed to do was put in more quality study hours, and I knew I could pass. I did this and was able to double my score (from a 4 to an 8).

It was after Exam P that I realized that all I needed to do to pass these things was to study really hard for a long time. Well, maybe that isn't such a big revelation. I did, however, learn that these exams are too expensive and too time-consuming for me to give anything less than my best. Since passing Exam P, I've been able to pass the remaining three preliminary exams. My friends and teachers sometimes ask my secret. My strategy is no secret: Study really hard for a long time, and it gets easier.

Through passing the first five preliminary exams, however, I *have* picked up some tips and tricks, none of which are of any use without putting in a lot of study hours. Though, if you can find a study strategy that doesn't involve hard work, I'd love to hear it. To me, there are really three main steps to passing: planning, studying and exam preparation.

I'll start with the disclaimer that I have a very Type A personality. I love lists. There is no better feeling to me than crossing a line off of a to-do list. The “Memos” application on my phone has a grocery list, a list of things I want to buy, a list of things I'm saving for and several to-do lists, separated by deadlines and purpose. If that doesn't sound like you, then maybe my strategies won't be all that helpful to you. Half of passing ex-

ams is trial and error; everyone has to figure out what works best for them. But this is what has worked for me, and maybe it will work for you, too.

Planning and studying sort of go hand in hand, but I've decided to keep them separate in the description of my process. I've noticed that when candidates tell non-actuarial folks that they've passed an exam, the audience typically has varying levels of excitement, ranging from “Big whoop” to “Wow, those are pretty hard, right?” My actuarial friends, on the other hand, usually respond with something like, “That's great; what's next?” To me, that's pretty telling (and pretty brutal). I think that a successful exam-passing strategy must have a plan. This plan doesn't consist of just what exam is next but also *when* the next test is, as well as what test to take after that. Candidates should know when each of the preliminary exams is offered and adjust their study schedules appropriately. To ensure I always have plenty of time to study, I like to give myself six months to prepare for an exam. I take four months to learn the material and two to work problems (but many people can pass putting in less work over a shorter span).

Studying: Just the word fills me with a sense of dread. The fact of the matter is that studying is not the best part of being an actuary. It may, in fact, be the worst part. It is, however, a necessary evil to reap the many benefits an actuarial career can offer. Part of studying is learning how to study. This seems like a simple concept, but it can be one of the hardest parts about preparing for a candidate's first couple of exams. It is recommended that a candidate invest about 100 hours of studying per hour of the exam. Sitting in the library for 300 hours checking Snapchat, however, is not going to help you pass the exam. Far too often, candidates are guilty of “studying” but not really learning anything. Distractions such as friends, Facebook and anything to avoid memorizing yet another formula can detract from quality study time. It's hard for me to explain to my friends that I need to study for an exam that's four months away instead of hanging out with them on a Saturday afternoon. So I hate having to forgo fun with friends only to waste time checking the latest tweets from my favorite professional athletes.

One way that I try to prevent falling behind is by making a lot of lists (see Type A personality disclaimer earlier). I like to plan out when I'm going to be done with learning the material, when I'm going to finish each section, what I'm going to finish in the coming week and what I'm going to get done each day to meet all of those goals. I have a daily planner that includes all the things coming up at work, at school, and in my personal life, which allows me to plan my daily study goals. Staying ahead of schedule is crucial because delays are inevitable. Life happens; plan accordingly.



Learning the material can be accomplished in a few different ways: online seminars, written manuals or good old-fashioned reading of the required texts for the exam. Personally, I prefer to listen to *and* see someone talk me through a difficult concept. That's just how I learn best. Let me watch you do it a couple times, and then let me try. This is one of the many scenarios where candidates must figure out what works best for them. Another tip is to be well-acquainted with the exam syllabus. These concepts are difficult; struggling to understand certain lessons will happen. Knowing the weight of the material can help candidates decide when to "dig in" and keep working and when to skip to the next lesson.

Once all or most of the material has been learned, the next step is working problems. The Society of Actuaries (SOA) provides hundreds of practice problems for each of the preliminary exams. These are great indicators of what an actual exam will be like. Being able to correctly work most of these problems should make candidates confident in their ability to pass the exam. Fur-

thermore, I think it is necessary to be a good test taker. Coaching Actuaries has a tremendous product called Adapt that I highly recommend. This service allows candidates to take a practice test with questions similar to the real test, geared to an individual's skill level at the time. Adapt is a great way to build up your test-taking skills.

By taking a lot of practice exams, candidates will hopefully develop these test-taking skills that are crucial to passing. The SOA is testing not only math skills but also the candidate's ability to read and think critically. It is these last two skills that are just as (and probably more) important than getting the right number. The exams have the five most common solutions to the problem. Just because the calculator displays a number that is one of these options doesn't necessarily indicate a correct solution. You have to make sure that you have read the problem correctly and thought critically about how to get to the solution in order to come up with the right answer.

The final skill vital to the success of an actuarial student is time management. Good test takers know when to skip a question. If a question seems to be too time-consuming, is too unfamiliar or has an unclear solution—skip it! Candidates get only a certain amount of time to complete the exam. Prepared candidates will use the allotted time to first nail the questions they know and then go back and guess for any problems that don't have a clear and timely solution.

Passing actuarial exams is hard. The fact is that, if you've decided to pursue an actuarial career, you're probably "smart" enough to pass the exams. My success isn't due to my intelligence—there were much smarter people in my classes with fewer passed exams. What sets candidates apart is their commitment to studying. Everyone ends up taking a different path. Find what works for you. Finally, and most important, if you're going to do something, give it all you have. ■



Ryan Shubert is an actuarial assistant at RGA Reinsurance Company in St. Louis and is currently making progress on his ASA designation. He can be reached at rshubert@rgare.com.

Should I Get an MBA in Addition to an FSA? Predictions, Perspectives, Analysis and Reflections

By Mark Spong

Editor's note: This article originally appeared in the August 2016 issue of The Independent Consultant. Copyright © 2016 Society of Actuaries. Adapted by permission.

"It's going very slowly, but ten years from now, it should be much easier for an actuary to move into what was previously considered an MBA-only role. That's my stance on it."

—David W. Simpson, transcribed from SOA Annual Meeting & Exhibit¹, October 1997

Mr. Simpson's prediction from nearly 20 years ago highlights a major question that many actuaries consider at some point in their career: Should I get an MBA in addition to my FSA? Or will an FSA (along with experience and skill) qualify me to step into the types of business leadership roles that I look forward to?

