ANÉA

THE FUTURE ACTUARY

BREAKING THE PARADIGM

2017

WINTER EDITION

ASNA
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We at ANÉA-ASNA know how much you love networking with other students, employers and industry professionals, hearing about what the industry’s hot topics are from the experienced individuals who are right in the thick of it, and possibly landing an internship with a top insurance company, and we feel the exact same way. Starting in the summer, and all throughout the fall, our Convention Team has been hard at work, bringing to you once again the electric and inspiring convention that has proudly become our namesake.

The ANÉA-ASNA Convention Team is thrilled to welcome you to the next ANÉA-ASNA Convention that will take place January 5-7, 2018, and will be held in our nation’s capital for the very first time! The convention will be hosted at the Westin Ottawa, with a convention space nestled right in the heart of downtown, overlooking the famous Rideau Canal, and featuring stunning views of Parliament Hill. Ottawa 2018: Breaking the Paradigm is all about navigating the exciting and dynamic changes that are coming our way. With autonomous vehicles on the roads, longer lifespans, and the rise of artificial intelligence, we are starting to dismantle the standard methods of managing risks and redesign the way we insure.

This year, we are bringing you more events, more networking opportunities, and new sponsors! The Elliott Bauer Club Night will return again, this year accompanied by a Cultural Event for those under 19, or looking for a different style of night on the town. Both the Club and Cultural events will be organized in partnership with Ottawa Venues, who will be bringing this years’ attendees deals and discounts at more than a dozen venues just footsteps away from the Ottawa Westin. But don’t skip out on your beauty sleep, you’ll want to be refreshed for the new Desjardins Private Breakfast! Speaking of Sponsorship, this year we will be joined by new companies like NBFC, and SCOR, who can’t wait to meet you at the extended career fair.

Whether you are looking to make new professional contacts, keep up with the industry, land your next co-op or even your first full-time job, the ANÉA-ASNA Convention is the place for you. Don’t believe us? Just ask the 600+ students from more than 14 universities all over Canada who join us every year!

Best of luck finishing up your semester, we can’t wait to see you in January!

Sincerely,

Jacqueline MacKay, Convention Chair
Quick Pass
featuring Concordia University Actuarial Mathematics students

The following four Concordians have passed their five preliminary exams under 1.33 years. Take notes.

Tip:
I recommend studying for actuarial exams while studying for classes that cover the material. This is a winning strategy, because you are getting more practice for your midterms and finals, as well as getting additional theoretical knowledge from your professor to what is offered by study manuals.

Tips:
1. To avoid cumulating stress from actuarial exams and stress from school, write as many actuarial exams as possible during your internships. There is also a chance that your employer will cover the cost of the registration fee and/or the study material.

2. Make a study plan. I always go through a couple chapters of a study manual to approximate the number of pages I can study in a day/ evening (varies by exam). Then, I can estimate the number of days/evenings I need to see the material. This allows me to plan how much work I have to get done every week before the exam date, provided I leave some time for review.

3. Get yourself a good coffee machine
Name: Mario Seddik

Exam FM  February 2016
Exam P    May 2016
Exam MFE  November 2016
Exam MLC  April 2017
Exam C    June 2017

Tips:

1. Make sure to master the section of the material with the highest weight on the exam.

2. If you don’t understand a chapter or a concept, try looking at sample exercises and their solutions. Most of the time, when the concept is not easy to grasp, the exercises on it tend to be relatively easier. So don’t be discouraged.

Name: Tobie-Éloi Hinse-Paré

Exam FM  February 2016
Exam P    May 2016
Exam MFE  November 2016
Exam S    May 2017
Exam C    June 2017

Tips:

1. It is important to establish a study schedule taking into account your strengths and weaknesses. Personally, I focus a lot more on exercises and practice exams than learning the theory. For all of my preliminary exams, I would start studying one month and two weeks before the exam date if possible. The first two weeks were dedicated to reading through the study manual and the following month was spent on practice problems and practice exams.

2. While reading the study manuals, I advise you to write down the important notions and formulas in each chapter. Doing four or five questions per chapter also helps to verify whether you’re making sense of the material or not.

3. To review the material, I recommend using online tools such as Coaching Actuaries. This is what helped me most while writing my preliminary exams.
We are ecstatic to welcome the University of Regina as the newest ANEA-ASNA Member University!

