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PUBLISHED BY THE CASUALTY ACTUARIAL SOCIETY

Congress Considers Measures Affecting TRIA, NFIP and Marijuana

Coverage of the 2019 Annual Meeting

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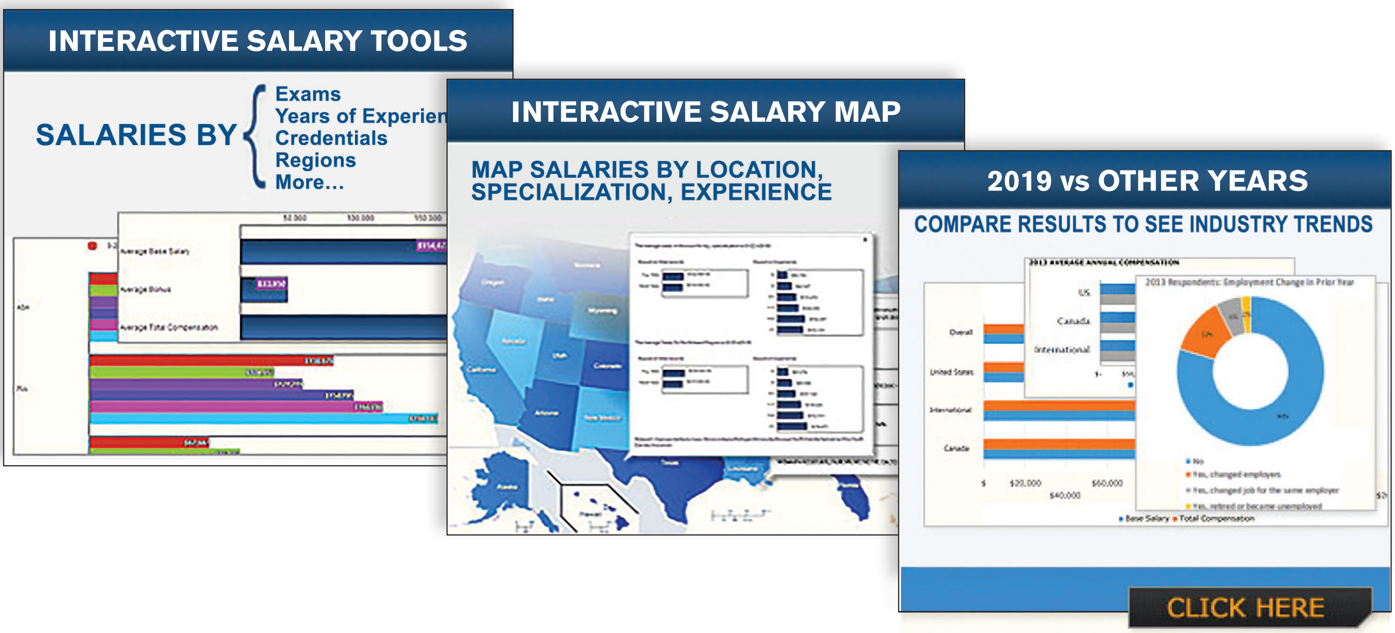

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January-February 2020

actuarialREVIEW

departments

FSC LOGO

on the cover

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editor's NOTE By ELIZABETH A. SMITH, *AR* MANAGING EDITOR

There's a Month for That — February is Insurance Careers Month

Back in the mid-2000s, I was involved in the Women's National Book Association's D.C. Chapter. I served as membership chair, president and board member for some years. After my service, I did my best to attend events and serve as a leader informally.

After one such event, I overheard some young women asking questions about how to get a job in publishing. They were recent graduates not working in their chosen fields and eager to learn how to break into the business.

I couldn't resist jumping in and advised them to get connected with temp agencies specializing in editorial and publications services. I told them about a friend who had been phased out of her job and became an editorial temp. She ended up being courted by two companies — one who had hired her as a temp and another who learned of her wicked skills from the agency.

When I was telling my story, it seemed as if I saw their eyes lighting up. Yes. There was a spark there. For me, a specialized temp agency was a small piece of information, but for them, it opened up a whole new set of possibilities. My work there was done.

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Actuarial Review welcomes story ideas from our readers. Please specify which department you intend for your item: Member News, Solve This, Professional Insight, Actuarial Expertise, etc.

SEND YOUR COMMENTS AND SUGGESTIONS TO:
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Follow the CAS

Automate your claim process with Radar Live

Insurers that quickly respond to customer claims have a decisive advantage

Radar Live offers:

More control: Claim triage, automation and decision support using predictive modeling, machine learning and unstructured data

Rapid decisions: Integrates with your claim platform so your predictive models (e.g., triage, fraud, intelligent routing) can run in real time

Intelligent intervention: Triage, route, estimate and automate claim processing, arming your teams and experts with deep analytical insight and decision support

Let us help you transform your claim operations, delight customers, and reduce claim costs and loss ratios.

To get started, contact us at ICT@willistowerswatson.com.

president's MESSAGE By STEVEN ARMSTRONG

2020 Vision: Strategy, Engagement and Education

"Running a business without a strategic plan is like driving across the country blindfolded without a map." You may have heard different variations on this quote, originally attributed to *Forbes*. You can fill in the last part of the simile with any number of activities requiring vision or, metaphorically, understanding. Whether you choose the literal or the figurative, the vision or understanding must be keen.

As we sharpen our focus in 2020, the CAS will harness its energy to deliver on three main priorities:

1) A new strategic plan.
2) Increased stakeholder engagement.
3) A four-year road map for basic education.

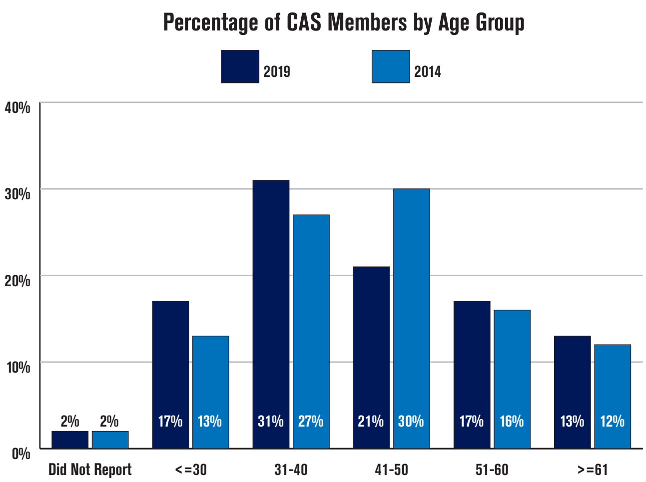
The CAS does have a strategic plan, which was refreshed in 2017 and is typically evaluated on a five-year cycle. However, given all the changes occurring in our industry and the world at large, the CAS is revisiting its envisioned future and resultant strategic goals two years ahead of schedule. We are decidedly driving open-eyed across the country, but we need to revise our current plan because the geography keeps changing.

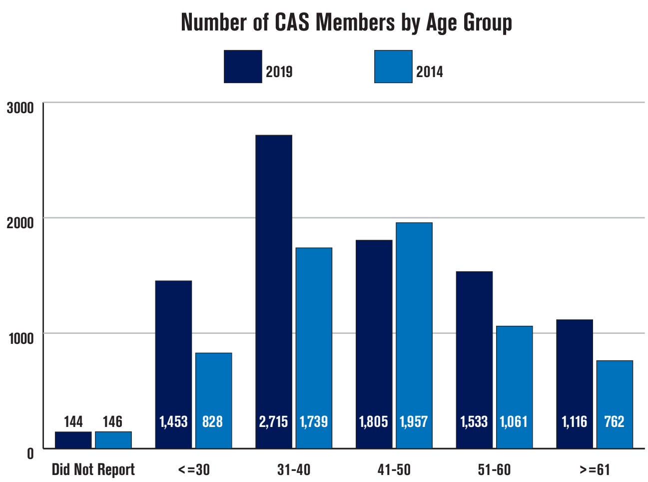
As for stakeholder engagement, the CAS is looking to fine-tune its value proposition and to understand what it truly means to be a member of our organization. Looking at our current state of the organization, there is no doubt that we are growing and that the average age of our members is skewing younger. (See the charts below.) We have a number of distinctly different member cohorts within the CAS and each cohort may have different needs and different ways that they wish to engage with the CAS: The value proposition of the CAS to a retiring member is likely to be much different from that of a newly minted Associate. Throughout 2020, we aim to understand the complexity and diversity of our membership and other key stakeholders — candidates, educators, employers and regulators — to ensure that the CAS is providing maximum value to all our constituents.

The last major deliverable for 2020 will be the release of a multi-year view of the changes we aim to implement in basic education. This basic education road map or timetable will include, but not be limited to, moving away from our paper and pencil validation to a more contemporary environment, validating predictive analytics at an applied level, developing a capstone project that could tie together knowledge obtained across all the exams and shifting towards modules or more online content. Early in 2020, the CAS will be vetting ideas for evolving and modernizing our basic education. We aim to have the road map for 2021-2024 complete by midyear.

I'm excited and energized about this coming year as CAS president. The CAS has set some big goals and I look forward to achieving them.

CAS Membership Statistics






RATEMAKING
PRODUCT AND
MODELING
SEMINAR AND WORKSHOPS
CAS
March 23-25, 2020
Sheraton New Orleans
New Orleans, LA

Editor's Note

from page 4

Reflecting on that story, it occurred to me that those women could have benefited from a month devoted to promoting publishing careers.

Future actuaries are so darn lucky.

This February kicks off the fifth year of Insurance Careers Month (ICM), and CAS members have some great opportunities to show and tell why the insurance industry, and more specifically P&C actuarial industry, is such an excellent career choice.

ICM 2020 will feature weekly themes such as technology and innovation, diversity and inclusion, and culture; social media challenges on YouTube and Facebook Live; and Twitter chats with industry rising stars.

The CAS University Engagement department is spearheading activities for the month, including inviting CAS members and candidates to be featured on social media and the Student Central website. On February 11 from 11 a.m. to 4 p.m. Eastern time, the CAS will also participate in "The Pipeline: Virtual Career Fair," hosted by Gamma Iota Sigma.

February is a day longer this year, so there is a bit more time to get out the word on this significant career choice.

Look for more information on the CAS and Student Central websites.

Who knows what sparks you may ignite?

See real-time news on our social media channels. Follow us on Twitter, Facebook and LinkedIn to stay in the know!

COMINGS AND GOINGS

Steve Wilson, FCAS, has been appointed to senior vice president, head of casualty and specialty for Hamilton Insurance Group's new American reinsurance platform. Wilson was previously with Third Point Re in Bermuda.

Selective Insurance Group has promoted **Christopher Cunniff, FCAS,** to senior vice president, actuarial reserving. Cunniff previously served as senior vice president and actuary of Liberty Mutual's commercial insurance business unit.

Kurt Hines, FCAS, has joined Everest Insurance as vice president of underwriting in the Specialty Insurance Group. Prior to joining Everest, Hines was president of Aslan Risk Advisors, a consulting practice he founded.

Tom Weist, FCAS, has been appointed to co-chief financial officer at Tokio Marine. Weist has been with Tokio Marine since 2011, recently serving as vice president and chief actuary.

Three CAS Fellows were placed on *Insurance Business* magazine's list of "Young Guns 2019." **Jonathan Charak, Laura Sutter** and **Melissa Tomita** are among 72 other insurance professionals under age 35 named on the list.

Sherry Huang, ACAS, has been named a 2019 "Woman in Insurance Leadership" by *Digital Insurance*. Huang was honored on October 29, 2019.

Aaron Beharelle, FCAS, has been appointed head of actuarial performance and reporting for Zurich Insurance Company. Beharelle rejoins the actuarial function following roles in the CEO office and investor relations.

Mirek Wieczorek, ACAS, has been named vice president of assumed reinsurance at ICW Group Insurance Companies. Prior to joining ICW Group, Wieczorek was previously with Tokio Millenium Re's reinsurance operations.

EMC Insurance Companies has named **Scott Jean, FCAS,** as president and treasurer. Jean previously served as executive vice president of finance and strategy.