Opinions vary widely and are largely dependent on personal circumstances. More and more actuaries are pursuing nontraditional roles and becoming entrepreneurs and innovators. The actuary of the future may be much more of a general business leader, as Mr. Simpson predicted. The goal of this article is to aggregate those perspectives and sharpen our thinking as we consider if adding an MBA would make sense.

CLARIFYING THE QUESTION

Before diving into arguments for and against adding an MBA, we should make a few things clear.

An MBA can mean many different things. It can mean two years studying full-time at a very selective and prestigious institution. Executive MBAs can mean many months of night and weekend classes. Some MBA programs are offered entirely online.



The cost of an MBA varies just as widely. Full-time programs can cost several hundred thousand dollars when you take tuition and forgone salary into account. Executive MBA programs can be just as costly, but a company sponsorship may be available.

With the variety of MBA options to consider, it is very likely that certain paths would be inappropriate, while some others might make sense. To help make this distinction, we should be explicit in selecting a set of "win conditions" that may justify the investment of time and money. For an MBA to be worth it, it should lead to:

1. Greater impact
2. Expanded opportunities
3. Increased personal fulfillment
4. Higher compensation

The order may be subjective, but for an MBA to have any value, it should have meaningful impact on the business. With the additional education, one should theoretically be able to step into more roles and take on greater responsibility. The last two conditions are certainly important but are hollow and selfish motivations if the first two conditions are not satisfied.

ARGUMENTS FOR ADDING AN MBA

Non-actuarial MBAs are overwhelmingly positive about their MBA experience and the impact the degree had on their career. The alumni network is always stated as the primary benefit, followed by executive presence training and general business knowledge playing a distant third. They often credit their first job (and salary bump) to their MBA program.

FSA + MBAs also tend to be positive about their MBA experience. In 2009, Mark Sorenson and Jay Jaffe wrote an article for the Society of Actuaries (SOA) titled “Is FSA Enough?”² and concluded that MBA programs offer a very attractive means of skills training and broader recognition required to compete and advance in a competitive and changing environment.

The perspective of actuarial students tends to be that they observe the impact that FSA + MBA business leaders have and naturally want to emulate that success. The Corporate Finance fellowship track is the most popular (~30 percent of FSA exam attempts according to actuarial-lookup.com) and has the most overlap with the MBA curriculum. For example, the primary source material for the CFE Exam is a textbook called *Corporate Finance* written by two Stanford Business School professors and specifically focuses on applying risk management concepts beyond just insurance.

All three of these groups would argue that an MBA represents a broader base of knowledge and skills and is more publicly recognized as a leadership credential than a traditional FSA. Key uses for an MBA are:

- If you are in a top-tier institution, the recruiting process enables you to get your foot in the door at firms that might otherwise be closed.
- The network you build with classmates can help you change companies or industries and/or pivot roles. Those relationships can also be a long-term valuable asset to your company.
- The soft skills training may boost your presentation and communication skills and may make you a more effective manager and business leader.

ARGUMENTS AGAINST ADDING AN MBA

Experienced FSAs generally seem split in their opinion. Skeptics tend to point out the following:

- Business schools do not have a monopoly on self-improvement. A well-crafted personal development plan plus active and deliberate networking can yield the same kinds of benefits. Two intense years at a consulting firm would do more for polishing communication skills and enhancing executive presence than any number of case studies or classroom presentations.
- An FSA is a professional designation with certification and ethical standards (think quality control), whereas an MBA is not.
- The promise of a strong MBA alumni network is the result of highly successful marketing on the part of business schools and is not a guarantee. Wide-eyed applicants buy this dream and pay a substantial premium for this intangible asset.

- One of the most attractive features of an actuarial career is that an FSA is sufficient. Candidates do not need full-time graduate degrees. Pursuing an MBA would negate this relative advantage to other careers.
- If you don’t pursue an MBA-track role when you first complete the MBA, you may be squandering its value at its peak.
- As an FSA you already have your foot in the door in the industry, and you don’t need an MBA to have an “in” with the top firms. In fact, it may even seem like recruiters will knock down your door once you earn your ASA or FSA.

Actuarial recruiters also tend to be skeptical of adding an MBA (see the recent DW Simpson article “Pursuing an MBA as an Actuary—Is It Worth It?”³). The main drawback identified there is cost, which we can explore more on our own.

Suppose you earn your FSA and then take two years off to attend a top-five business school full-time. You miss out on salary and incur substantial debt, with the hope of landing a top-paying job on graduation. How much does the salary boost have to be in order to balance out the cost of tuition and lost earnings?

The following hypothetical framework puts a career as an FSA on the left and an FSA + MBA on the right. It makes some sweeping assumptions, but it is a start for an interested reader to personalize.

$$NPV(FSA\ Salary) = PV(NPV(FSA + MBA\ Salary)) - NPV(Cost\ of\ MBA)$$

- $P = FSA\ Salary = \$100,000$
- $R = Annual\ Cost\ of\ MBA = \$70,000$
- $r = discount\ rate = 10\%$
- $g = salary\ growth\ rate = 3\%$
- $n = career\ length = 30\ years$
- $X = Required\ Post - "MBA\ Salary\ Bump"$

$$\frac{P}{r-g} \left[1 - \left(\frac{1+g}{1+r} \right)^n \right] = \frac{1}{(1+r)^2} \cdot \frac{P+X}{r-g} \left[1 - \left(\frac{1+g}{1+r} \right)^{n-2} \right] - R \left(\frac{1-(1+r)^{-2}}{r} \right)$$

$$X \approx \$36,000$$

This particular example requires a salary bump of \$36,000 in the year after an MBA in order for the investment to break even.

At first this bump seems reasonable when compared to the headline of the *Fortune* article “Congrats, MBA Grads! You’re Getting a \$45,000 Raise.”⁴ A second look shows the median starting salary for a newly hired MBA is about the same as an FSA without an MBA. Expecting the same boost in earnings on top of FSA compensation may be optimistic. A *Wall Street Journal* article noted in 2013, “For Newly Minted MBAs, a Smaller Paycheck



Awaits.”⁵ Even at Wharton, one of the best business schools in the world, the median salary in the Wharton Employment Summary⁶ for 2015 MBA grads is \$125,000, still thousands less than the breakeven point for this example.

