

# actuarialREVIEW

VOL 52 / NO 6 / NOVEMBER-DECEMBER 2025

PUBLISHED BY THE CASUALTY ACTUARIAL SOCIETY 



## Beyond the Policy: Exploring the Landscape of Trust in Insurance

**CAS Research:  
Strategic Expansion**

**Volunteers Make Things Happen:  
CAWG Enhances Experience for  
Aspiring Actuaries**



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# actuarialREVIEW

November-December 2025



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FSC  
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### Beyond the Policy: Exploring the Landscape of Trust in Insurance

By KOBE BALSON, TRAVIS PERALTA,  
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# actuarialREVIEW

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**editor'sNOTE** By SARAH SAPP, AR MANAGING EDITOR

## On Trust, Volunteering, and Research

Our cover story delves into one of the industry's most essential yet fragile foundations — trust. Drawing on studies from J.D. Power and Edelman, the article examines how misunderstandings, claim denials, and public perception have strained insurer-insured relationships. It also highlights how greater transparency, plain-language policies, and emerging technologies such as telematics, blockchain, and AI can restore confidence and strengthen the mutual pledge at the heart of insurance.

In our last issue for 2025, we take time to honor a working group that has gone above and beyond the call of duty this year to improve the organization and better serve our members. You will learn how the Candidate Advocate Working Group has been leaning into the CAS Strategic Plan to enhance the candidate experience. You will meet superstar volunteer Keith Quigley, chair of the Microlearning Working Group, and discover a new way of learning that might be right for you. We'll also introduce you to the new AI Working Group chair, Mario DiCaro.

We offer a year in review of the incredible research that has been con-

ducted within the organization. You will learn how our research division sought to foster inquiry and thought leadership around critical areas of emerging opportunity and threat. Learn about the seven working groups and their most recent contributions to ratemaking, reinsurance, risk, reserves, artificial intelligence, climate and sustainability, and open-source projects.

In this issue's *Developing News*, we explore how world events and executive actions are reshaping the risk landscape for insurers. From CEO conduct and its implications for D&O coverage, to the effects of Middle East tensions on marine underwriting and a new wave of cyberattacks targeting major insurers, each story highlights the growing need for actuarial insight in a rapidly changing world.

Finally, Rachel Hunter explores how Bayesian MCMC modeling can enhance actuarial reserving. Drawing insights from Maochao Xu and Michael Larsen, the article highlights the method's advantages in handling sparse data, improving reserve range estimates, and providing clearer insight into uncertainty — while reminding practitioners to balance model complexity with interpretability. Enjoy the issue! ●

*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.

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## Enhancing CAS Stakeholder Engagement

As I reach the end of my term as CAS president, I took some time to review the commitments I made to you, the members, and reflect on what has been accomplished during my tenure. I'm pleased to say that we have made important progress in many aspects of fulfilling the CAS Mission.

Over the past year, my messages in the *Actuarial Review* have shared much of this progress. In my [January/February message](#), I described how our new [strategic plan](#) is helping CAS leadership focus on the future. We are well underway in implementing our strategic plan, and the momentum is building as we are now entering the second year of this plan.

In my [March/April](#) message, I shared the remarkable growth we are seeing in areas outside our traditional strongholds in North America. Over the past year, I have had more opportunities to see how CAS's international engagement is elevating actuaries who practice in property-casualty/general insurance. This is essential for the growth of economies around the world and brings opportunity and learnings back to our core membership. We are serving members in Canada with greater focus, including with our first-ever Canada Connection professional education event in Toronto this December.

In my [May/June message](#), I focused on our opportunity to strengthen the foundation of the CAS with clarity, transparency, and resiliency. I made the case for us to simplify and streamline the CAS governing documents into a new set of bylaws. I'm very pleased that our new bylaws are now in effect, thanks to the

strong support from the membership — with nearly 80% of voters voting in favor of these important changes.

In my [July/August](#) message, I outlined the shared ways that I see us strengthening in each of the key attributes that make us a profession: our unique body of knowledge, our high standards of entry, our code of ethics/professionalism, our service orientation, and our credentialing organization — the CAS itself. If there is one lasting impact that I want to leave on the CAS from my tenure, it is an increased recognition and appreciation for each of these attributes. By understanding and strengthening these things, we strengthen our profession — which makes us unique among the wide variety of analytical careers.