Jessica Cao, FCAS, has joined HDI Global USA as vice president, actuary. Cao joins HDI from AmWINS Specialty Casualty Solutions.

EMAIL "COMINGS AND GOINGS" ITEMS TO AR@CASACT.ORG.

ACTUARIAL REVIEW *LETTERS POLICIES*

Letters to the editor may be sent to ar@casact.org or to the CAS Office address. Please include a telephone number with all letters. Actuarial Review *reserves the right to edit all letters for length and clarity and cannot assure the publication of any letter. Please limit letters to 250 words. Under special circumstances, writers may request anonymity, but no letter will be printed if the author's identity is unknown to the editors. Event announcements will not be printed.*

IN MEMORIAM

David Reed Bradley (FCAS 1975)
1950-2019

D.W. Simpson Marks Its 22nd Year Donating to the CAS Trust

The Trustees for the CAS Trust are pleased to announce that D.W. Simpson Global Actuarial Recruitment donated $10,000 to the Trust in 2019, bringing the company's total contributions to $230,000 over the past 22 years.

Established in 1979, the CAS Trust is a non-profit organization that funds actuarial research and education. One of its most notable programs is the CAS Trust Scholarship, which aims to build students' interests in the property-casualty actuarial profession and to encourage the pursuit of CAS designations.

The CAS sincerely thanks D.W. Simpson and its employees for its continued support of the CAS mission to advance actuarial science.

Thanks to contributions like these, the CAS Trust is able offer $20,000 in scholarships each year.

NOTICE

2019 Annual Report of the CAS Discipline Committee to the Board of Directors

Background

The CAS Rules of Procedure for Disciplinary Actions (as amended May 3, 2009 by the Board of Directors) requires an annual report by the Discipline Committee to the Board of Directors and to the membership. This report shall include a description of its activities, including commentary on the types of cases pending, resolved and dismissed. The annual report is subject to the Confidentiality requirements.

2019 Activity

Investigations of the two cases involving candidates that were received during 2018 were completed and the cases were closed. Both cases related to matters other than exam-related activities.

There are no cases currently pending before the committee.

—Pat Teufel, Chairperson of the 2019 Discipline Committee

October 23, 2019

CALENDAR OF EVENTS

March 9-10, 2020
ERM Symposium
The Westin Tampa Waterside
Tampa, FL

March 23-25, 2020
Ratemaking, Product and Modeling (RPM) Seminar & Workshops
Sheraton New Orleans
New Orleans, LA

May 10-13, 2020
Spring Meeting
Hilton Chicago
Chicago, IL

May 13, 2020
Underwriting Collaboration Seminar
Hilton Chicago
Chicago, IL

June 1-2, 2020
Seminar on Reinsurance
Loews Philadelphia Hotel
Philadelphia, PA

September 14-16, 2020
Casualty Loss Reserve Seminar (CLRS) & Workshops
Hilton Orlando Bonnet Creek
Orlando, FL

November 8-11, 2020
Annual Meeting
Washington Marriott Wardman Park
Washington, D.C.

CAS STAFF SPOTLIGHT

Meet Nora Potter

Welcome to the CAS Staff Spotlight, a column featuring members of the CAS staff. For this spotlight, we are proud to introduce you to Nora Potter.

Nora Potter

- **What do you do at the CAS?**
  I manage nearly all of the CAS's virtual events, such as webinars, livestreaming, virtual workshops/seminars, as well as UCAS, where all our on-demand education is housed. I also work on many of our international professional education opportunities overseas.
- **What do you enjoy most about your job?**
  I really enjoy trying out new technologies and delivery systems that will better serve our members' needs.
- **What's your hometown?**
  Ha ha! Kind of everywhere. Specifically, I was born in Bangkok, but I've traveled all over due to my father's occupation as foreign service officer.
- **Where'd you go to college and what's your degree?**
  I went to the College of William and Mary and majored in international relations.
- **What was your first job out of college?**
  I worked as an education coordinator at the Society of Research Administrators International.
- **Describe yourself in three words.**
  Creative. Planner. Traveler.
- **What's your favorite weekend activity?**
  I always enjoy going out and seeing new exhibitions in town or going out to a cidery with friends.
- **What's your favorite travel destination?**
  Anywhere new. As for places I've been, it's hard to say; I have a lot of favorite places. In the USA, I would say New Orleans for the food and the music.
- **Name one interesting or fun fact about you.**
  I once had a close encounter (on purpose) with a full-grown tiger. Since I was born in the year of the tiger, it was very special to me. Its tail accidentally thwacked my side and it hurt because it was so powerful! Good thing it was tame!


Presented by:
Canadian Institute of Actuaries
Institut canadien des actuaires
CAS
SOCIETY OF ACTUARIES®
ERM
Enterprise Risk Management Symposium
March 9-10, 2020
Tampa, FL
ermsymposium.org/registration

NAIC Updates Appointed Actuary Requirements

By KEN WILLIAMS, CAS STAFF ACTUARY

The National Association of Insurance Commissioners (NAIC) has recently issued new Actuarial Opinion instructions and regulatory guidance for Appointed Actuaries writing property-casualty actuarial opinions for 2019 NAIC Annual Statements.

These changes only apply to P&C actuaries who sign actuarial opinions for the NAIC P&C annual statements.

These changes include new, accepted actuarial designation requirements, new qualification documentation and a new CAS attestation procedure. In addition, there likely will be new continuing education (CE) log requirements in 2020. Appointed Actuaries should review the NAIC Actuarial Opinion instructions and related regulatory guidance to fully understand all the changes.

Accepted Actuarial Designation

The previous definition of a qualified actuary required membership in the CAS. The new definition requires that a qualified actuary "has obtained and maintains an Accepted Actuarial Designation." The NAIC Actuarial Opinion instructions further define an accepted actuarial designation as meeting or exceeding the NAIC's minimum P&C actuarial educational standards for a P&C appointed actuary.

In late 2018 and early 2019, a group from NAIC analyzed what skills appointed actuaries apply in their work. The group developed nearly 100 knowledge statements that they deemed necessary for the basic education of appointed actuaries. A team of CAS volunteers reviewed the job analysis and mapped the current exam syllabus learning objectives and readings to the NAIC knowledge statements. After discussions and a final review, the NAIC approved the following definitions as acceptable actuarial designations for CAS designations:

i. Fellow of the CAS (FCAS) — Condition: Basic education must include Exam 6-Regulation and Financial Reporting (United States).
ii. Associate of the CAS (ACAS) — Conditions: Basic education must include Exam 6-Regulation and Financial Reporting (United States) and Exam 7-Estimation of Policy Liabilities, Insurance Company Valuation, and Enterprise Risk Management.

The above requirements will be effective for all new CAS Associates and Fellows who receive their designations in 2021 or later. Members who received their designation prior to 2021 may substitute equivalent examinations or experience or continuing education. Under the NAIC rules, actuaries who do not meet the basic education requirements are still allowed to be appointed actuaries if they can show that they have gained the knowledge by experience or continuing education. Actuaries will need to write how they obtained knowledge of the material in the qualification documentation.

In addition to the CAS designations, the NAIC also recognizes the Fellow of the Society of Actuaries (FSA) designation in the General Insurance track with credit for certain exams as an acceptable actuarial designation.

The NAIC review did find small deficiencies in the CAS syllabus on nine of the required knowledge statements; to address this, minor changes to the CAS Course on Professionalism, online courses and some examinations will be made this year.

Qualification Documentation

The new instructions require all appointed actuaries to provide a form summarizing their actuarial qualifications. This qualification document is to be supplied to the Board of Directors upon appointment and on an annual basis, either directly or through company management.

The qualification document is a detailed account of how the actuary satisfies each component of the qualified actuary definition. The document should include a brief biography and a description of how the definition of "Qualified Actuary" in the instructions has been met, including documentation of basic education, experience and continuing education. In addition, the actuary should confirm that they have obtained and maintain an accepted actuarial designation and belong to a professional association requiring adherence to the American Academy of Actuaries' Code of Professional Conduct and U.S. Qualification Standards.

New Attestation Procedure Online

Currently, CAS members attest to having complied with CE requirements on the CAS website by choosing "I have complied." Starting in 2020, CAS actuaries who meet the appointed actuary qualification requirements will also be able to make their attestations on the CAS website like they do for CE. The new attestation option may also be used by members who are not currently working as appointed actuaries but may in the future.

Future Continuing Education Log

The NAIC's Casualty and Statistics Task Force (CASTF) has passed new rules for documenting CE for appointed actuaries. The NAIC is considering including these requirements with the 2020 Annual Statement Instructions and become effective at year-end 2020. The CE requirements will NOT change; appointed actuaries will still be required to meet the specific qualification standards of the U.S. Qualification Standards; however, they will have to provide more detail on the type of specific continuing education. The SOA and CAS are working to develop a new worksheet that appointed actuaries can submit to their respective organizations to document their CE. More information on these changes will be coming out later in 2020.

A Whirlwind Visit to China

At the beginning of November 2019, Steven Armstrong, then CAS President-Elect, visited Beijing for formal and informal meetings to promote the CAS and to learn more about the insurance market in China. For more on Armstrong's brief and productive tour, see his LinkedIn post at linkedin.com/pulse/my-time-beijing-steven-armstrong/.

1. *Steve Armstrong stands and gives a brief speech before dinner.*
2. *Getting to know one another over dinner and cocktails and under an impressive light fixture.*

3 & 4. *Peking University students have questions for the teacher. Armstrong taught a class on basic ratemaking and U.S. personal auto pricing.*

ANNUAL MEETING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1. *A fire breather demonstrates his talent during festivities celebrating Polynesian culture set on the Great Lawn of the Hilton Hawaiian Village on November 12.*
2. *CAS CEO Victor Carter-Bey introduces himself to the audience at the CAS Annual Business Meeting on November 11.*
3. *CAS University Liaisons and newly minted CAS Associates Yin Pok Robert Lee (left) and Anthony Chungheng Ip (middle) join Edward Keaunui of the University of Hawai'i West O'ahu in Kapolei at the conclusion of the Student Program on November 12. Keaunui is an assistant professor of business administration & risk management and an insurance coordinator for the university.*
4. *Pictured left to right, CAS Fellows Marcela Granados, Nan (Jenny) Zhang and Corey Alfieri take a moment for a picture before their presentation "Visual Thinking — Data Visualization for Actuaries and Data Scientists." Neil Greiner, FCAS, joined the trio as a presenter.*
5. *Rob Walling, FCAS, (left) teamed up with his son, David Walling, for the session "Improving Start Up Viability Using Captive Insurance Products."*
6. *Foreground, left to right, CAS Fellows Len Llaguno, Julie Hagerstrand and Chunpong Woo get the audience in the spirit before their presentation "Reserving with Machine Learning: Innovations from Loyalty Programs to Insurance."*
7. *CAS President Jim Christie (right) congratulates new FCAS Daniel Nysch.*
8. *New ACAS Joseph Kyujoon Lee and his wife, Rachel, enjoy the evening at the Tuesday Night Buffet on November 12.*
9. *New CAS Associate Yolanda Aserweh (right) and her mother, Eben, wear fresh flower leis with their beautiful dresses. Leis were given to attendees when they entered the Great Lawn for the Tuesday Night Buffet.*

NEW FELLOWS ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Nicole Feinauer, Kelly Gates, Erik Fingar, Jing Huang,* **CAS President Jim Christie**, *Andrew Newbill, Amar Siddiqui, Aaron Hardiek, Michael Haldeman.*
Row 2, left to right: *Allison Brune, Chelsea Adler, Ziruo Wang, Lance Clevenger, Kari Vaughn, Nicholas Gurgone, Ka Yin Yau, Jiagang Ke, May Ho.*
Row 3, left to right: *Matthew Frieling, Nancy Narisi, Joshua Doll, Jayson Taylor, Daniel Kuntz, David Dolfin, Peter Henningsen, Jason Filip.*