Aside from the cost, there are other considerations that are more subjective. The first is that designations can be very alluring. The attraction of additional letters to add to your signature and pad a resume can be incredibly strong. It is very important that a choice of this magnitude is not motivated by vanity. Earning an MBA on top of an FSA might be unconsciously equated to a “golden ticket” to the executive suite.

The second consideration is that there are several sources of bias that can warp our perception of the value that an MBA may add.

- Positive attribution bias may color the perspectives of MBAs. It would be difficult to admit that the time and money spent on earning an MBA was not worth it.
- Survivorship bias may sway observers to believe that the reason why MBAs often have more visible leadership positions than FSAs is because of their MBA. We may mistakenly ignore many other MBAs who were not as successful.
- Confirmation bias may lead people to favor an MBA because it is more widely known and marketed. If we expect MBAs to

be successful business leaders, then that is what we are more likely to observe.

A third consideration is the differentiation factor. How much would adding an MBA set you apart from your peers? A quick look at the numbers may be surprising. There are just over 16,000 current FSAs in total.⁷ To put this in perspective, more than 100,000 MBAs graduate *every single year* in the United States.⁸ Harvard MBAs alone outnumber FSAs. While it is true that an FSA + MBA would be an even smaller and possibly more elite subset, there are plenty of other ways to distinguish your experience. For example, you might actively pursue lateral career moves for broader experience or stretch assignments in nontraditional roles. The point is that an FSA may be able take you further than you think. After a decade on the job, odds are that your performance will be what distinguishes you as opposed to your credential.

CONCLUSIONS

A common theme that came up during this research was branding. Perhaps it is not surprising that the degree that includes marketing and competitive strategy has clearly captured the public’s perception of leadership.

A company-sponsored Executive MBA turns out to be uniquely attractive to an FSA. It would satisfy all the identified “win conditions” in a way that other options may not. By partnering with your sponsor company, your impact on the business would be based on an independent assessment of real results, not just hopes and dreams. The investment in human capital by the sponsoring company would almost certainly be connected to strategic talent management goals and succession planning. The sponsoring company would cover all or part of the cost, which would be essentially equivalent to a raise. The partnership seems like a reasonable way for an FSA to further his or her personal and professional development while also meeting the needs of the business. Besides, would you rather network with proven business professionals whose sponsoring companies want to invest big money in them or bright, ambitious full-time students just a few years out of school?

The goal of this article was to sharpen our thinking by presenting some perspectives and analysis. There are still a host of other questions to keep you up at night as you wrestle with deciding your path. As you do, remember Mr. Simpson’s prediction and consider Bob Morand’s reflection:

“The landscape has definitely changed since 1997. Actuaries have made themselves much more relevant for insurance companies. For example, the CRO title didn’t really exist back then. Actuaries have ascended to C-suite roles that used to be filled by MBAs. Looking forward another

ten years, actuaries continue to reinvent themselves. Predictive analytics is one area where actuaries continue to evolve and progress.”

—Bob Morand, vice chairman, president and managing partner of DW Simpson (6/30/2016 interview)

Note: Thanks to the dozens of people who contributed their perspectives and helped shape this article. ■



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Knowledge On-the-Go

SOA Podcasts

The SOA releases free podcasts each month, designed to help busy professionals find the time to gain insight and hear different perspectives. Recent podcasts explored topics ranging from how nonqualified annuities are taxed to how to be an ethical leader.

[SOA.org/Podcast](https://www.soa.org/Podcast)

60 Minutes: The Phone Interview

By Sally Ezra

When someone has decided to consider new career opportunities, it is a big deal! There are so many things to consider, such as the following:

- What kind of step am I looking to make?
- How much more money am I looking to make?
- Will I really be able to relocate?
- I have great benefits; how are the benefits at the companies I'm looking at?
- Are the long-term opportunities better elsewhere?

Many people want to learn the answers to some or all of their pressing questions early in the interview process. Although getting those answers would be an ideal situation for someone seeking a new role, it's unlikely that many of the answers to those questions will come to light until further along in the process.

Upon telling a candidate that a company wants to have a phone screen, I'm almost always asked something along the lines of, "My family wouldn't be able to relocate with me for six months; should I mention that?" Or, "I need a big step up in money to make this move; should I ask what the range for this position is?" or many other questions that simply are not right to bring up in an initial interview. When I'm asked whether those things should be brought up, my reply is: "You have 60 minutes to impress the interviewer. Asking those questions at this stage is not the best way to show you are a great fit for the role. Those questions will get answered along the way, but when you have 60 minutes to make the impression you want to make, spending time on issues and concerns will not get you to where you want to be."

So, how do you want to spend those 60 minutes? On a very basic level, employers are essentially assessing an interviewee on two things: Can the person do the job? Do I want this person working for me? An interviewee wants to convey competence and a collaborative essence in the phone screen.

To convey competence, review the job description for the role for which you're being considered. Write out notes that describe your competencies for all the responsibilities. When there is something in the job description that you haven't done before

(and hopefully there are some, particularly if you are considering a role that either broadens the scope of work you've done or takes you to a new level of responsibility), note how your experience to date will lend itself to the work. Be able to describe why you are looking to expand in those ways, too.

Review the company's website beforehand, and explain in the phone interview why the company is of interest to you. For example, if you are currently at a large company and interviewing at a small one, be ready to explain why you think you'd fit in well in their environment—or vice versa.

When conveying why you would be a good person to have on the team, think about the work you will be doing and the different interactions you would have in the role.

Review the LinkedIn profile of the person with whom you will be speaking. Whether it is someone in the human resources department or a hiring manager, think about what that person will want to know about you. Be prepared to impress by being well prepared!

Many candidates have a perceived need to interview the interviewer—to interview the company they're considering joining. The best way to do that is to ask well-thought-out questions that indicate a positive outlook yet get you the answers you need. Keep your ears open for red flags, and take note of the concerns you have and figure out the best ways to get to the answers you need. The hard questions most interviewees want to ask simply won't matter if no job is being offered! And many don't need to be asked, because they become immaterial along the way. The better the interview process goes, the more likely the interviewee will get more of his or her needs met. So the best thing someone can do is put him- or herself in the position to be the best candidate for the job.