In my [September/October message](#), I talked about how important our sense of community is to us as professionals. This sense of community has continued to be important, even as the CAS grows in the aftermath of the pandemic. By building relationships with each other, working together to strengthen our profession, and learning together to advance our practice, we build stronger bonds of community that benefit us all.

There is one important area of focus that I have not described in previous messages — the way the CAS engages some of our most important stakeholders — our employers, universities, and regional affiliates. I'm pleased to say that we have renewed and enhanced our engagement in important ways during my tenure.

### Employers

As I assumed the president's role, I com-

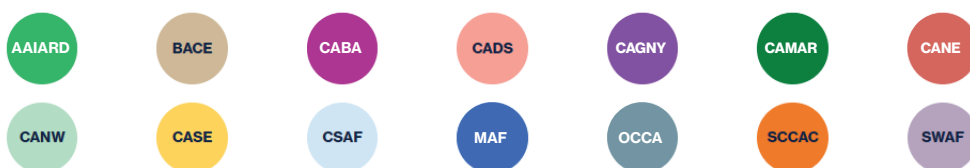
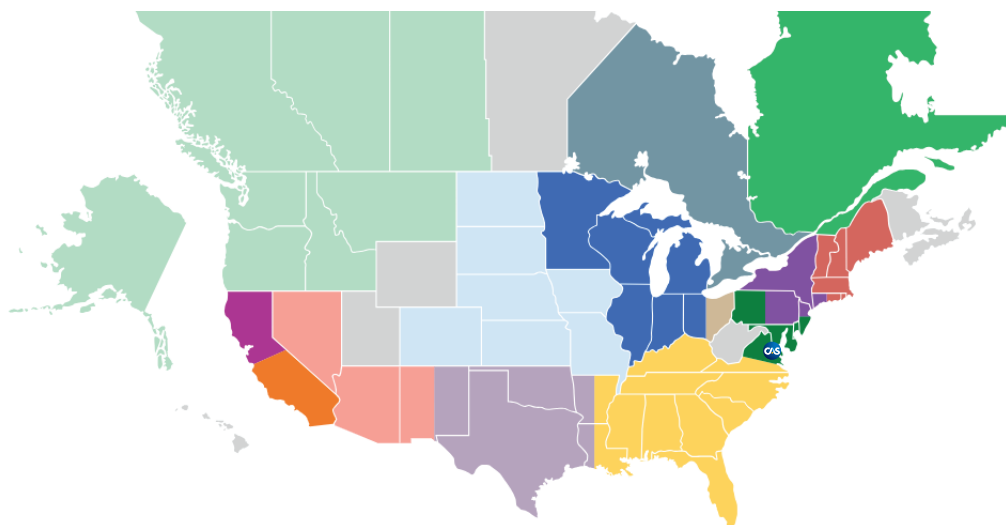
### CAS Mission Statement

The purposes of the Casualty Actuarial Society are to:

- Advance the body of knowledge of actuarial science applied to general insurance, including property, casualty, and similar risk exposures.
- Expand the application of actuarial science to enterprise risks and systemic risks.
- Establish and maintain standards of qualification for membership.
- Promote and maintain high standards of conduct and competence.
- Increase the awareness of actuarial science.
- Contribute to the wellbeing of society as a whole.

mitted to restarting our CAS leaders' engagement with employers. In many ways, our employers are our most important stakeholders — supporting our credentialing process, our continuing education, and our career paths. However, in the post-COVID transition, we had gotten out of the routine of engaging in-person with employers. I personally visited four companies this year — including some of our largest employers of CAS actuaries — on-site in their offices. I met with leaders and all of their CAS members and candidates. I fielded questions across a host of issues of interest to them. I also introduced them to CAS staff members who participated with me. In many cases, I met with senior leaders outside the actuarial departments to communicate the importance

## Regional Affiliates



of CAS members for their businesses, and I expressed appreciation for the time their employees spend in support of CAS and other industry initiatives.

Since my initial visits this year, other CAS leaders have visited several other large employers. We now have a plan to visit every major employer of CAS actuaries at least once every

employers to identify a contact person to be a conduit of information to and from the CAS. And we have given a CAS staff member the responsibility to continue to develop this network and maintain ongoing communication.