Row 1, left to right: *Shaolong Wang, Samantha Hooton, Wenjie Zhu, Weiyu Gu,* **CAS President Jim Christie**, *Mary Gibbs, Kathy Ma, Yueting Liao, Griffin Winton-LaVieri.*
Row 2, left to right: *Thomas Holmes, Yushuai Li, Wen-Hsin Hsu, Qing Liu, Qianru Liu, Xin Wang, Ashley Wirz, Megan Hagner.*
Row 3, left to right: *Anthony Dake, Daniel Mitte, Kathleen Hurta, Anthony Milas, Bradley Hicks, Paul Hendrick, Lu Wang, Nicolas Dubuc, Jacques Gauthier-Duchesne, Matthew Stephenson.*

Row 1, left to right: *Corey Sarcu, Spencer Sadkin, Justine Vachon, Michael Hedstrom,* **CAS President Jim Christie**, *Yisi Lu, Jamie Frieden, Julie Frechette, Kendra Ward.*
Row 2, left to right: *Nan Wu, Nicholas Troetti, Simon Thibault, Ryan Yusuf, Zach Dietz, Steven Coleman, Michael Croxton, Pierre-Luc Legresley, Sean Fakete.*
Row 3, left to right: *Jean Sebastien Lavoie, Tyler Lantman, Mark Doering, Christopher Harris, Daniele D'Antico, Patrick Curley, Michael Donohue, Benjamin Markowski.*

Row 1, left to right: *Min Zhong, Michael Mahachi, Rong Li, Shree Adhikari,* **CAS President Jim Christie**, *Xian Liu, Bingkun Cai, Steven Baluta, Shawn Balthazar.*
Row 2, left to right: *Deepti Tammareddi, Peter Ott, Shon Yim, Marc-Andre Bernier, Yuwen Liang, Mathew Marchione, Maxime Belanger, James Kwok.*
Row 3, left to right: *Michael Erd, Dan Cunningham, Daniel Aarhus, William Stouffer, Nicholas Madine, Man Hin Kwan, Catherine D'Astous, Frédérick Khuong, Pierre-Antoine Espagnet.*

NEW FELLOWS ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Chor Leong Aw Yong, Siqi Li, Andre Gauthier, Jian Li,* **CAS President Jim Christie**, *Haifeng Lin, Andrew Brooks, Kelly Bruett, Tyler Silber.*
Row 2, left to right: *Benjamin Armstrong, Briza Ling, Xiaoqin Song, Ran Kan, Hilary Spink, Rachel Soich, Logan Soich, Taylor Caligaris.*
Row 3, left to right: *Ryan Brown, Andrew Kelliher, Matthew Mielnik, Drake Landry, Victor Araujo, Michael Mancuso, Keith Keaveny, Yuyang Wang, Rick van den Hengel.*

Row 1, left to right: *Yue Ren, Ellen Grohovena, Susana Gisele Zelaya, Eliane Morin,* **CAS President Jim Christie**, *Kayla Robertson, Laura Jaroh, Caitlin Allen, Misu Kim.*
Row 2, left to right: *Zhifeng Deng, Bei Li Jiang, Erin Svec, Bradley Sevcik, Joanie Cloutier, Amelie Carrier-Bolduc, Alex Denault, Zachary Johnson, Travis Tanaka.*
Row 3, left to right: *Marc-André Côté, Marc-André Busque, Kevin Knight, Richard Avonti, Jocelyn LeBlanc-Courchaine, Corey Alfieri, Alessandro Pace, Tyler Grant Smith, Erik Christianson.*

Row 1, left to right: *Jean-Michel Plante, Michael Schwalen, Alexander DeWitt, Sandy Lowe,* **CAS President Jim Christie**, *Jonathan Ravin, Winston Tan, Darcie Truttmann, Kasey O'Connor.*
Row 2, left to right: *Hao Wang, Salil Tamhane, Hayley Topel, Max Kravitz, Utsav Shah, Alyssa Webb, Giancarlo Lahura, Marino Vasantharajah, Li Wang, David Ren.*
Row 3, left to right: *Matthew Fox, Matthew Actipes, Matthew Kendall, Joseph Lawless, Angelo Nasca, Patrick Jung, Zhenglun Lou, Cheng Khang Saw, David Quaid.*

Row 1, left to right: *Nicole Perilstein, Prizilla (Ziping) Lin, Alison Rexroat, Vanessa Robinson,* **CAS President Jim Christie**, *Xiaoling Kong, Lindsey Peniston, Katherine Oriolo, Tianzi Xie.*
Row 2, left to right: *Tyler Rosacker, Tim Nijkamp, Patrick Peters, Corey Rousseau, Chu-Wei Pai, Eric Chen, Michael Richard, Brett Nortz, Xiaoxi Shen.*
Row 3, left to right: *Vincent Roy, Alexander Kapraun, Robert Henault, Katelyn Crunk, Michael Ruggiero, Jonathan Sinclair, Sarah Nimphie, Justin Rosile.*

NEW FELLOWS ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Gaurav Sharma, Yiding Wang, Chuning Li, Zhi Qi Li,* **CAS President Jim Christie**, *Myra-Kim Fortin, Alexandre Guerin, Laura Campbell, Zhoujie Guo.*
Row 2, left to right: *Daniel Nysch, Ziyue Liu, Craig Sloss, Neeraj Nachnani, Nilesh Patel, Taylor Peltier, Xiaoyun Tang, Tjun Tuen.*
Row 3, left to right: *Jarred Quinlan, Dustin Duncan, Andrew Duhancioglu, Cesar Franco, Lucas Wendt, Brian Norton, Erick Vertein, Kyle Koenig, Mingxi He.*

Row 1, left to right: *Felix Lesperance, Katie Kerckaert, Kathy Liu, Audrey Boulianne,* **CAS President Jim Christie**, *Reena Shanker, Nicole Langlois, Annie Que, Mary Cecelia Hubach.*
Row 2, left to right: *Ryan Shivy, Xavier Plante, Jade Nasr, Mathieu Rheault, Frédérique Paquet, Philippe Cloutier, Michael Golding, Teng Li, Sue Ann Loo, Kar Leng Wai, Kohei Kudo.*
Row 3, left to right: *Zachary Renschler, Nicolas Vega, Philippe Corriveau, Vincent Lacombe, Raphael Brissette, Patrice Boily-Martineau, Marc-Olivier Menard, Tianchen Zhao, Hugh Lee, Adil Virani.*

New Fellows not shown: *Brian Babcock, Megan Baker, Jonathan Brockman, William Bryan, Furquan Burke, Brian Choi, Fergal Corrigan, Nicholas DeNardo, Patrick Digan, Thomas Foster, Qian Gao, Vartika Gupta, Andrew Hemmer, Colin Heydorn, Hugo Houde, Brian Hunt, Peter Klinner, Marla Koch, Thanakrit Krupanyamart, Alan Law, Shea Ling Lee, Khey Junn Lim, Russell Linder, Huan Liu, Kevin McBeth, Brian Mittleberg, Steven Murtha, Daniel Nishimura, Nongkoh Nwadibia, Jin Sheng Ooi, Anthony Pinello, Bryant Quinn, Peter Riihiluoma, Kristen Schuck, Mohammed Siddiqui, Tyler Sifers, Nan Tang, Lauren Thoreson, Darren Toh, Michael Vryenhoek, Shengnan Wang, Derek Watson, Ryan Wilkins, Xintong Xiao, Zhen Ye.*

NEW ASSOCIATES ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Andrea Shen, Davis Nguyen, Rongrong Deng, Rui Chen,* **CAS President Jim Christie**, *Miao Li, Karla Sosa Romo, Jorge Ramirez Andrade, Tian Chen.*
Row 2, left to right: *Evan McDonald, Ashley Hamberg, Kristen Fox-Neff, Huan Peng Tang, Samantha Tveter, Catharine Wadkins, Claire Hemmele, Elizabeth Jackson, Jessica Sackett.*
Row 3, left to right: *Choi Gip, Katharine Reinert, Brett Ware, Craig Hoffman, Kathryn Dilke, Trenton Davis, Morgan Squire, Kevin Green, Jean Forest, Kayla Greeson.*

Row 1, left to right: *Michael Hunt, Alexander Perhac, Chang Wang, Taylor Mitchell,* **CAS President Jim Christie**, *Pamela Ponce Fernandez, Lindsey Shim, Hannah Cregg, Emily Thoman.*
Row 2, left to right: *Phui Jing Lee, Jordan Zweerink, Salvatore Neglia, Neel Patel, Emily Johnson, Joanna Dearolf, Andrea Monterotti, Samuel Petersen, Benjamin Jesser.*
Row 3, left to right: *Brandon Stockton, Joseph Lee, James Lentivech, LeighAnn Sullivan, Ian Neubauer, Colin Finch, Ian Drayer, John McNulty.*

NEW ASSOCIATES ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Katherine Alers, Iris Ching, Carlos Martinez, Shivani Karani,* **CAS President Jim Christie**, *Asia Longpre-Croteau, Zoe Qing Wei, Yolanda Aserweh, Sora Jessica Cha.*
Row 2, left to right: *Chan Jui Wang, Hong Truong, Tuan Tran, Melanie Famiglietti, Cassandra Shreves, Max Trinh, Gabriel Dufresne, Terry Kyereh-Apraku, Caroline Menzie.*
Row 3, left to right: *Dylan Martz, Jared Hageny, Joel Moseman, Trevor Taylor, Anthony Joseph Baer, Jake Daniels, Jennifer Kew, Kelly MacDonald, Kwadwo Asamoah, Breanna McLaughlin.*

Row 1, left to right: *Jack McCann, Stephen Palkert, Min Seob Ahn, Randy Pai,* **CAS President Jim Christie**, *Meghan McLenithan, Nancy Nguyen, Carmen Tam, Cheryl Ip.*
Row 2, left to right: *Anthony Ip, Hao Qin, Simcha Sholomson, Keith Edwards, Emily Wang, Gilles Therien, Tri Nguyen, Dalton Streff, Hubert Martel, Yipeng Hong.*
Row 3, left to right: *Brady Skifstad, Daniel Heinz, Eric Matych, Oliver Jiang, Jason Janik, Gary Tsai, Scott Chaussee, Patrick Goodney, Jonathan Constable.*

Row 1, left to right: *Matthew Murray, Jonathan Wang, Jeffrey Molgano, Jessica Hendricks,* **CAS President Jim Christie**, *Meagan Leppien, Neelaakshi Piplani, Chenxi Huang, Xiaoxi Yang.*
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Row 3, left to right: *Joseph Blandford, Likang Zhang, Richard Holton, Paul Zotti, Alex Twist, Moshe Weinstein, Nicholas Drendel, Lei Lei, Mohammad Punjwani, Dominic Dillingham, Raychel Watters.*

Row 1, left to right: *Layla Trummer, Camilo Gonzalez Guevara, Alexander Schulz, Matthew Krochmalski,* **CAS President Jim Christie**, *Chi Song, Viviane Huynh, Matthew Lopez, Kody Barton.*
Row 2, left to right: *Lawrence Pizzi, Craig Nelson, Caitlyn Pace, Michael Bedard, Philippe Galibois, Lise-Andrée Thivierge, Jeffrey Hochsztein, Lawrence Cho, Nicholas Kunkle.*
Row 3, left to right: *Alvaro Sanchez, Andrew Fang, Jiande Li, Alex Carlson, Johnathon Min, James Lothian, Alexander Kokinov, Dulton Moore, Kaitlyn Cantrell.*

NEW ASSOCIATES ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Elizabeth Schmitt, Weier Jin, Michelle Daigle, Diana Vlaic,* **CAS President Jim Christie**, *Chu-Chun (Michelle) Hsiao, Winnie Luong, Chantal Hurtado, Zachary Suter.*
Row 2, left to right: *Xiang Luan, Christine Tan, Lei Zhang, Eric Zange, Zachary Westermeyer, Joel Fitzgerald, Emily Thompson, Julie Rachford, Michael Brownson, Benjamin Carani.*
Row 3, left to right: *Scott Macejak, Jesse Finkel, Nicholas Pilsner, Stanislav Khalitov, Jonathan Laubinger, Michael Gilchrist, Ezra Kirshenbaum, Moira Power, Andrew Justus.*