As with any search one partakes in life, a job search involves an evolution in thinking. What seems most important at the beginning may become less important along the way. The importance of any one variable might go from low to high or vice versa. Some things that seem important might fall off the list, and items not previously thought of might land on the list of things to consider. It's a journey. Be invited to continue the journey by making sure that your first 60-minute phone interview gives the interviewer the information he or she needs to conclude that you're a great fit for the role! ■



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Actuarial Job Market Overview

By Andrew Bourg

Q&A with DW Simpson's Marianne Westphal, senior director; Kieran Welsh-Phillips, manager; and Elsa VanHove, senior recruiter.

The actuarial job market is constantly changing and evolving to adapt to new laws, economic structures and consumer demands. With these changes, it's important for all actuaries, regardless of age or experience, to be aware of these changes and update their skills and career goals as the expectations for actuaries evolve.

The Actuary of the Future (AOF) Section sat down with three recruiters from the well-known actuarial recruitment firm DW Simpson (Marianne Westphal, Kieran Welsh-Phillips and Elsa VanHove) to discuss the ever-evolving actuarial field. These recruiters are well-versed in the topic of the actuarial job market and provided insights into the field that will benefit actuaries as they make career decisions.

AOF: What is the current job outlook in each of the major actuarial fields (life, health, retirement, and property and casualty)? What about nontraditional actuarial roles?

DW Simpson: Overall, the market is very strong. We are seeing growth in each field and highlight some of the following areas:

- **Life.** The market has remained active in this area. We have seen a lot of positions come up, both in traditional life and in annuities. Regulatory bodies and major life and annuities carriers have been hiring for roles in model validation as well as on the corporate side. Also, more software companies have been looking for designated actuaries to work in sales and implementation. Finally, long-term care and disability experience have been sought after in the past year.
- **Health.** As the health care landscape continues to evolve, Affordable Care Act, Medicare and Medicaid experience is valuable, as is health care economics experience.
- **Retirement.** Pension risk transfer is an in-demand skill set as companies de-risk. We are seeing some traditional pension consulting roles come back as consulting firms grow out these areas.

- **Property and casualty (P&C).** We are seeing continued growth in P&C roles. In personal lines, we are seeing a need for candidates with predictive modeling skills. In commercial lines, areas such as political risk and cyber risk are bringing more candidates.
- **Nontraditional.** Predictive modeling and analytics is not necessarily considered nontraditional anymore, but it certainly is an area of increasing interest; companies looking for expertise in data science value candidates who can work with and interpret the data from an actuarial perspective. We are also seeing more actuaries in start-up environments, both in health insurance and technology. Furthermore, over the past year we have seen more established companies hiring their first in-house actuaries.

AOF: Are there any anticipated major changes in the actuarial job markets in the next few years? This may be largely subject to legislative changes, but is there anything else on the horizon?

DWS: From a legislative perspective, national and international capital regulations such as Solvency II will continue to bring actuaries out of a backroom function and into corporate and decision-making teams. Principle-based reserving (PBR) and model validation are timely topics. Financial institutions are also starting to realize the value of an actuary's thought patterns and processes, which is opening the door for actuaries to be involved in industries outside of traditional insurance.

Disruptive technologies and ongoing advancements in analytics will continue to drive changes in the actuarial profession. With the advent of driverless cars, the ever-evolving Affordable Care



While the overall actuarial job outlook is growth positive, it is key to distinguish oneself from the competition during these all-important initial career stages.

Act and new kinds of cyber risks, actuaries constantly need to innovate within the profession. This includes not only refining existing procedures and methodologies but also responding to the ways in which people are looking at insurance (e.g., peer-to-peer insurance). With the exponentially increasing amount of data available to sift through, actuaries who have skill sets in data science, predictive modeling and analytics will become increasingly valuable.

AOF: Does having a LinkedIn profile help candidates in finding and securing job openings? Do employers tend to utilize LinkedIn or other social media websites?

DWS: Many actuarial employers utilize social media, particularly during an interview or offer process. It is worthwhile to create—and maintain!—a LinkedIn profile summarizing your skill set and achievements. You may provide more or less detail at your discretion. An appropriately professional head shot as well as a brief, easy-to-read summary of your expertise are complementary finishing touches to consider. As for more personal social media outlets, we recommend setting your accounts to private, monitoring these evolving platforms to ensure that your settings stay private and keeping any publicly accessible components politically correct.

All this said, don't forget the human elements of networking and keeping in touch with a recruiter—highly beneficial endeavors and at the core of finding and securing well-matched job openings. Web resources are intended to be a supplement to one's professional presence and efforts.

AOF: What geographical areas (both in the United States and internationally) typically have the most actuarial job openings? Are any areas growing or shrinking at any noticeable rate?

DWS: As the need for the actuarial skill set has only grown over the past 10–15 years, we have only seen the market expand. In the United States, the Northeast continues to be where we see the largest concentration of actuarial opportunities, as well as major metropolitan markets (e.g., Chicago and Atlanta). New York

City, Philadelphia, Boston and Hartford, Conn., are the larger hubs, though there are reputable companies dotted throughout the region. In other regions, notable actuarial markets include the following:

- Midwest: Minneapolis–Saint Paul, Indianapolis and Des Moines, Iowa
- South: Florida, Dallas–Fort Worth and Raleigh, N.C.
- West: San Francisco, Phoenix and Seattle

For our neighbors up north, Toronto is a national hub for actuaries, followed by markets in Montreal and Vancouver. Bermuda in the Caribbean continues to be a popular destination. In Europe, London and Zurich are large (and competitive) markets, and in the Middle East, Dubai is a growing insurance hub. Singapore and Hong Kong have long attracted international expatriates across all industries, though there are growing insurance markets in China and Southeast Asia. Latin America is also an ascent market.

AOF: Are companies becoming more open to having employees work remotely? What are the circumstances necessary for this to be an option?

DWS: Generally speaking, we are seeing a small but growing trend for remote working. Having employees in the office is still a preference for the vast majority of our client companies, as there is still a lot of value placed on informal “watercooler” conversations. However, with workplace teleconferencing options expanding and becoming more advanced, telecommuting is becoming more widely accepted. Additionally, as companies look for candidates with difficult-to-find and highly sought-out skill sets, remote work can be one way to attract that top talent.

An individual company's culture often dictates that firm's comfort level with telecommuting, as does tenure and personal performance. We have specifically seen an uptick in actuaries working remotely in consulting or nontraditional (e.g., sales-oriented) roles. Often with a remote situation there will be a heavy travel component, either to client sites, a regional office or both. During the interview process, it is important to vet out how comfortable your direct manager will be with a telecommute situation, and it may be a good idea to discuss what regular lines of communication will look like (e.g., office instant messaging, email, phone conversations or a combination).