The University of Regina has had an actuarial science program since 2000 and currently has 80 students enrolled. This university program covers the material from the first five actuarial exams and is based around a 12 to 16 month internship offered to students following their third year. They are working to integrate 4 month co-op terms in the equation to accommodate students, but this formula is not yet set into place.

The University of Regina’s actuarial community is a part of MASS: Mathematics, Actuarial Science and Statistic Student Society.
Building, enhancing and reviewing models are core components of many actuarial departments’ day-to-day activities. As a result, it is important to develop models in a structured manner so that they are robust and adaptable to current and future stakeholder needs.

This article outlines eight guidelines for successful model development, including a desired outcome and a key consideration associated with each.

**Eight guidelines for successful model development**

1. **Secure buy-in at all levels**
   - **Desired outcome**: The final model meets the need of all stakeholders
   - **Key consideration**: Senior management involvement

   Model development is typically performed in reaction to or in anticipation of internal or external change. It is crucial that all impacted stakeholders have a say and a role in defining the model scope, required functionality and output design.

   Senior management involvement plays a crucial role in ensuring goals are clearly defined, communicated and understood and is instrumental in setting the tone around the model’s importance to all involved.

2. **Establish effective governance**
   - **Desired outcome**: Model development is robust, comprehensive and timely
   - **Key consideration**: Documenting research and rationale behind – and approvals of – key decisions

   As part of model development, all significant model methodology, model design and assumption recommendations should be reviewed and approved by a panel of key stakeholders and subject-matter experts prior to implementation.
Establishing a governance committee with the directive of reviewing, approving and documenting key model decisions helps ensure the model is robust and also adds an important layer of model auditability.

Further, forming a steering committee of senior stakeholders with the mandate of guiding overall model development helps ensure achievement of major goals and milestones and adherence to budget.

“Effective governance... [helps ensure] model development is robust, comprehensive and timely.”

3. DEFINE PLANNING AND COMMUNICATION PROTOCOLS

<table>
<thead>
<tr>
<th>Desired outcome</th>
<th>Model developers and stakeholders are aligned on progress, with no surprises</th>
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</thead>
<tbody>
<tr>
<td>Key consideration</td>
<td>Accounting for and communicating with all required parties</td>
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Before undertaking any form of model development, it is essential to outline a development plan or roadmap.

The roadmap should capture:
A. Clear and realistic goals
B. Major planning, development, testing and documentation work steps
C. Potential roadblocks
D. Staffing requirements (core developers, data providers and subject matter experts)
E. Interim tollgates and final deliverables
F. Timelines

The roadmap should be communicated effectively to all stakeholders to ensure they are aware of and on board with expectations and given an opportunity to provide feedback.

Finally, clearly-defined communication protocols within and between the model development team and key stakeholders should be established. Channels for ongoing feedback, status updates and governance and steering committee meetings should be decided at the onset of the development effort.

4. ALLOCATE DEDICATED RESOURCES

<table>
<thead>
<tr>
<th>Desired outcome</th>
<th>Model development is efficient and effective</th>
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<tbody>
<tr>
<td>Key consideration</td>
<td>Knowledge transfer to model end-users</td>
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It is often beneficial when dedicated resources, with limited distractions from other responsibilities, are allocated to model development. One developer at 100% capacity is typically more effective and focused than five developers at 20% capacity, thus promoting momentum. Part-time resources are generally limited to subject-matter experts or oversight roles.

If few model end-users are involved in day-to-day model development, it becomes more important to (1) communicate and promote knowledge transfer throughout the duration of the development effort, and (2) create effective model documentation and provide training to end-users at the conclusion of development.

⚠️ Certain actuarial systems only allow for one user or developer to be actively using a given model at any one time. Thus, smaller development teams tend to be preferable for coordinating and merging multiple model changes.
5. MANAGE DATA EFFECTIVELY

<table>
<thead>
<tr>
<th>Desired outcome</th>
<th>Timely access to accurate and complete data</th>
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<tr>
<td>Key consideration</td>
<td>Data management is often the driving force behind model development success or failure</td>
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There is typically a significant amount of data required to develop an actuarial model. Policy-level and plan-level information often accounts for the majority of data volume; however, other data elements, such as assumptions, are also required.

All applicable data sources and formats should be identified as early as possible in the model development process. A plan should be in place to effectively automate and consolidate the data management process.

“Data management is often the driving force behind model development success or failure.”