Row 1, left to right: *Alex Xiao, Yuanshen Zhu, Luis Montes, Zhenghui Wu,* **CAS President Jim Christie**, *Yu Qiu, Zirui Chen, Bruno Blanchette, Robert Fox.*
Row 2, left to right: *Zheng Leah Wong, Jinghao Wu, Marco Sung, Weiting Lu, Xiaoge Song, Congren Zhang, Sejong Lee, Bryce Peterson.*
Row 3, left to right: *Cedric Chamberland, John Potter, Yiming Wang, Kieran Hendrickson-Gracie, John Myers, Bilal Alam, Zekai Sun, Erik Hostetter, Kyle Gutowski.*

Row 1, left to right: *Natalie Kleinfelter, Jessica Vannatta, Nora Evans, Rachel Holmes,* **CAS President Jim Christie**, *Veronica Armand, Nicole Hicke, Angelo Besana, Alexander Smatt.*
Row 2, left to right: *Matthew Glascock, Wee Chen Chua, Irina Kretskaia, Yizhi Yu, Eric James Murphy, Jonathan Macenski, Yujia Gan, Kelly Kirker, Gregory Peed, Andrew Li, Ha-Kion (Daniel) Wong.*
Row 3, left to right: *Jake Marshall, Alexander Robinson, Michael Borysek, Jacob Yohn, Joshua Lieberg, Dylan Reed, Joseph Chan, Brendan Kelly, Austin Miller, William Ampadu, Zdravko Paskalev.*

Row 1, left to right: *Emily Raab, JunLang Yin, Effie Jiang, Yuhan Zhao,* **CAS President Jim Christie**, *Shruti Lakshmi, Ming Yi, Matthew Imoehl, Laura Harter.*
Row 2, left to right: *Thomas Scott, Benjamin Cranny, Kaitlin Samel, Tara Telford, Ryan Heil, Russell Leone, Christopher Kwok, Peter Hohman, Neetha Mamoottile.*
Row 3, left to right: *Jonathan Pollock, Tukker Bogaard, Houston Higgs, Joel Vree, Ryan Tompkins, Boden Pradel, Austin Rieger, Paul Oshana.*

NEW ASSOCIATES ADMITTED IN NOVEMBER 2019

Row 1, left to right: *Jaime Lewis, Scott Huisinga, Paul Donnelly, Avi Saper,* **CAS President Jim Christie**, *Alyssa Brehm, Francisco Meraz, Rebecca Sze, James Riley.*
Row 2, left to right: *Caitlin Heitman, Ee Kean Kew, Rehan Siddique, Trenton Lipka, Phani Poranki, Yin Pok Lee, Catherine Haughney, Megan Loomis, Matthew Carpenter.*
Row 3, left to right: *Jason Von Hoene, James Greb, Liam McGrath, Nicholas D'Orazio, Brandon Maggio, James Wencil, Tao Lin, Lee Drinkwater, Stephen Evilsizor, Angel Gentchev.*

Row 1, left to right: *Brittni Gunnoe, Lauren Kidwell, Abigail Pierson, Jiyan Liu Henning,* **CAS President Jim Christie**, *Kelsey Lancaster, Ioana Zorca, Amanda Lundquist, Qi An.*
Row 2, left to right: *Nicholas Boguszewski, Christopher Benvenuto, Patrick Horn, Yamei Zhou, Zifan (Nancy) Yang, Zhenghao Ye, Ngoc Nghiem, Jasmine Lemay-Dagenais, Nassim Benchabane.*
Row 3, left to right: *Aidan Williams, Ronald Wai-Hin Tsang, Bo Wang, Guillaume Larouche, Alexandre Jean-Venne, Man Hin Kwan, Justine Roy, Francis Crevier Raymond, Fabiano Garofalo.*

Row 1, left to right: *Kyle Hartung, Nathan Ortiz, Aaron Mostrom,* **CAS President Jim Christie**, *Tanner Klippenstein, Neil Redpath, Arthur DeGraw.*
Row 2, left to right: *Anthony Maley, Kevin Heroux-Prescott, Jacques Zang, Daniel Chammas, Danika Babin-Demers, Yael Even-Fournet, Michelle Tam, Dominick Sullivan, Marc-Antoine Beaulieu Gagne.*
Row 3, left to right: *Colin Anderson, Guillaume Vaillancourt, François Turcotte, Tommy Maltais Lemelin, Josue Kouyo, Danielle Nantais, Alexander Loveland, Jackson Hunt, Steven Getselevich.*

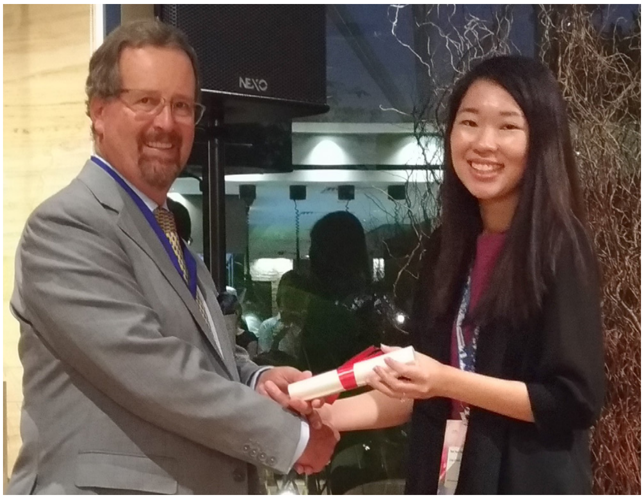
Kishan Patel, **CAS President Jim Christie**.

New Associates not shown: *Daniel Andrade, Genevieve Belanger, Jonathan Bell, Kezhi Cai, Ihsin Chen, Jen-Yu Chen, Xiaolan Chen, Garth Chin, Shuo Deng, Brigh Desjardins, Mathieu Desjardins, Olivia Doll, Michael Doolan, Ryan Dougherty, Daniel Figueroa, Christian Fonseca, Zhihui Gao, Evelyn Guan, Caleb Hawks, Xinyi He, Jacob Hill, Robert Hinkel, Eric Hintikka, Nicholas Hsu, Yifang Jia, Zhang Jiang, Lindsey Jorgensen, Kelsey Keenan, Nayoon Kim, Stephen Kleinberg, Maria Koelbel, Osng Kwon, Wenjing Lai, Chen Li, Xiaolu Li, Ruiqi Liang, Sophie Lin, Anqi Liu, Marko Martinovic, Xingyi Meng, Emma Musumeci, Piratheep Navaratnam, Li Yuan Ng, Thien Nguyen, Ryan Nisbet, Tian Yu Oh, Daniel O'Shaughnessy, Lana Park, Ryan Peiffer, Lisha Qin, Maxime Romano, Joseph Schmitt, Anyamanee Seetongsook, Simon Shum, Robert Silva, Veronica Skinner, David Skrtich, Samuel Tam, Junyi Tang, Kwan Loong Tay, Brian Thompson, John Vassil, Yuhe Wang, Michael Wise, Morgan Xiong, Katherine Zhang, Andy Zhou.*

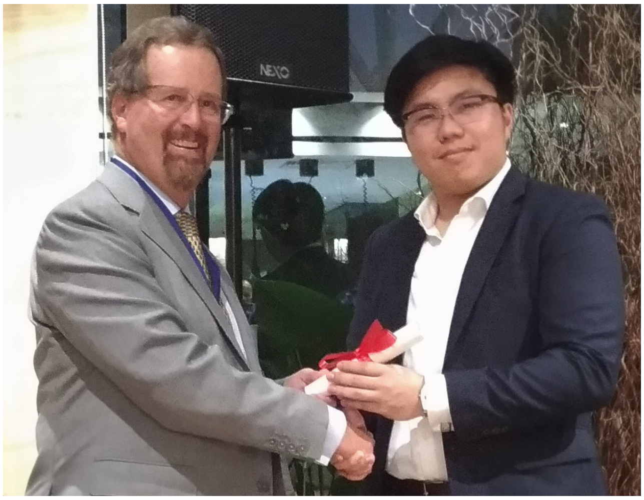
New CAS Members Honored in Singapore

CAS President Jim Christie personally congratulated new CAS members — one Fellow and three Associates — who had attained their designations in 2019 but were unable to attend the CAS Spring or Annual Meetings.

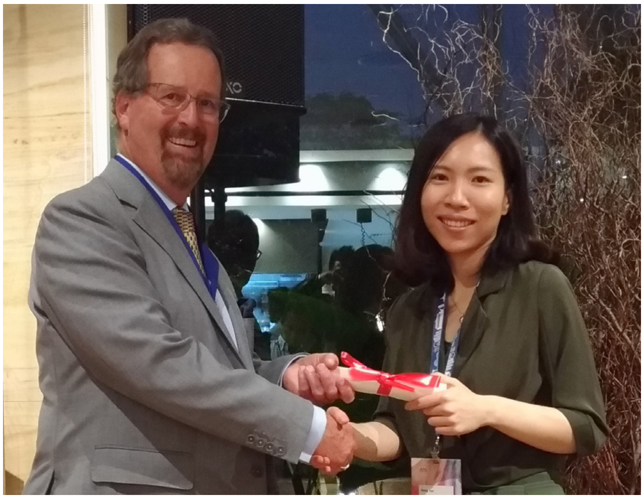
Christie, pictured on the left of the photos below, was part of a CAS delegation attending the 22nd Annual Asian Actuarial Conference held October 21-24, 2019, in Singapore. The theme of the 2019 AAC was "Crazy Responsive Actuaries."



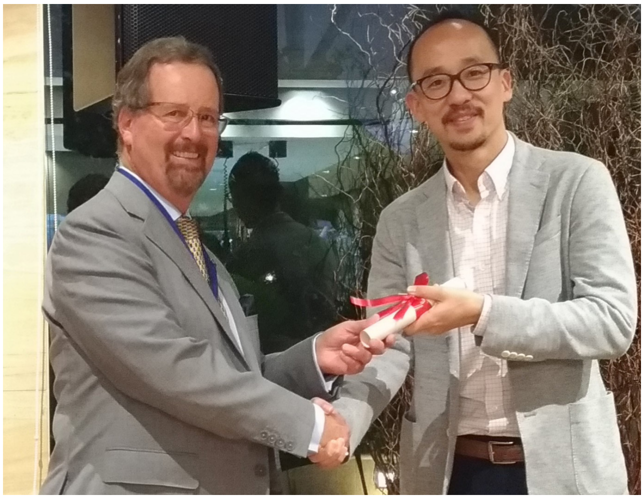
New FCAS Yun Ying Toh



New Associate Ji Hyun (John) Kim



New ACAS Yun Hong



New ACAS William Naftali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Congress Considers Measures Affecting TRIA, NFIP and Marijuana

By ANNMARIE GEDDES BARIBEAU

The United States Congress is currently considering several bills that impact the insurance industry. Some measures address two federally based programs: the U.S. Treasury's Terrorism Risk Insurance Program, referred to as TRIA, and the Federal Emergency Management Association's (FEMA) National Flood Insurance Program (NFIP). Both programs require long-term reauthorization to assure market stability for reinsurers, insurers, agents and consumers.

Since the nation's 116th Congress has another year to consider legislation, provisions are subject to change. There was high confidence that Congress would reauthorize TRIA. However, lawmakers remain at loggerheads regarding the NFIP — especially concerning premium increases.

Congress is also considering how federal law should respond to the vast implications of the state legalization of marijuana, including its impact on the insurance industry.

More than a dozen bills addressing the federal treatment of marijuana were introduced by this Congress. Two in particular directly address insurance industry concerns. Both would provide protections to insurance industry participants seeking to cover and serve cannabis-related businesses. While federal legalization of the drug is gaining support, Congress remains divided.

It's TRIA Time — Again

For the fourth time in 18 years, the insurance industry was awaiting final action on legislation that would reauthorize the federal backstop for reinsurers and insurers if a qualifying terrorism event should occur in the United States.

While maintaining the limits and requirements of the program in the 2015 law, the current reauthorization bills, both titled the Terrorism Risk Insurance Program Reauthorization Act of 2019 (HR 4634/S 2877), would extend TRIA for seven years. These measures also offer two new reporting obligations. The first directs the U.S. Treasury to include an evaluation concerning the availability and affordability of terrorism risk insurance in its biennial report to Congress; the second requires the General Accountability Office (GAO) to conduct a study on insurance coverage for cyberterrorism. The insurance industry widely supports the current legislation.