AOF: How competitive are internship and entry-level positions currently? Is the number of students applying for such positions increasing or decreasing?

DWS: Today's junior-level actuarial market is highly competitive. The role of an actuary is receiving increased media attention, and more universities are offering actuarial science programs. As such,

the profession is garnering greater interest and a greater number of applicants.

While the overall actuarial job outlook is growth positive, it is key to distinguish oneself from the competition during these all-important initial career stages. Some key components hiring managers tend to focus on include exams passage (approximately three passed), education background (relevant degree[s] with a strong GPA), technical skills (e.g., Excel, Access, VBA, SAS, SQL, R, C++ and actuarial software), related activities and leadership experience, and communication savvy. Securing an internship in conjunction with academic pursuits is strongly advised.

AOF: Do employers approach career changers differently from the more typical recent college graduate? What advantages or disadvantages exist for such aspiring actuaries?

DWS: As with traditional entry-level candidates, it is important that career changers take proactive steps to stand out from the crowd. New grads may be at an advantage in terms of fulfilling relevant coursework, possessing freshly developed and applied technical skills, and perhaps in performing hands-on actuarial work via an internship.

In addition to the applicant advice outlined in the previous question, it can be helpful for a career changer to highlight his or her business savvy via accomplishments made in a professional setting to date—a notable potential advantage over new graduate candidates. Another point to emphasize is one's commitment to the actuarial path, supported by specific reasoning as to why this is a conscious, worthwhile and long-term professional transition. A career changer is also encouraged to apply for internship opportunities and must be prepared to genuinely consider a fair entry-level market salary (see DW Simpson's annual salary survey¹). ■



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ENDNOTE

¹ DW Simpson, 2015 Actuarial Salary Survey, <https://www.dwsimpson.com/salary>.

The Competency Framework: Design Your Future

By Richard Junker and Curtis Lee Robbins

Editor's note: This is the first article in a series of three covering the Society of Actuaries (SOA) Competency Framework. The subsequent articles will appear in future issues of the Actuary of the Future newsletter.

The Society of Actuaries (SOA) Competency Framework is a powerful tool to enable you to design your future. Though it has been the SOA's instrument for prioritizing continuing education and support to members since 2010, many actuaries are still not fully aware what a potent tool it can be to them in planning their personal careers.

To raise that awareness, and to inspire you to take action, the authors will provide answers in this series of articles to the following questions:

1. What is the Competency Framework?
2. Why did the SOA design the Competency Framework?
3. Where are actuaries today?
4. Where will you be in five years?
5. How do you gear up for designing your future?
6. How do you create a personal development plan?
7. How will the Competency Framework help your future?

WHAT IS THE COMPETENCY FRAMEWORK?

Simply stated, a *competency* is a demonstrable ability (the synthesis of skills, knowledge and behaviors) that contributes to an essential outcome (product or service) that defines an individual as qualified.

The Competency Framework is a meaningful model of competencies that may be organized by content, role, position or a combination thereof and may be used for a variety of purposes and processes. It is the synthesis of these skills, knowledge, behaviors, attitudes and attributes that contribute to outstanding job performance.

The SOA's Competency Framework is a tool to help actuaries make decisions related to their individual professional development and career management plans. It applies systematic, sound approaches to selecting professional development opportunities,

focusing on the skills needed to go beyond technical and specific actuarial analysis.

The Competency Framework was introduced to focus and prioritize continuing education and support to members. The Personal Development Plan (PDP) answers the constant question, "What should I be doing next?"

The eight competencies in the Competency Framework are shown in Table 1.

Table 1
SOA Competency Framework

Competency	Legend	Definition
Communication	C	Demonstrating the listening, writing and speaking skills required to effectively address diverse technical and nontechnical audiences in both formal and informal settings
Professional values	P	Adhering to standards of professional conduct and practice, where all business interactions are based on a foundation of integrity, honesty and impartiality
External forces & industry knowledge	EF	Identifying and incorporating the implications of economic, social, regulatory, geopolitical and business changes into the design and delivery of actuarial solutions
Leadership	L	Initiating, innovating, inspiring, creating or otherwise acting to influence others, regardless of level or role, toward a common goal
Relationship management & interpersonal collaboration	RM	Creating mutually beneficial relationships and work processes toward a common goal
Technical skills & analytical problem-solving	TS	Applying the actuarial knowledge, skills and judgment required to provide value-added services
Strategic insight & integration	SI	Anticipating trends and strategically aligning actuarial practices with broader organizational business goals
Results-oriented solutions	RO	Providing effective problem-solving that addresses relevant interests and needs

WHY DID THE SOA DESIGN THE COMPETENCY FRAMEWORK?

The Competency Framework provides strategic benefits:

- Integrate education and career development
- Focus and prioritize continuing education and support to members
- Provide a foundation for professional development

WHERE ARE ACTUARIES TODAY?

The Competency Framework was introduced to members in 2010. The Self-Assessment Tool of 100 items was drawn from a sample of statements provided by more than 3,000 actuaries across various areas of practice, answering the question, “What skills do actuaries need?” Statements were collected and distilled into 100 items by area of practice and then generalized for all areas of practice.¹

According to Steve Eadie, Dale Hall and Judy Powills, who helped develop the SOA Competency Framework, the central premise of the Competency Framework is:

In addition to technical skills and an understanding of the external forces that affect an actuary’s work, nontechnical skills are central to the actuary’s success as a well-rounded business professional and advisor. It is clear that actuaries will benefit from continuous learning and development in various areas of competency to ensure that they are able to respond to a rapidly changing environment. Their employers demand it. Their clients demand it. Ultimately, the public demands it.

The SOA Competency Framework Personal Planning Workbook complements the Self-Assessment Tool. Using the spreadsheet-based planner is an easy way to organize, design and track your professional development. The planning workbook is updated annually to include references to sessions, organized by competency, from the SOA’s flagship meetings—Life and Annuity Symposium, Health Meeting, Valuation Actuary Symposium and SOA Annual Meeting & Exhibit.

The greatest performance gaps continue to be in the areas of communication, relationship management and interpersonal collaboration, strategic insight and integration, leadership, and results-oriented solutions.