Considerations and actions required to secure appropriate data for model development

- Outline data timeline and resources, including IT staff and resources
- Determine effort and iterations required to scrub or enhance data
- Assess availability of institutional knowledge and documentation
- Define process and integrate data into modeling system

6. ELIMINATE MODELING SILOS

<table>
<thead>
<tr>
<th>Desired outcome</th>
<th>Models that span multiple functional areas or product lines</th>
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<tr>
<td>Key consideration</td>
<td>Rigidity of organizational structures</td>
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Actuarial models are required for a variety of purposes depending on the functional or product area within a company. Modeling silos exist when multiple platforms, models or processes are used. For example, maintaining a valuation model and pricing model for a particular product may result in overlapping processes, model inputs and outputs. Thus, building, validating and maintaining multiple models leads to wasteful duplication of effort. Developing a minimal number of models (i.e., single model or model suite) capable of handling multiple functions can help break down these silos.
7. FULLY UTILIZE MODELING SYSTEM’S CAPABILITIES

<table>
<thead>
<tr>
<th>Desired outcome</th>
<th>A flexible, adaptable and transparent end-to-end modeling and reporting process from data to results</th>
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</thead>
<tbody>
<tr>
<td>Key consideration</td>
<td>Best-in-class implementation requires deep platform expertise</td>
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Best practice involves developing a full end-to-end modeling and reporting process from data to results. Minimizing the use of external spreadsheets, manual interventions and outside-of-model adjustments are important steps in developing a robust, flexible, adaptable and transparent model.

8. CREATE DETAILED AND TRANSPARENT DOCUMENTATION

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<tr>
<th>Desired outcome</th>
<th>Strong institutional knowledge and improved model usability and auditability</th>
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<tr>
<td>Key consideration</td>
<td>Model documentation should be updated alongside the model</td>
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Creating robust and user-friendly model documentation is just as important as developing the model itself. All key methodology decisions, simplifications, approximations and data limitations should be clearly documented to ensure understanding and portability. A consistent set of standards for model maintenance and testing should also be codified.

IN CLOSING

Following these eight simple guidelines promotes the development of efficient and flexible models which satisfy current and future stakeholder needs.

The views expressed are the authors’ own and may not represent the views of Oliver Wyman.

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Every year, companies from all around the globe release revolutionary technological concepts, projects and prototypes. Some of these innovative breakthroughs urge the traditional property and casualty industry to redefine itself. Portrait of an ever-changing field with Nicolas Beaupré, Vice President Pricing, Underwriting and Business Intelligence for Belairdirect Quebec and Newfoundland.

**Autonomous vehicles**

The arrival of autonomous vehicles on our roads generates change in the property and casualty insurance field.

Nowadays, car insurance is based on the fact that a policyholder involved in a road accident may or may not be responsible for the accident. With autonomous vehicles, a perspective shift is necessary. Debate on whether the person behind the wheel or the manufacturer who programmed the car is to be held accountable arises. However, the question will remain unanswered until the legislation, which is governed by province in Canada, has been adapted to accommodate these vehicles.

In addition, although we expect to see the number of accidents on the road decrease, it is worth noting that the severity of each incident will be inversely proportional and non-negligible. Naturally, repairing and replacing sophisticated systems and sensors will be more costly than repairing and replacing car parts currently in use.

Although following the evolution of the risk will be necessary to conclude so, we expect a decline in the premiums of policyholders. As of right now, the quantitative aspect of the reductions is impossible to predict.

It is noteworthy to mention that we will be going through this ordeal gradually, seeing as the arrival of such vehicles on the road will not happen overnight and, over time, the programming will be improved so as to avoid more and more accidents. Who knows? In forty or fifty years, vehicles may be able to communicate with each other in order to establish who goes first at a roundabout: road signs could disappear and accidents could potentially become a thing of the past.

A home is considered smart when sensors are installed to regulate, control and identify certain parameters, such as temperature, humidity or a human presence.

Some insurers issue discounts when their policyholders agree to place these gadgets, like the water damage sensor, in their home. The water damage sensor aims to alert the owner via his cell phone in the event of an incident, which allows the owner to react immediately and minimize the damage.

We can also mention NEST, the programmable thermostat that regulates the temperature of the house.