The bill was introduced in the House by Financial Services Committee Chairwoman Maxine Waters, D-Calif., and by Senator Thom Tillis, R-N.C., in the Senate. In November, the U.S. House of Representatives and the U.S. Senate advanced their respective bills with mostly bipartisan support. HR 4634 passed the House by a vote of 385-22. The Senate bill passed the Senate Banking Committee and then the full Senate with changes on December 19, 2019. The following day, the president signed the bill into law.

The last time the insurance industry awaited passage of a TRIA extension in 2014, some insurers limited contracts due to the uncertainty that Congress would pass a reauthorization bill before the expiration date. Congress did let the program lapse at the end of 2014, which resulted in a short period when the industry lacked the backstop. Two weeks into 2015, a new Congress passed a reauthorization bill, renamed the Terrorism

[T]he Terrorism Risk Insurance Program Reauthorization Act of 2019 would extend TRIA for seven years . . . [and] offer two new reporting obligations: . . . an evaluation concerning the availability and affordability of terrorism risk insurance . . . [and] a study on insurance coverage for cyberterrorism.

Risk Insurance Program Reauthorization Act of 2015 (TRIPRA), and President Barack Obama quickly signed it into law.

In an October 2019 letter to Congress, the American Academy of Actuaries wrote that temporary extension "creates an environment of uncertainty" that challenges reinsurers when quantifying their exposure to terrorism losses. For this reason, the Academy recommended a long-term or permanent extension of authorization to assure financial security and stability.

The Academy's letter also discusses several issues related to cyberrisk, which led to the inclusion of language requiring the GAO to complete a study, due 180 days after the new measure becomes law, that analyzes cyberterrorism risks. The point of the study, says Rich Gibson, FCAS, the organization's senior property-casualty fellow, is to gain clarity about whether or how a cyber event would be covered by TRIA, particularly given that cyberterrorism is a relatively new risk.

Specifically, the study would:

- Identify the potential cost of cyberattacks to the United States' public and private infrastructure that could result in physical or economic damage.
- Determine whether states' definitions of cyber liability under property-casualty insurance are adequately priced to cover acts of cyberterrorism.
- Assess whether the private market can adequately price cyberterrorism risks.
- Determine whether the current risk-sharing arrangement under TRIA is appropriate for a cyberterrorism event.

The GAO report would be submitted to the House's Financial Services Committee and the Senate's Banking, Housing, and Urban Affairs Committee.

Generally, standard commercial property and liability coverages still exclude cyberterrorism and there is no clear coverage guaranteed under policies specific to cyber. There are also unresolved coverage issues concerning widespread secondary events caused by a cyberterrorism attack on public utilities or internet infrastructure, the letter states.

The current bill does not change program requirements for insurers and reinsurers. "Over time, partly through design and partly because of inflation, the share of hypothetical losses has shifted more toward the industry participants," says Gibson.

The 2015 law prescribed incremental increases to program requirements capping at 2020 levels for the years afterward. To apply, an event must be certified as a qualified act of terrorism by the U.S. Treasury with consultation from the U.S. Department of Homeland Security and the U.S. Attorney General's Office.

The insurer must also pay a deductible of 20% of its prior year's direct earned premium for TRIA-covered commercial insurance lines on insured losses following an attack that exceeds an industry loss "program trigger" of \$200 million. For insured losses that exceed an insurer's TRIA deductible, the federal government reimburses the company for 80% of the losses and the insurer retains a 20% co-share (see *AR* September/October 2014).

Assuming an event incurs up to \$37.5 billion in aggregated insured losses, TRIA allows the federal government to recoup federal loss payments from the insurance marketplace. Above that amount, which would be adjusted annually under the new bill, recoupment is discretionary.

NFIP Waiting Game

Agreeing on public policy for the NFIP is not easy. The NFIP provides flood insurance for nearly five million home and business owners and is intended to provide affordable and available flood coverage, but its congressionally decreed objectives often work against each other.

Because legislative consensus is difficult to reach, there have been 15 short-term extensions since the NFIP's last five-year reauthorization ended on September 30, 2017. Having difficulty passing legislation is nothing new. Before passage of the Biggert–Waters Flood Insurance Reform Act of 2012, Congress passed 17 short extensions and the program expired four times.

Although lawmakers were able to move two bills through the House Committee on Financial Services last summer with bipartisan support, some unresolved issues remain. Two bills enjoy the most support. The National Flood Insurance Program Reauthorization Act of 2019 (HR 3167) is sponsored by Rep. Maxine Waters, one of the namesake legislators of the Biggert-Waters Act. HR 3167 is set to merge with HR 3111, the NFIP Reform Act of 2019, introduced by Rep. Nydia M. Velazquez, D-N.Y., with the goal of improving claims processing challenges that surfaced after Superstorm Sandy. The other bill is the National Flood Insurance Program Reauthorization and Reform Act of 2019 (S 2187), sponsored by Sen. Bob Menendez, D-N.J.

The measure introduced by Waters is a compromise bill that would fund grants for flood mitigation strategies, improve flood maps and adjust premiums for certain circumstances. It would also require an annual independent actuarial study to analyze the program's financial position, recommend adjustments to underwriting standards, encourage program participation and make recommendations for quality control procedures and data accuracy in the underwriting process.

A significant part of the Menendez bill that affects the insurance industry was merged in the Waters bill. Like the Waters bill, it offers various incentives for property owners to mitigate risk and expands funding for more accurate mapping of flood risk across the country.

The Menendez bill, however, includes language that would affect the Write Your Own (WYO) program that allows participating insurers to write and service the standard flood insurance policy under their names. "The bill goes much further in reforming the Write Your Own program," says Tom Santos, department vice president of research for the American Property Casualty Insurance Association (APCIA).

Specifically, the measure calls for a WYO rate reduction from 29.9% to 22.46%, which is a 25% cut. The bill is to ensure that policyholders do not overpay WYO companies that sell policies and service claims without risk exposure. Passage will likely lead to reduction in agents' commissions, which would make it harder for agents to assist consumers in making educated choices about flood insurance and would disincentivize agents from selling flood coverage altogether, says Lauren Pachman, counsel and director of regulatory affairs at the

The NFIP provides flood insurance for nearly five million home and business owners and is intended to provide affordable and available flood coverage, but its congressionally decreed objectives often work against each other.

National Association of Professional Insurance Agents. The cap would continue until FEMA determines the actual cost of providing these services as required under the Biggert-Waters Act.

The bill would also require FEMA to develop a fee schedule for WYO vendors, including but not limited to claims adjusters and engineering companies, and to reimburse actual costs per service or product. Meanwhile, FEMA has separately offered to change the current methodology for calculating the WYO expense ratios, and those changes, if effectuated, would also adversely affect insurers and agents, says Pachman.

One major difference between the Waters and the Menendez bills concerns how quickly rates could increase. The Menendez bill would place a ceiling on annual premium increases from the current upper limit of 25% to 9%. This differs from the Waters bill, which has also been criticized for not curtailing double-digit rate increases.

Premiums are expected to rise an average of 11.3% nationwide, with the average premium increasing from $873 per policy to $972 effective April 1, 2020. Add in the surcharge mandated by the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) and the Federal Policy Fee and the average total policyholder tab climbs from $993 to $1,092.

While Congress mulls over legislation, FEMA is moving forward. Last spring, the agency announced a new rating approach called Risk-Based Flood Insurance Rating or "Risk Rating 2.0," which would deliver rates that better reflect individual property risks.

The agency initially announced that new rates for single-family homes would go into effect October 1, 2020. But more than 60 house members wrote top congressional leadership in early November requesting a delay of Risk Rating 2.0 implementation because it would raise their constituents' premiums too dramatically. "Risk Rating 2.0," they wrote, "will no longer use flood maps and zones to determine a homeowner's premium rate, but rather a series of models that will 'fundamentally change' a property's individual flood risk assessment and therefore (its) insurance price."

Within days of the letter, FEMA pushed back Risk Rating 2.0 implementation to October 2021. Biggert-Waters charged FEMA with developing more accurate risk-based rating, Santos explains. "The concern is when they do that, premiums for some people will rise so quickly that they would be unaffordable. For others, premiums are likely to decrease as a result of more accurate, fairer risk-based rating," he adds.

Fulfilling the requirements of Biggert-Waters has been fraught with peril. Within weeks of President Barack

Obama enacting the 2012 bill, Superstorm Sandy damaged the densely populated and high-value real estate located in New York and New Jersey. In response to the historically costly storm, HFIAA delayed rate increases for four years.

Meanwhile, the insurance industry has made significant inroads in rating flood risk using technology, data and modeling, which has further encouraged private insurers to offer flood coverage. Applying similar methods could give the NFIP a better opportunity to compete against private insurers (see *AR* July/August 2017). More private insurers are expected to offer flood coverage thanks to a regulation that provides mandatory acceptance by private flood insurance lenders. Effective July 1, 2019, the rule was promulgated and finalized by five federal banking regulators in compliance with Biggert-Waters.

Currently, the NFIP, which has a $30 billion debt ceiling, owes about $20 billion to the U.S. Treasury. The $16 billion in insured losses from 2017's Hurricanes Harvey, Irma and Maria would have surpassed that limit. Still, President Donald J. Trump agreed with Congress to forgive the losses later in the year.

A Potpourri of Legislation

Marijuana legalization is a complex issue for the insurance industry. Some insurers and brokers see the burgeoning marijuana industry as a new market. However, personal lines and workers' compensation carriers are not only seeing increases in accidents and losses from the use of the psychoactive drug but are facing a flurry of legal ramifications (see *AR* January/February 2019).

Although several bills in Congress address a hodgepodge of issues stemming from state legalization of marijuana, there are a couple of legislative initiatives that directly affect the insurance industry.

The Secure and Fair Enforcement (SAFE) Banking Act of 2019 (HR 1595/S1200) would provide a federal safe harbor for financial service providers, including banks, insurance companies and brokers, to provide services to a "cannabis-related legitimate business" operating legally under state law. The bill should encourage insurers that have shied away from offering coverage to join the market.

While allowing commerce to move forward, the bill, which was introduced by House Rep. Ed Perlmutter (D-Colo.) and Sen. Jeff Merkley (D-Ore.), does not change marijuana's Schedule I classification under the Controlled Substances Act. The bill was passed by the House in September by a bipartisan vote of 321 to 103 and is now under consideration by the Senate Committee on Banking, Housing, and Urban Affairs.

Another bill, the Clarifying Law Around Insurance of Marijuana (CLAIM) Act (S 2201), would also take steps to protect businesses in the insurance industry. Introduced by Sen. Menendez, the CLAIM Act is tailored to the insurance industry and would offer protections to companies providing insurance coverage to state-sanctioned cannabis-related businesses.

Specifically, the bill would prohibit federal regulators from discouraging insurers from offering coverage to a cannabis business, terminating or limiting an insurer's policies because the insurer has offered coverage to a cannabis business, or taking adverse action on a policy solely because the owner is engaged in a

The Secure and Fair Enforcement (SAFE) Banking Act of 2019 (HR 1595/S1200) would provide a federal safe harbor for financial service providers, including banks, insurance companies and brokers, to provide services to a "cannabis-related legitimate business" operating legally under state law.

cannabis business.

Like the SAFE Banking Act, the CLAIM Act would ensure protection to brokers and insurers along with their officers, directors, and employees in states where cannabis is legal. A significant part of the bill, which was sponsored by the insurance industry, was folded into the SAFE Banking Act. The Senate version was referred to the Committee on Banking, Housing, and Urban Affairs. A corresponding bill (HR 4074), introduced by Rep. Velazquez, has been referred to the House Committee on Financial Services.

Although the APCIA supports the SAFE Banking Act and the CLAIM Act, the association encourages even greater federal regulation of the drug.

The SAFE Banking Act has the best chance of passage, says Scott Sinder, the Council of Insurance Agents and Brokers' chief legal officer and a partner with the law firm Steptoe & Johnson LLP. Even without the bill, he adds, the number of banks willing to work with the marijuana industry is now up to 500.