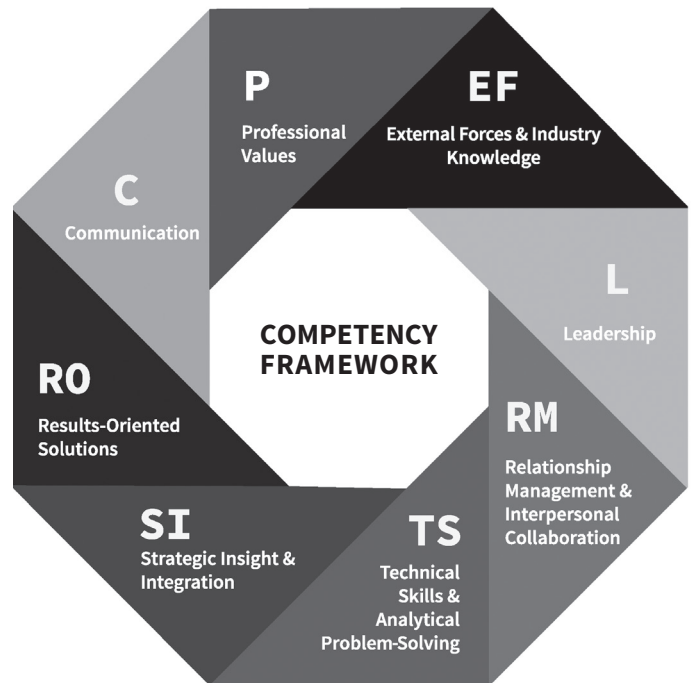
One may contend that today’s actuaries are much better communicators and collaborators than those of a generation ago. Certainly, presenters at actuarial meetings are far more engaging and polished than their predecessors. The many meeting management tools and the technology triumphs of recent years have lifted all boats as well. Every speaker has benefited.

Many new ASAs and FSAs have focused heavily on building technical skills and passing examinations and now need to switch their focus to the soft skills (i.e., communication and the other interpersonal competencies). A consultant friend who specializes in Excel systems and building models observes that many in-the-trenches actuaries with whom he works can build terrific models, yet they lack interpersonal versatility.

The pipeline of new associates and fellows will do well to make the Competency Framework their second religion over the coming decade. (Our recommendation is not to be construed as spiritual guidance.)

The branding for the Competency Framework has changed in parallel with the SOA’s recent branding update. The new image, as seen in Figure 1, is an octagon of the eight competencies. As shown at <http://cfat.soa.org>, the full display invites you to take the self-assessment and design your future.

Figure 1
The Competency Framework



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"In addition to technical skills and an understanding of the external forces that affect an actuary's work, nontechnical skills are central to the actuary's success as a well-rounded business professional and advisor."

WHERE WILL YOU BE IN FIVE YEARS?

Think about where you want to be in five years. Do you want to be an individual contributor, a manager, director or vice president of a department, a C-level executive, or retired and living off your travels and Tai Chi practice?

"We must remember that casting a critical eye on our weaknesses and working hard to manage them, while sometimes necessary, will only help us prevent failure. It will not help us reach excellence . . . you will reach excellence only by understanding and cultivating your strengths."

—Marcus Buckingham, *Now Discover Your Strengths*

Here are five questions that can give purpose and direction in your career planning:

- **Who are you?** What is the one thing you know better than anyone else? What one thing do you do best?
- **Where are you needed?** Think in terms of where you are needed rather than where you want to be or what kind of money you want to make. It's not what you want but where you are needed—specifically you, with your gifts.
- **Who will you serve?** Who specifically will benefit from the service you provide?
- **What specifically do they need?** How do those you serve change or transform as a result of what you do for them?

- **What is your call to action?** Looking five years into the future, think about how you might finish this statement: "To be valued for my professionalism, technical expertise and business acumen, I will have developed skills that include . . ." ²

As you assemble your personal development plan entries, concentrate on the following:

- Identify the skills you gravitate toward.
- Focus on fixing your weaknesses.
- Determine what you do well, where you find joy and what you want to focus on.
- Be happy at what you do best.
- Do not ignore critical skills.

In our next installment, we will discuss how to gear up for the design of your future. In the interim, the authors welcome your feedback. Our goal is to have this series address your questions and needs and to help all actuaries of the future design a future they will find meaningful and rewarding. ■



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ENDNOTES

- 1 For a full discussion of how the Competency Framework was developed, see Steve Eadie, Dale Hall and Judy Powills, "Road to Success," *The Actuary* 6, no. 3 (June/July 2009), <http://www.soa.org/library/newsletters/the-actuary-magazine/2009/june/act-2009-vol6-iss3-eadie.aspx>.
- 2 Joe Jones, founder and program director at Transition Masters in Tampa, Fla. <https://www.linkedin.com/in/joehhones>

Actuaries in the East: Student Initiatives for Change

By Jacqueline Mackay

ACTUARIES IN CANADA

Suppose you meet an actuary in Canada. As you make small talk, you discover that she attended the University of Waterloo and now works for an insurance company in Toronto. If you are experiencing wildly vivid déjà vu right now, you are not the only one. Ontario, a front-runner in both education and job opportunity, has long established itself as a mecca for all things actuarial. You will be hard pressed to find an actuary in Canada who has never worked there.

Where presence of actuarial science is concerned, Ontario gets a gold medal, while Atlantic Canada gets only a participation award and a pat on the back. North America is full of bright students, so upon hearing the limited reach in Atlantic Canada of such a limitless career, I took action. This is my first contribution to the actuarial profession.

According to the Canadian Institute of Actuaries (CIA), 46 percent of CIA members currently work in Ontario. Second to this, we see 25 percent in Quebec, amounting to almost three-quarters of Canadian actuaries in these two provinces alone. That leaves 17 percent of members outside of Canada, 10 percent in western Canada, and a disheartening 2 percent in Atlantic Canada.

THE CONFERENCE

On March 12, 2016, St. Francis Xavier University (StFX) hosted the Atlantic Canada Actuarial Student Conference, the first of its kind, which brought together 30 students to develop their understanding of actuarial science and explore the possibility of a career as an actuary. With financial backing from the Society of Actuaries (SOA), the Casualty Actuarial Society (CAS), the Canadian Institute of Actuaries (CIA), Manulife Financial and StFX, the conference engaged students at all levels of prerequisite knowledge, whether they had been studying in this field for years or simply googled “What is an actuary?” the night before.