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**“IN FORTY OR FIFTY YEARS, VEHICLES MAY BE ABLE TO COMMUNICATE WITH EACH OTHER IN ORDER TO ESTABLISH WHO GOES FIRST AT A ROUNDABOUT: ROAD SIGNS COULD DISAPPEAR AND ACCIDENTS COULD POTENTIALLY BECOME A THING OF THE PAST.”**
Its data, which is automatically uploaded to the web, is always available to the user and indicates the different observable cycles of temperature variation.

These new data sources will gradually be transformed into pricing variables, which will allow insurers to better identify the level of risk of their policyholders.

If these sensors allow the insurer to target and tailor its awareness efforts based on the potential risks present in an insured person’s home, we can expect the claims and the premiums, if trends are predictive, to decrease.

The Sharing Economy

If I have a vehicle at home and it is parked in the garage 80% of the time, is it possible to benefit from this asset by monetizing this property through an online platform? This train of thought accurately expresses what the principle of sharing economy is. The latter applies to vehicles, to home appliances and even to the services that anyone can offer: if someone likes to cook, it is possible for that person to sell their dishes to other individuals. This business involves risks not covered by traditional insurance just like driving people from point A to point B. Uber and Turo are the leaders in their respective service categories.

“At Intact, finding solutions for these sharing economy participants is an ongoing project that we believe will make us a pioneer in the field.”

At Intact, we have been very forward thinking in identifying the sharing economy as a market to be developed. Moreover, studies agree that the sharing economy is growing quickly and will eventually equal the traditional economy in size and importance.

In the past, insurers have always made a clear distinction between commercial insurance and personal insurance. Due to the up and growing sharing economy, we can no longer do that: we must adapt to create a product that is commercial insurance for an individual. At Intact, finding solutions for these sharing economy participants is an ongoing project that we believe will make us a pioneer in the field.

Change

Change is the source of everything: it is inevitable, and that is why it is necessary to be an actor of change. Sometimes it is even better to provoke it than to wait for it and end up with our backs to the wall. Embrace the change.

“EMBRACE THE CHANGE.”
Q&A

What will the actuarial field look like in the future?

In this day and age of machine learning, data science, artificial intelligence and robotics, the future of actuaries looks very different from this point onwards, and the industries they will operate within will not be siloed to the insurance industry. Actuaries who have steep learning curves, who have expertise across different knowledge verticals and who maintain a strict balance between the generalist–specialist model will be valuable assets in the future. Traditional insurance roles, both in Life and in Property & Casualty, will become, in some way or the other, unimportant, and actuaries will need to seek applications of their core skillsets elsewhere. Additionally, actuaries who are fairly good with numbers and ad-hoc roles will, from now on, have to start building critical soft skills, such as entrepreneurial nature, work ownership, high efficiency in data analytics and building data architecture, which will be swiftly transferable to any industry and any role. These are highly paramount qualifications to have to succeed in roles that exist or that will be created, as opposed to the jobs that once were existing for them.

In summary, actuaries will find challenges in healthcare, retail, e-commerce, energy, consumer goods, and many other unconventional industries. Heavy reliance on data streams, integration of technology and insurance/financial tools, automation and development of robot systems are going to cause a momentum shift in the traditional actuarial roles to roles in the making where these actuaries can build value in the chain. Needless to say, the statistical and mathematical aptitude of these actuaries will always be invaluable.

- Siddhesh Pawar, ANÉA-ASNA President 2015–2016

How do you overcome failing an actuarial exam?

(Not so) Fun Fact: More than 100,000 exam Ps, 60,000 exam FMs, 40,000 exam MFEs, 30,000 exam MLCs and 30,000 exam Cs were failed since 2007 (with the number of failures more or less proportional to the number of attempts).

Actuarial exams are hard and failing an actuarial exam sucks. You are exhausted. You feel like you’ve just wasted 200 or 300 hours of your time preparing for an exam. You question your life choices.

That’s normal, but take a step back and keep the following in mind:

The journey to ASA, ACAS, ACIA, FSA, FCAS or FCIA is not a race: go at your pace. What study habits may work for your friends might not work for you, and vice versa. Enjoying life and becoming an actuary are not mutually exclusive events. Your mental health is worth more than your resume.

Ultimately, you are human, and humans trip and fall all the time. However, humans also persevere, get back up, recover and try again.

Try to understand what went wrong, and keep that lesson with you. You can do it.

- Catherine Martin, ANÉA-ASNA VP Communications 2017–2018