Sinder's favorite bill is the Marijuana Revenue and Regulation Act (S 420/HR 1120), which would remove marijuana from the purview of the Controlled Substances Act but allow states to prohibit it within their borders. Sen. Ron Wyden (D-Ore.) introduced the measure that would also impose an excise tax on marijuana products and regulate them similarly to alcohol and tobacco.

"The Wyden bill would allow states to regulate as they wish but clean up all of the federal regulatory issues that have been plaguing hemp-derived CBD," Sinder says. "It is the only ultimate solution currently pending . . . all of the other proposals would essentially be interim solutions." The tax would increase annually to a 25% sales price ceiling. Marijuana producers, importers and wholesalers would be required to obtain permits from the U.S. Department of the Treasury. Strict rules would prohibit the sale or distribution of marijuana in states where it is illegal. The bill was referred to the Senate Finance Committee and has a small chance of passage in the current Congress.

Although the APCIA supports the SAFE Banking Act and the CLAIM Act, the association encourages even greater federal regulation of the drug. This includes determining and implementing marijuana impairment standards, supporting employers' rights to a drug-free workplace, issuing mandatory warning labels and requiring users of the drug to be age 21 or older, according to an APCIA statement offered to the Senate Committee on Banking, Housing, and Urban Affairs in July.

Annmarie Geddes Baribeau has been covering insurance and actuarial topics for nearly 30 years. Find her blog at www.insurancecommunicators.com.

Actuaries Have the Skills to Take It to the Bank(ers) By JIM LYNCH

It is easy to think that what bankers and currency traders know, we actuaries cannot.

But their worlds aren't mysterious, and basic actuarial tools can help manage financial risks, two actuaries told attendees in the session "Actuarial Approaches for Measuring and Managing Nontraditional Risks" at the CAS Annual Meeting in Honolulu in November 2019.

James McNichols, ACAS, consulting actuary at Huggins Actuarial Services, Inc., and Michael Schmitz, FCAS, principal and consulting actuary at Milliman, Inc., urged actuaries to boldly venture into banking, economic forecasting and currency risk management.

Both actuaries said that the actuarial toolkit, tweaked slightly, offers lots of opportunities for property-casualty actuaries to expand into other financial services fields.

McNichols gave two examples: a reinsurance pool that protects several firms' currency risks and the risk that the economy will fall into a recession. Schmitz outlined how actuaries can model various aspects of mortgage risk.

To show that banking-style risks such as foreign exchange trading and economic forecasting aren't radically different from traditional insurance risks such as personal or commercial auto, McNichols assessed them side by side in an "actuarial risk ranking."

It can be a little hard to follow, but here is what McNichols did.

He realized, as many have, that all of these financial risks can be modeled across the three dimensions of pure risk:

- Likelihood of an event (frequency).
- Severity of the event once it has occurred.
- Predictability of overall outcomes (in insurance this is aggregate claims).

He then ranked financial risks by assessing how susceptible each one is to the three types of measurement risk that challenge any financial model:

- Model risk (that the model you have chosen is inappropriate).
- Parameter risk (that the model could be correct but the parameters you've chosen such as mean and variance are incorrect).
- Process risk (that the results are random even when you have the correct model and parameters).

By mapping this basic risk geometry, he had two key insights: Some insurance lines, like personal auto and workers' compensation, present less actuarial risk modeling uncertainty than is exhibited by financial risks, but others, like cyberrisk and asbestos reserves, have a lot of modeling uncertainty — as much or more than banking-style risks such as mortgages and foreign exchange.

Foreign exchange risk, in particular, is relatively high in measurement risk, but this risk is concentrated in the process risk of the frequency distribution. Other dimensions of the risk are relatively easy to ascertain.

Currency risk is tricky because the vast majority of rate changes occur in a very small range. But when crazy things happen, they are *really crazy*, fat-tailed events. A normal distribution does OK explaining typical events but breaks down with crazy ones. Those are the events that multinational corporations fear the most because an unfortunate turn for them in the foreign exchange markets can severely damage revenue and profits.

Actuaries are experts at understanding the skewness of a distribution — and fitting a distribution with lots of small losses and fewer large losses. (An obvious example is the lognormal distribution.)

"We are experts at skew," he said.

But currency risk needs an understanding of kurtosis — the spikiness of the distribution. McNichols considers expertise in kurtosis an easy addition to the actuarial toolkit. Why does it matter? Because a particularly spiky (leptokurtic) curve has a much fatter tail than a lognormal distribution.

In a really crazy year, the hefty premium is designed to be enough to cover any losses. Most years, a lot of the premium — say, 70% — is refunded. And the overall cost is competitive with traditional currency hedges such as options and futures, McNichols said. That insight lets him pool several different companies' foreign exchange risk into a retrospectively rated reinsurance pool.

Next, McNichols focused on economics. In his actuarial risk rating, the forecasting of recessions was roughly on a par with modeling excess umbrella losses and could in theory be modeled by looking at frequency and severity. Frequency measures how often we have recession. Severity measures how long the recession lasts.

In most traditional actuarial analyses, frequency and severity are assumed to be independent. But we don't know if that is a valid assumption when modeling a recession.

If both the frequency and severity can be either independent or dependent, then there are four scenarios:

1. Both frequency and severity are independent of each other.
2. Both are dependent on each other.
3. One is dependent and the other independent.
4. The other way around.

Modeling each of the scenarios, McNichols said, would provide insights to clients. He recommended a Bayesian approach — creating an initial estimate and refining it as more information becomes available — and proceeding with caution. Clearly, the model risk associated with predictions of economic activity is relatively high and thus a structured reinsurance solution can help address this unique enterprise risk management problem.

Currently, not many actuaries are modeling currency risk or predicting recessions, but a number of banking-related products use actuarial techniques. The second session speaker, Schmitz, described those products and showed how traditional techniques can model their risks, particularly if those techniques get a couple of tweaks. He gave similar information, and a bit more detail, at a second Annual Meeting talk, "Banking on Actuarial Talent: Why Actuaries Are Well-Positioned to Boost the Banking Sector."

Banking and insurance have overlapped for years in private mortgage insurance (PMI), which protects banks and mortgage investors when a home buyer finances more than 80% of the home loan. Actuaries have been writing and pricing it for decades.

But the PMI product has some key differences from a traditional insurance product. For decades, mortgage insurers only needed loss reserves for loans that were already delinquent. No loss reserve was needed for loans that would eventually become delinquent, the PMI equivalent of IBNR.

That left significant long-tail risk, Schmitz said, which was covered by contingency reserves — a separate liability on the insurer's balance sheet intended to protect banks when the economy falters and lots of borrowers default.

The contingency reserve didn't work terribly well in the financial crisis. Many of the main PMI writers lost billions and some exited the business.

The financial crisis highlighted some shortcomings of rigid adherence to traditional loss development methods. In a 2010 CAS *E-Forum* paper, Schmitz and co-author Kyle Mrotek, FCAS, noted that traditional triangular methods need to be adjusted for changes in underwriting standards.

In the first decade of the century, mortgage underwriters relaxed their standards.

One way to observe this relaxation is through the popularity of interest-only mortgages. A traditional mortgage requires the borrower's payment to cover the interest that has accrued on the loan and a portion of the outstanding principal. For an interest-only loan, the payment only covers the accrued interest, meaning the borrower still owes the entire principal on the day the loan comes due.

In 2002, just 1% of the riskiest borrowers had interest-only loans. By 2005 one-third had them.

It was a significant change. As they pay down loans, borrowers have an ever-increasing stake in making sure they stay current on debts. And a borrower who can't afford to pay a little extra to cover a sliver of principal is probably skating on thin ice financially.

Analysts who ignored that underwriting trend were likely to understate the frequency of defaults in the portfolio. And they did.

In his banking sector presentation, Schmitz noted that calendar year development patterns could also be affected by economic conditions and government programs. For example, missed payments — those harbingers of defaults — could indicate an economic recession.

An example of government's role in changing patterns occurred in 2017, when missed payments spiked, but not because borrowers were facing financial ruin. The spike was caused by the extraordinary number of people affected by Hurricanes Harvey, Irma and Maria. In a federal disaster area, homeowners are allowed to skip mortgage payments without penalty, and many do — enough to distort development patterns.

Schmitz recommended focusing on Bornhuetter-Ferguson analysis, especially when data are volatile or immature. The a priori justification should consider modifications for economic patterns and account for standard underwriting characteristics like credit score and loan-to-value ratio. The analysis should be at the most granular level possible. Econometric forecasts of frequency and severity at the individual loan level are the standard.

The lessons of the PMI crisis are worth learning for actuaries. New mortgage-related products have emerged, some driven by regulatory changes and some by the dynamics of the marketplace.

One of these is credit risk transfer. The mortgage market is dominated by government-sponsored enterprises, or GSEs, namely Freddie Mac and Fannie

Mae. These companies purchase and guarantee millions of individual mortgages from banks. They create securities whose principal and interest are paid with the funds the GSEs receive from the millions of people paying off the loans the GSEs bought. The GSEs guarantee the securities against default.

Of course, that guarantee leaves the GSEs with an enormous pool of risk. In the financial crisis, defaults triggered those guarantees and cost them hundreds of billions of dollars. The federal government bailed them out at a cost of $187 billion, according to the Shadow Open Market Committee. (The GSEs paid it back eventually and the government turned a profit.)

To avoid a repeat, the GSEs now create securities and credit insurance transactions that cede the pool of risk to investors and reinsurers. Other lenders do the same thing. The process is known as credit risk transfer (CRT). When the GSEs, who sit on the back end of the mortgage market, are the ones securing a CRT, it is called a back-end CRT. For other transactions, such as PMI, it is called a front-end CRT since the loans already have credit protection before they get to the GSEs.

The financial crisis also drove an accounting change that actuaries could address: current expected credit loss.

Beginning in 2020, banks over a certain size will have to post a larger reserve: not just for loans already impaired, but for the expected losses on loans when they are first written. In insurancespeak, loans have to be reserved at ultimate loss, not just reported. Small banks were granted an extension and have until 2023 to implement the new framework.

Schmitz said that the change "transforms how banks think about credit risk." Just as they have done for decades with PMI, actuaries can estimate the reserve associated with credit risk. In South Africa, they already do, Schmitz said. And soon, more actuaries may be seen in banks and throughout the financial marketplace — not just insurance.

As Schmitz said: "Actuaries are well-positioned to do this."

James P. Lynch, FCAS, is chief actuary and director of research for the Insurance Information Institute. He serves on the CAS Board of Directors.

Actuaries Around the World: Many Countries, Many Challenges

By JIM LYNCH

Because the Casualty Actuarial Society is a global organization, it is fitting that the organization held its Annual Meeting in Honolulu, right in the middle of the Pacific — a good place for a truly international view.

"Actuarial Challenges Around the World," the first general session of the November 2019 Annual Meeting, brought together top actuaries to discuss their views on the profession and the industry. CAS Director of International Relations Ran Guo, who is based in Beijing, led the discussion on a series of topics with Jefferson Gibbs, vice president of the Actuaries Institute in Australia; Ana María Ramírez Lozano, president of the Colegio Nacional de Actuarios in Mexico; Marc Tardif, FCIA, FSA, president of the Canadian Institute of Actuaries; and Dehong Xu, FCAS, president of Liberty China.

The challenge of the quants

The panelists were asked whether actuarial jobs are being taken away by other quantitative professionals like data scientists.

Xu said that actuaries need to break free of their traditional roles, especially when some of their duties can be performed more cheaply by non-actuaries. He emphasized that actuaries need to be courageous and to take risks — a theme he would return to a few times during the session.

Borrowing a phrase from an American friend, Gibbs said that actuaries should be "alert but not alarmed." Quants aren't the only threat; pricing tools are quite efficient and could also take away jobs, he warned. Actuaries should make sure the world understands the value that they bring.

Actuaries may want to move to nontraditional industries, but they are having trouble breaking through. Out-

side of insurance, "We aren't a known quantity," Tardif said. "We think we have a role to play and we intend to play it," he said, even though cheaper resources are always a possibility.