The conference began with an introduction from then-CIA president, Rob Stapleford, followed by two introductory sem-



inars that introduced some of the differences between life insurance and property and casualty insurance. Following this, we had a roundtable discussion, which entailed having each of the speakers sit at a table while the students rotated at their leisure in small groups to each table. This allowed students to ask questions of a broader spectrum in a more personal setting and for the speakers to share any information or advice they thought would be helpful. Next, the students were able to sit in on two complementary Q&A sessions—a recent-graduate discussion and a career panel. The recent-graduate discussion focused on what it was like being an actuarial student, preparing for and writing exams, applying for internships and co-op terms, and more, while the career panel offered perspective on how a student might choose to diversify his or her career in the long run.

The students in attendance regarded the conference as a “phenomenal learning experience” that helped them to “recognize which areas of actuarial science [they found] most interesting” and “made the whole designation process [seem] less intimidating.”

WHERE I STARTED

In 2014, I began my first year at StFX as a wide-eyed freshman who liked math and did not want to be a teacher. Growing up with an actuary as a father, I never cared to know exactly what the profession entailed, and when implored by others as to my father’s career, “It’s a math job” was as comprehensive a response as I could muster. However, I was attending university as a math major, and I needed to get serious about what career path I intended to pursue. After many months of incessant questioning

of my father on all things actuarial, I decreed that I, too, would be an actuary.

After a year of classes at my beloved university, I finally acknowledged the callous truth that there was no actuarial program, no concentration, no clubs and almost no opportunities that would bring me closer to my goal. After a year of classes, I also knew that, regardless of this, StFX was my home. I concluded then that, since I was not going to transfer schools, I would simply have to transform mine.

Upon further investigation, I discovered that StFX was not an anomaly; everywhere I looked, Atlantic Canada was sorely lacking in the breeds of opportunity that I demanded. There were a few universities with streams or certifications, or perhaps a club or society, but, overall, it was clear that StFX was just the tip of the iceberg when it came to a dearth of actuarial opportunities in Atlantic Canada's learning institutions.

PLANNING THE CONFERENCE

As I got to work, researching and networking, I was fortunate to meet Benjamin Keslowitz, who was at the time the chair of the Actuaries of the Future Section of the SOA. He suggested a few different approaches through which I could address my predicament, among them being to organize a conference for students across Atlantic Canada.

I met with Professor Joe Apaloo of the StFX math, statistics and computer science faculty. After presenting him with my list of objectives, we worked together to form a concentration in actuarial science and have six of our courses approved as VEEs (Validation by Educational Experience)—a thrilling checkpoint, but not the finish line.

Support was found also within the CIA, with whom I spoke about creating an actuarial program at StFX and about organizing my conference. The staff provided resources and guidance on all of my initiatives and continued to do so throughout the entirety of the planning period.

I learned of the Actuarial Students National Association (ASNA), which, among other initiatives, organizes an annual convention for more than 600 actuarial students from all across Canada. Its 2016 convention was held in Niagara Falls, Ontario, in January. This event was organized and executed by actuarial students for actuarial students and provided me with inspiration, ideas and the opportunity to begin recruiting for my own conference.

From students to actuaries and everywhere in between, each person I had the pleasure of meeting was delighted to learn of my plans and eager to help me in any way that they could.

The five months spent planning the conference were the busiest, the most stressful and by far the most rewarding of my life. I spent my days at my classes and my nights at my desk, booking venues, confirming catering, designing posters, contacting speakers, reviewing decks, securing sponsorship and quickly developing a dependency on Tim Horton's black coffee.

MY CALL TO ACTION

My experiences with this journey consistently reinforced my confidence in actuarial science. Not only is it an incredibly diverse and rewarding field, regularly praised as one of the top careers in the world, but it is also full of genuine, inspiring and supportive individuals who believe in investing in the actuaries of tomorrow. Moving forward, I urge you all, especially students at schools less active in actuarial science, to branch out and ensure that, for yourself and for those around you, there are no missed opportunities, because everyone deserves more than a participation award and a pat on the back. ■



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Stress Testing

By Matthew Creech

Stress testing is a suite of tools that actuaries use for a variety of purposes. The tools help companies evaluate the what-ifs and more efficiently weight risk and opportunity. There are many applications of stress testing, but all ultimately lead to more informed decision making. Stress testing can also support the Own Risk and Solvency Assessment (ORSA) regulatory requirement by using the tools to demonstrate an insurer's "assessment of risk exposures" and "prospective solvency assessment." There are different ways to categorize stress testing, but I like to group them into three distinct tools: sensitivity testing, scenario testing and reverse stress testing. The following three sections define and further explain each stress testing tool, including recommendations on improving and getting the most applications out of your stress-testing tool kit.

SENSITIVITY TESTING

Sensitivity testing is the most common form of stress testing that many organizations frequently use. Sensitivity testing is performed by stressing one assumption at a time and measuring the magnitude of that individual assumption or risk. Key uses of sensitivity testing include measuring and monitoring risk exposures, determining and evaluating key assumptions, and better understanding the range of profitability that can be expected for a new product. Unfortunately, the use of sensitivity testing as a product management tool often ends after completing the pricing exercise. Most companies continue to monitor key assumptions using standard experience analysis reports but do not continue to utilize the sensitivity results from pricing.

A standard experience analysis report consists of actual and expected results for key assumptions. This should be improved, given the tools and technology we have available today. Experience analysis reports should go one step further and provide the profitability impact (internal rate of return, profit margin, return on equity, etc.) from the assumptions' deviation from expected. The results from pricing sensitivity testing can be used to produce this "dynamic" product management report, which continues to monitor the profitability of a product. This type of report provides consistency to assumption monitoring, as it links the assumption experience to the profitability impact. Therefore, it is well understood what assumptions are having the largest impact on the profitability of a product.

SCENARIO TESTING

Scenario testing is conducted by stressing multiple assumptions, often historical or hypothetical scenarios about which a story can be told or used to answer a question. A scenario should be well thought out so that all interrelations among risks and assumptions are considered and included in the scenario planning. A key use of scenario testing is that it does the best job of explaining risks to senior management and to stakeholders who may not be experts in the insurance industry (such as board members). Scenarios should tell a story around a particular risk and, most important, help the company develop actions for managing a risk. Key actions that should be developed through scenario testing include implementing preemptive actions and developing contingency and mitigating actions.