Ramírez Lozano thinks that actuaries are irreplaceable at insurers, but in order to be competitive, they have to develop "those soft skills" like communication.

Guo advised actuaries to look beyond pricing and reserving to find which of their skills create the most value for their employers, then capitalize on those skills.

The challenge for growth: How will the profession grow?

Gibbs said it is OK to get more technical in one's work, but "balance that by looking at the bigger picture." In the past couple of years, general insurance actuaries have been moving to the C-suite and beyond P&C entities. For example, some Australian actuaries have begun to work in analytics for the retail and government sectors. Distribution and human resources functions also need actuarial skill sets.

In Canada, actuaries are also advancing to the C-suite, but it varies from firm to firm. "There's room to grow there," Tardif said.

Ramírez Lozano notes that actuaries are moving to areas in which plotting strategy is critical. Often it is the actuary's job to instruct a data scientist on how to solve a problem. "We know the market. We understand the problem. We can solve the problem," she said.

Xu recommended a bold course, joking that the proper attitude could be: "The actuary can do every job in the company." The days in which inexperienced actuaries get promoted are ending.

Xu recommended a bold course, joking that the proper attitude could be: "The actuary can do every job in the company."

Technology: How will insurtech change the insurance market?

Change is constant; technology is only one aspect of it, said Gibbs. Having more technological tools gives actuaries more time to discuss analysis with a client, which makes communication crucial. "Lots of people can [use] tools, but not everyone knows how to communicate," he said. Part of communication is understanding client attitudes toward technology and anticipating them.

The insurance market will not continue to develop without technology, said Ramírez Lozano, who advocated for actuaries to use technology and stay aware of new developments. "I think we should put technology in our DNA," she said.

Life insurers may have their share of "fancy technologies," Tardif said, but property-casualty insurers are ahead. Particularly, he noted P&C efforts combating fraud. He also called on P&C actuaries to help those in other, less technical areas to understand and take new risks instead of continuing conventional ways of working.

Xu commented that technology is reshaping corporate structures, with flatter organizations replacing the typical reporting pyramid. "That means that the leaders of today may not be the leaders of the future," Xu said. Actuaries can play an important role as tech-savvy players throughout a company, including nontraditional areas like human resources.

Whither the actuary, today and tomorrow?

Distilling these perspectives taken from, literally, around the world, to two was difficult, but here they are:

- Actuaries face challenges from technology and from new classes of workers.
- Actuaries can address them by creating new talents that leverage upon the old, whether by looking outside the traditional insurance pricing/reserving roles or by becoming better communicators to those who depend on them.

Xu's advice to actuaries, which he said more than once, bears repeating: Be bold. He encourages actuaries to ask themselves, "Can I do this? Is it worth it?" and to accept the challenge.

"The world isn't as tough as you might think," Xu said.

The Case for Innovation — Quantified By JIM LYNCH

How important is innovation for insurers? Next year, AM Best will start grading them on it.

Actuaries got a peek at how the venerable ratings firm will assess innovation, part of a general session called "Innovation's Contribution to Financial Strength," at the 2019 Casualty Actuarial Society Annual Meeting in Honolulu last November. Actuaries also got a look at the many types of innovation insurers need to think about (hint: it's not just insurtech) and why they are important.

Greg Heerde, head of Americas for Aon Benfield Analytics and CEO of the claims consultant Inpoint Inc., laid out the case for innovation. He also gave the state of the art and what innovations await.

The case

Heerde's PowerPoint displayed the 100 largest insurers from 1987. Of them, 15 have gone insolvent or exited property-casualty insurance. "That feels like a pretty big number to me," he said.

Further, only seven of the top 30 P&C companies in 1987 still exist in their same form today. Some merged into other firms, though many of those transactions were "not done from a position of strength." This highlights the need to continually adapt and innovate to remain a viable, ongoing insurance enterprise.

State of the art

Heerde described three primary categories of innovation as technological, operational and product. Technology (think insurtech) is the area that receives much of the attention and where many exciting gains are being made. Companies have also been focused on achieving operational efficiency (including risk pricing, risk selection claims) through better acquisition and utilization of additional data. Companies can also innovate by creating new products, but, as an industry, there has been less successful focus in this area.

Actuaries also got a look at the many types of innovation insurers need to think about (hint: it's not just insurtech).

"There is a mountain of opportunity . . . to evolve our product mix" to better handle risks in today's economy, he said.

Two recent examples of successful product innovations are mortgage risks and cyber insurance. Starting in 2012, the government mortgage servicing giants, Freddie Mac and Fannie Mae, started buying protection against default from the reinsurance industry, resulting in greater than $22 billion of limit and $4.5 billion of new lifetime premium to date. Insurers also wrote $4.5 billion in 2018 in cyber insurance — a line that barely existed five years ago and is expected to surpass $20 billion by 2025.

Heerde foresees multiple areas of additional potential product growth, including the broad categories such as climate change and intellectual property.

For climate change, many risks are and will continue to emerge that can present identifiable insurance opportunities. Property risks, including changes in frequency and severity of storms and fires, will continue to evolve. Liability for the problem may find its way back to carbon producers. If so, can insurers offer protection now?

For pioneering entities, intellectual property has to keep pace with the market. Insurers have typically protected tangible assets, but the economy is growing faster in producing intellectual property like patents and copyrights. Innovative companies can find ways to insure those intangibles that now represent more than 80% of total assets.

Scoring and Assessing Innovation

To judge how well insurers innovate today, AM Best has spent the past two years developing criteria for scoring innovation, which it plans to roll out in 2020.

Since 1899, AM Best has been assessing the financial strength of insurance companies, and their methodology continues to evolve. In the last decade, for example, it began to assess the quality of companies' enterprise risk management programs.

James Gillard, executive vice president and chief operating officer of AM Best, said assessing innovativeness makes sense because "We anticipate that the rate of innovation is going to increase." Gillard is responsible for Best's rating operations globally — 3,400 companies in 90 countries.

Industry leaders appear to agree. In a survey Best conducted, 42% said that innovation was extremely critical to their success; another 30% said it was very critical.

"Companies that fail to embrace

innovation “will be left behind,” Gillard said. “Ultimately, their financial strength will be challenged.”

In its current framework, Best focuses primarily on four aspects of a company. Gillard provided the chain of logic supporting each part of the review:

- Balance sheet — A company needs a strong balance sheet to write business and pay claims.
- Operating performance — If operating performance is weak, the balance sheet will deteriorate.
- Business profile — If the business profile lacks a competitive advantage, performance will deteriorate (and then the balance sheet will).
- Enterprise risk management program — Without a strong ERM program looking at risks collectively, a company is at risk of losing its financial position.

The innovation assessment will be part of the analysis of a company’s business profile. Best will not prescribe a right or wrong way to innovate, Gillard said. New products are innovations, Gillard noted, and they don’t have to be high-tech to be considered so.

Best will develop a score for each company, then look at how that score compares with similar companies. Some areas of insurance are innovating faster than others and Best’s assessment will reflect that. Personal auto, with telematics and other technological changes, is evolving quickly, so companies need to be more innovative in that line, Gillard said.

The overall score will be the sum of two components, input and output. Each will be rated on a scale with a maximum of 16 in total for each of these two components.

Four inputs will be rated from 1 to 4 (4 being the highest), then added together.

Leadership. Senior management has to buy into the innovation culture, Gillard said. It has to dovetail with the corporate mission and be communicated clearly.

Culture. The company has to accept the possibility of failure and have that ideal embedded throughout the organization. It is also important to be able to recognize failure fast, Gillard said.

Resources. The focus here is not only on the resources themselves, but also on their strategic management. Key questions are whether the company is creating value with these resources and whether it has the right talent.

Processes and structure. This includes data, Gillard said, but more importantly, a company has to show that the data is of high quality and the company can manage it. Governance also will be evaluated here.

For output, two components will be scored from 1 to 4. The sum of the scores will be doubled to create an output score.:

- **Results.** A company should show the return on its innovative efforts over the past five years in a tangible, quantifiable and replicable way.
- **Level of transformation.** Best will compare companies with competitors and potential competitors, both inside and outside the industry. It will look at how well innovations address both short- and long-term needs.

Each company’s score will put it into one of five buckets: minimal, moderate, significant, prominent and leader.

The distribution will probably be skewed left, Gillard said, with few companies, if any, in the leader category. The innovation score isn’t expected to automatically result in upgrades or downgrades.

Best has gone through two comment periods in developing the process. The later period ended on October 31, 2019. The criteria is scheduled to go live in 2020. ●

CAS Members Among the First Certified in Catastrophe Risk Management

Kunst

Mao

Mildenhall

Musulin

In late 2019, The CAS Institute (iCAS) awarded one of its newest credentials, the Certified Catastrophe Risk Management Professional (CCRMP). Working in conjunction with the International Society of Catastrophe Managers (ISCM), iCAS offers two levels of credentials in catastrophe risk management: the higher-level CCRMP and, for those with less experience in the industry, the Certified Specialist in Catastrophe Risk (CSCR) credential.

Amy Brener, director of The CAS Institute, interviewed the first four CAS members who became CCRMPs. They discussed the significance of the new credential.

Howard Kunst, FCAS, CCRMP, is the chief actuary, science & analytics at CoreLogic in Irving, Texas. He has a passion for educating the insurance community about the various types of catastrophe risk models and how they can be used, which is extremely important now given the industry's growing interest in learning more about natural catastrophes.

Minchong Mao, FCAS, CCRMP, is managing director for Aon in Chicago. She has worked in the industry for 18+ years and has volunteered for the ISCM and the CAS for many years. She is one of the original members of the iCAS Steering Committee.

Stephen Mildenhall, FCAS, CSPA, CCRMP, is an assistant professor of risk management and insurance and the director of insurance data analytics at the school of risk management in the Tobin College of Business at St. John's University in New York City. A prolific author of actuarial science, he also serves on the boards of the CAS and iCAS.

Rade Musulin, ACAS, CCRMP, has spent most of his career in cat risk management in the U.S. and Asia Pacific. He has worked in several nontraditional areas, including political lobbying, media, climate risk, community resilience and executive management. He is immediate past vice president–casualty of the American Academy of Actuaries and a principal at Finity Consulting in Sydney, Australia, leading its climate risk practice.

Amy Brener: Minchong, why was it important to create these credentials and can you describe the process used to develop the syllabi and the exams?

Minchong Mao: Employers need training materials to bring employees up to speed. These credentials will supplement existing training, so it is a lot easier for employers to identify and retain talent. From an employee's perspective, a clear, externally validated certification demonstrates expertise and qualifications. Among insurers, reinsurers, brokers and consulting firms, we now have several thousand professionals globally. With this level of scale, it makes sense to have these credentials.

A steering committee of key leaders from the ISCM and iCAS designed the curriculum structure and the syllabus, which includes the high-level framework of each exam. We set up the two-tier exam process. After being approved by the steering committee, the syllabus was handed over to the exam subject matter expert (SME) group.

The SME group included people who are familiar with the CAS and the Chartered Property Casualty Underwriter exam processes, who understand the education standards of those organizations and who are knowledgeable in the industry. To develop each exam, the SME group recruited qualified volunteers. In order to ensure the quality of the exams, a screening committee vetted the volunteers' education, experience and references.

The iCAS facilitated training on how to write learning objectives, knowledge statements and exam questions, all of which were peer-reviewed. Developing learning objectives included identifying study materials on relevant topics.

AB: Steve, you and Minchong are already senior in this field. Why was it important for you to get the CCRMP?

Stephen Mildenhall: As actuaries we value credentials and understand their importance. Credentialing recognizes that you have a certain body of knowledge. I am convinced that this will be the gold standard for cat modeling, and it was worth the investment of time to put in an application to become a CCRMP.

MM: Catastrophe risk management work impacts rate filings, underwriting risk selection and rating agencies' capital adequacy tests. University curriculum and actuarial exams don't cover in-depth cat risk management topics. These credentials are a perfect fit to fill the knowledge gap; they add credibility to our work and bring the profession to a higher standard.

AB: Rade, what prompted you to get the credential?