The example I like best is how football teams prepare for a game. The most effective teams have a plan for succeeding in a scenario of being down late in a game. This scenario plan is referred to as the "two-minute drill." The best teams not only have preemptive actions in place to keep from getting into this situation, but also have a contingency plan in place to overcome the adverse scenario. Overall, scenario testing is a key tool that all companies should utilize and continue to develop to manage a variety of risks.

REVERSE STRESS TESTING

Reverse stress testing (RST) comes from the opposite end of scenario testing. RST first defines the outcome and then determines the loss it would take to result in that outcome. The outcome is most likely a key trigger level for an organization. Examples of



Stress testing is a fundamental tool that equips management with the knowledge to make informed decisions.

outcomes used in RST could be that the company's risk-based capital ratio falls below 200 percent, management suspends shareholder dividends or share repurchases, or the company breaches key metrics identified in the risk appetite statement. RST helps the company understand the losses that can be absorbed without breaching the key triggers important to the company. RST can be a valuable complement to scenario tests, as it can be used as a benchmark to determine the impact of a particular scenario. For example, the financial impact from a data privacy breach scenario or a pandemic scenario can be

assessed against RST to determine if the financial loss from the scenario results in a breach of a key trigger level identified by RST.

Overall, stress testing is an important function of actuaries that should continue to be developed and utilized. Stress testing is a fundamental tool that equips management with the knowledge to make informed decisions. Stress testing lays out the risks and opportunities better than any other tool, and it is the actuary's responsibility to ensure management has this tool in mind when making important business decisions. ■



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Review: *Actuarial Excel: Data Analytics and Applications*

By Dave Snell

Excel is ubiquitous in actuarial work. We use it for pricing, reserve calculations, merger and acquisition analysis, experience studies and other situations where actuaries once used a paper spreadsheet. Admittedly, other very specialized and highly sophisticated tools have emerged for some of these tasks, but invariably we encounter the odd product, cohort or ad hoc situation that does not fit into these other tools, and the first thing we reach for to solve the issue is Excel. It is little wonder, then, that prospective employers expect a student entering an actuarial career to have facility with this wondrous tool. Yet, gaining facility in Excel for actuarial work can be a daunting task. The program has myriad capabilities, and Excel textbooks often run 1,000 pages or more and cover many capabilities of little use to actuaries, while they lack the emphasis and depth on the analytic capabilities needed in our actuarial work.



Maryville University professors Guangwei Fan, ASA, MAAA, Ph.D.; Guodong Li, FSA, MAAA, EA, Ph.D.; and Jinfeng Wei, Ph.D., have created a supplement to their very popular classroom lessons that I believe is a game changer for holistic education. Traditionally, the paradigm of university instruction has been to have a lecturer in front of the class imparting the wisdom of experience in a mostly single-direction communication process. Students dutifully take notes and later try to make sense of them. It worked for several hundred years, so there was little impetus to change the setup. More recently, however, that traditional approach has come under attack from the Khan Academy, MOOCs (Massive Open Online Courses) and the dozens of sites with video lessons available on the Internet. Several leading and prestigious universities have endorsed this shift. One drawback of MOOCs and similar delivery vehicles, though—and I write from personal experience—is that occasionally the student has a question and wants to have a helpful and knowledgeable human mentor to guide him or her around some obstacle that is blocking further progress, and these online channels do not provide such a source.

Actuarial Excel: Data Analytics and Applications, developed by these three dedicated teachers, is a comprehensive package that includes audio, video, written and hands-on components to facilitate the learning process. There are video-on-demand overview lessons for each chapter; interactive class exercises on Excel workbooks that the student can use, inspect and modify as desired; links to homework assignments and review quizzes; and proven exercises and lessons from their classroom teaching experience of this material over the last several years.

I started using Excel when it first came out in 1985, and as a long-time user of its predecessors (Multiplan, Quattro, Lotus 1-2-3 and VisiCalc), I was a power user from the beginning. The introduction of a true programming language (beyond the keystroke macros) in Excel 5.0 (1993) was a revolutionary advance. Over the ensuing years, I created hundreds, if not thousands, of spreadsheet applications, and some are still in use in multimillion-dollar, and sometimes even multibillion-dollar, scenarios. I relate this background to emphasize that I am used to pouring through Excel textbooks and searching for the few new features I could add to my repertoire—always looking for more arrows for my quiver of spreadsheet-related tools.

My pre-review expectation of this package was that it would cover the basics and then perhaps some VLOOKUPS and possibly INDIRECT statements as the advanced material for actuarial analysis. I was wrong! One of the first video segments I watched involved creating a list of students, sorted by test scores. My first inclination would be to take the original list and use Excel's data sort capability. This is easy, but it has the drawback of being a manual operation and thus not as easily reproducible or auditable by others. Next, I might have put the sort commands into a

VBA macro, but that would require the workbook to be saved as an .xlsm file instead of the more common (and trusted) .xlsx file, and some company security controls discourage the use of these files. Instead, the authors showed a clever use of a combination of the RANK, INDIRECT and MATCH functions that accomplished the task with none of these concerns. That is just one example, but it shows the forethought and emphasis on best practices evident throughout the book and the interactive course.

Continuing to focus on the student, the videos are professionally prepared in short-duration lesson supplements, and the voice accompanying them is that of a native-born American speaker (the daughter of one of the professors) in clear, unambiguous English, with the unmistakable cadence and tone of a fellow student. The authors have made every effort to facilitate the learning process.

These Maryville professionals have upped the ante on teaching effectiveness by embracing a reversal of the longtime process. Instead of lecturing from a lectern and leaving the students to go figure out what they said (or meant to say), they supply the multimedia package for the students to explore at times and places more convenient for them, and they extend the learning process by answering the questions each student has from self-exploration of the package. I see high potential for this pack-

age as the core content of what could turn out to be an excellent MOOC, and that could be a future offering from Maryville. In the interim, though, the on-site students get the best of all worlds! The prepared text, videos and Excel workbooks form a wonderful self-study package that addresses the typical questions students have asked over the last several years. In addition to this prepared material, classroom students have the benefit of personally asking the authors about any finer points or any ideas triggered by these lessons and getting the insights of a personal mentor.

I recommend this educational bonanza for all actuaries and students—those currently pursuing a formal actuarial science or related degree at a university and those who want to hone their professional skills in Excel for more effectiveness in their daily work. I commend the Maryville University faculty and administration for advancing the state of actuarial education. ■



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