Rade Musulin: I have seen firsthand the consequences of catastrophe management breakdowns, starting with how Hurricane Andrew devastated Florida's economy and insurance industry. It took decades for the state to recover by enacting stronger building codes, developing new regulatory standards and creating new structures like the Florida Hurricane Catastrophe Fund. New catastrophe risk management tools were critical in the recovery. In 2004, four hurricanes hit Florida and in 2005, Katrina tore through the Gulf states, and in both events, the insurance system and housing market responded better than in 1992, reflecting how better cat risk understanding yields great social benefits.

I have been doing most of my work in the cat space and have found it to be very actuarial, though not in the traditional sense, so this credential represents an important evolution in our educational process. Catastrophe risk is one of the most important risks the insurance industry faces, and actuaries possess unique skills in tail risk and extreme event management. In fact, understanding and managing cat risk is at the core of our actuarial mission. Cat risk management also provides a great opportunity to collaborate with experts in other disciplines such as meteorologists, engineers and data scientists. I wanted to get this credential to support it and demonstrate the importance this area has to the profession.

AB: Howard, explain how you apply your actuarial background to science and analytics and how the CCRMP reflects that experience?

Howard Kunst: Before my current position, I did a lot of work with catastrophe model results. Twenty years ago, I was part of team building one of the first by-peril rating models for Florida homeowners to better account for hurricane risk. Now I work with the teams building those models and provide guidance on how the models have been used and will be used. Using my actuarial skills, I can validate that the model results are accurate and meaningful. Throughout my career, I've touched both sides of the catastrophe modeling industry, and that unique experience is highlighted within the CCRMP credential.

AB: What advice would you give someone who is interested in specializing in the field of catastrophe risk management?

SM: This topic falls between departments and syllabi in university education: You can major in risk management or actuarial science, but not in cat management. In terms of integrating those pieces of knowledge and presenting them in a way that will be relevant to how you will be using them in practice, you really can't do better than this CCRMP syllabus and credential. I think it needs to be combined with work. (We have work experience standards within the qualification process.) The material is extremely relevant to a catastrophe risk manager's day-to-day job. I hope a lot of companies can incorporate this material in place of in-house training. Students will find that this product helps to prepare them well and gives them context and a better understanding of what they are doing as they begin their professional careers as catastrophe managers.

RM: To young people who are considering the credential early in their careers, I would tell them that, in the next decades, catastrophe risk management will be one of the most exciting areas, especially dealing with rising sea levels and other manifestations of climate change. This is an area where there will be a lot of opportunity in coming years for people who master this material.

HK: The best advice I have is that it is important to learn about all aspects of catastrophe risk management — underwriting, pricing and aggregation/portfolio risk management — and how they are all intertwined. A holistic understanding of the process can certainly make all other processes within catastrophe risk management much more understandable.

MM: Cat risk management is a lifelong learning journey. There will be continuing education requirements so that credential holders will remain current. I would encourage candidates as they go through the process to provide their feedback and consider volunteering. Their help will make the program stronger and better.

A CAS subsidiary, The CAS Institute (thecasinstitute.org) provides educational opportunities to quantitative specialists in predictive analytics and data science as well as catastrophe risk management. For more information on the CCRMP and CSCR credentials, visit CatRiskCredentials.org.

IN MY OPINION By GROVER EDIE, *AR* EDITOR IN CHIEF

Use Insurance Principles to Manage Your Time

As actuaries, we estimate the likelihood and expected cost of all sorts of events — rare, routine and costly ones, those that can be absorbed in normal operating budgets, and all sorts in between.

Some of us apply insurance principles to our finances. Years ago, my wife and I had a fund for those unexpected bills that came along. Over time, we found that the events happened just about as often but cost a lot more than they used to. I write this after spending $200 to get the clothes dryer fixed this afternoon.

This expense fund got me thinking. What if we applied insurance principles to time management?

Marking Time

A lot of time management gurus tell us that we should keep a schedule of everything we do — something I resisted for years. At one point, however, I started to keep track of what I did through the workday and it has now become a habit. Schedule tracking is very informative and helps keep me on task. The data enables me to analyze what I am doing and how much time I am spending on tasks. I consider it my "time database."

But data collection is only the beginning. In applying our skills to time management, we need to analyze and project data and take corrective action where needed.

Meetings

When I worked at different companies, I found that meetings took up an inordinate amount of my time. I checked with my staff and found it was the same for them. How could my team and I get work done during normal business hours when we spend so much time in meetings?

To combat this problem, we implemented a form of "loss control" for meetings that paid off.

I used a tactic very similar to a business interruption feature called a "time-delay deductible." How did it work? I relocated to another floor.

We *underwrote* our meetings and declined some of them. We ceased being "take-all-comers" attendees and only accepted select invitations. In some cases, we would send one person, rather than the two or three invited, helping us to cover the topic without redundant staff attending.

Sometimes, I would apply a "policy limit" to a proposed meeting. "I can give you half an hour but not an hour," was often what I told some who requested meetings. More often than not, we accomplished all that we needed to in that shorter time.

We also developed a means of reducing "contagion risk" by not scheduling meetings back-to back. Oftentimes a group of people would be waiting for other participants to get out of an earlier meeting that went long because the meeting before that started late because everyone had to get out of a third meeting that went overtime because . . . well, you get the idea. I required that 30 minutes before and after all meetings be unscheduled. This shielded me from the "meeting-went-overtime-because-it-started-late-because-the-prior-meeting-went-over" syndrome. That 30-minute buffer also afforded me time to make notes about the meeting that just finished and give me time to assemble the items for the next one.

For most meetings, I would ask for a "declarations page" or agenda that includes who is attending; what is to be discussed, decided or announced; and the overall purpose of the meeting.

"Limiting endorsements" is another important tactic that disallows introducing new topics during a meeting. I don't like to be blindsided by someone starting down another path by saying, "While we're all here, let's discuss...." Sometimes this can be a way to get someone into a meeting unprepared for the meeting's true purpose. Having an agenda and being willing to say that you are not prepared to discuss the topic at that time works like a policy limitation or condition.

Interruptions

Like meetings, interruptions consume time, but they cost even more time be-

cause your mind has to "reset" in order to get back into what you were doing before. Some people work around this by coming in early to do work before everyone else shows up.

To combat interruptions, I created a "franchise deductible" program. Every day I would have a standing meeting with people working on projects. The idea was for that meeting to last only a few minutes and for those individuals to save up all of their questions until our meeting (the franchise deductible). My purpose was to not get peppered with a lot of questions throughout the day and to make the other person think more about their questions before approaching me. This meeting requirement gave them the opportunity to work on their problem-solving skills.

At another job, I used a tactic very similar to a business interruption feature called a "time-delay deductible." How did it work? I relocated to another floor.

People who worked near my staff said that they often saw the actuaries go into the stairwell, only to come back out before they even had enough time to get to my floor. Upon further investigation, I learned that, as they practiced how to pose the question, they answered it themselves. The time between when they got up from their desk to when they would arrive in my office was enough time to eliminate a lot of questions.

When Time is Not Enough

Sometimes a company is not granted a filed and needed rate increase. The time management parallel to that is not having enough staff to get done all the demands of your department or of yourself.

In this instance, you can apply tactics similar to what I outlined above: Underwrite and decline to do some tasks or projects (don't accept all comers) or do some tasks less frequently (semiannually instead of quarterly) or both. Just as underwriting will cease writing in unprofitable areas, you can quit servicing unprofitable areas, that is, you drop unimportant activities and push work back on others among other strategies. Ultimately, you might just have to withdraw from writing that line of business (quit doing a task) or even withdraw from the state altogether (find another job.)

Conclusion

I have only scratched the surface of applying insurance principles to time management. Look for more on this topic from me in the future. I challenge you to think about other principles from other endeavors that you use to manage time better.

Nothing to See Here . . . . Just Multiplying Some Positive Integers

To give readers a break from the hard stuff, here is a basic and easy puzzle for everyone. To keep things simple, this puzzle will only involve multiplication and positive integers.

Here are some positive integers:

$G = 10^{100}$ (a googol)

$GP = 10^{G}$ (a googolplex)

$GP! = 1 \times 2 \times 3 \times \ldots \times GP$ (factorial of a googolplex)

Here are some sequences of positive integers:

$A(1) = 2$

$A(n+1) = A(n)^{A(n)}$

$B(1) = 3$

$B(n+1) = B(n)!$

$C(1) = 1$

$C(n+1) = 2^{C(n)}$

What is the smallest integer k that satisfies the condition for each of the following conditions?

$A(k) \geq GP! \times B(k)$.

$A(k) \geq GP! \times C(k)$.

$A(k) \geq B(k) \times C(k)$.

Lawn Mower Geometry

In this puzzle we were challenged to save young Don Mango from heat stroke by minimizing the time he spends driving a riding lawn mower through the sweltering heat of the Texas summer. Following are details of the riding mower:

- Makes a perfect 3-foot diameter circle.
- Travels at 10 feet per second.
- Turns on its center (rotates) at 45 degrees per second.
- Takes four seconds to stop (slowing down + turning + accelerating again).

Fields to be cut include the following:

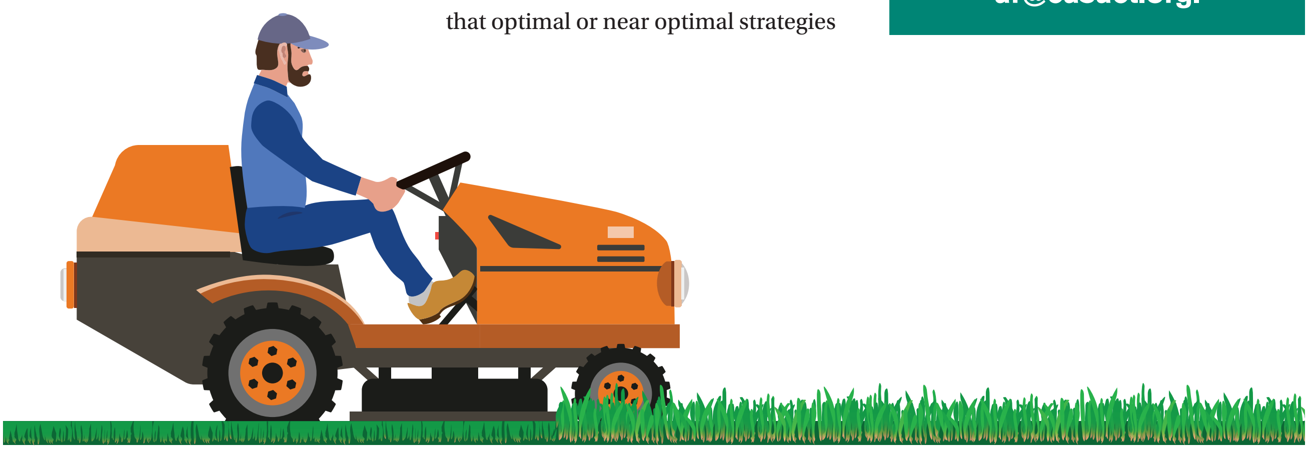
- A 50-foot-by-100-foot rectangle.
- A 50-foot-(side A)-by-100-foot-(side B)-right triangle.
- Two different trapezoids:
  - Two triangles attached on the 50-foot side of a rectangle.
  - Two triangles attached on the 100-foot side of a rectangle.

Analysis of the problem suggests that optimal or near optimal strategies tend to involve cutting in the longest strips possible to minimize turning time.

Grand Master Puzzle Solver Bob Conger heroically composed a massive treatise analyzing and explaining highly efficient mowing strategies. It is posted on ar.casact.org, the *AR* magazine website, as it consumes too much of the print edition to include. The optimal times vary a little depending on exactly how the turning maneuver and its associated time penalty are interpreted. Conger arrived at the following estimated time intervals for optimal (or near optimal) strategies:

- Rectangle — 233 to 301 seconds.
- Triangle — 139 to 207 seconds.
- Trapezoids
  - 50-foot attachment — 401 to 484 seconds.
  - 100-foot attachment — 467 to 613 seconds.

Know the answer? Send your solution to ar@casact.org.



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