Through these initiatives, we are ensuring the CAS continues to bring value to our members and their employers,

do much more than educate future actuaries. Professors who teach actuarial science courses see firsthand the competitive environment for the analytically talented undergraduate — including competition within the actuarial profession and with data science careers. They are a vital source of information about how relevant the CAS is to students, and I've learned a lot from talking with them during my tenure.

The CAS has made university engagement a key focus area for more than a decade now, and we've done remarkable work with professors and students. I've been excited to see that work advance this year through several initiatives. In June, we held our first ever CAS Academic Summit. We had representation from more than 30 universities, showcasing broad diversity in school size and actuarial programs. What they all had in common was an interest in im-

## The CAS has made university engagement a key focus area for more than a decade now, and we've done remarkable work with professors and students.

three years. We have also renewed our Employer Advisory Council (EAC) — a group of senior actuaries representing approximately 10 employers, who give us input on CAS initiatives.

To help facilitate ongoing communication with employers beyond the EAC, we started a new program called our CAS Employer Network. We invited

and we are maintaining lines of communication that will help our members be at their best as our industry and workplaces continue to evolve.

### Universities

In many ways, universities provide a pipeline of actuarial talent that will create the future of our profession. They

*President's Message, page 8*

## President's Message

from page 7

proving how they include P&C content in their curriculum and prepare their students for success in P&C actuarial careers. Over this two-day event, they shared their own best practices and experiences in attracting students to the entry points of our profession. They shared the challenges they face and gave us feedback about how we can maintain and improve the CAS's position with students. And our excellent CAS staff leaders offered tools and resources to help them motivate students toward careers as P&C actuaries. It was great to meet these dedicated professors at this first-of-its-kind event. I'm excited for how we will build on this success in the years to come.

## Regional Affiliates

Soon after I was elected, I determined that I wanted to spend time during my president-elect year engaging with members — not only in large CAS events, but also in smaller forums like our Regional Affiliate meetings. Our Regional Affiliates do a remarkable job of extending the reach of the CAS and fostering more localized communities. They provide continuing education opportunities to members who may not be able to attend our larger events due to location, timing, or expense. They facilitate relationship building and networking among actuaries in different parts of the U.S. and around the globe.

I have had the privilege of meeting our members at several of these meetings over the past two years. I shared updates from the CAS and opened myself to questions. I learned a lot from these engagements and heard what was

important to our members and candidates. I also met the volunteers who lead these affiliates and put so much time and energy into building their regional communities. These are remarkable and dedicated people who do great work.

As I wrap up my turn to serve the profession as the CAS president, it is the memories of these engagements that burn the brightest. It has been a privilege to meet so many people who are so passionate about our profession, our role in the industry, and the people who will become the actuaries of the future. In so many ways, this is the essence of what it means to be a profession — we are people who make each other better through our shared commitment to our identity as actuarial professionals. I am so grateful that I found my way into this profession when I sat for my first actuarial exam nearly 30 years ago. And I am so grateful for your trust in me to serve as president this year. I'm glad I could do my part to make our profession stronger for years to come. ●

## July-August Excellence

Dear Editor,

Thank you for your excellent work on the *Actuarial Review*. As a CAS exam taker, I truly appreciate the [July-August issue](#). The content is incredibly helpful — particularly the main article and the Professional Insight sections — as they encourage us to think critically about the evolving landscape of the actuarial profession. I also want to mention how much I enjoy the print version. It's a valuable resource for staying engaged with the profession beyond exam materials. Thank you again for your dedication and thoughtful work.

Best regards,  
Shiming Wu ●

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### ACTUARIAL REVIEW LETTERS POLICY

*Letters shall not contain personal attacks or statements directly or implicitly denigrating the characters of individuals or particular groups; false or unsubstantiated claims; or political rhetoric. Letters should be no more than 250 words and must include the author's name and phone number or email address, so the editorial staff can confirm the author. Anonymous letters will not be published. There shall be no recurrence of topics; issues previously addressed will not be the subject of continued letters to the editor, unless new and pertinent information is provided. No more than one letter from an individual can appear in every other issue. Letters should address content covered in AR. Content regarding the CAS Board of Directors or individual departmental policies should be directed to the appropriate staff and volunteer groups (e.g., board, working groups, committees, task forces, or councils) instead of AR. No letter that attempts to use AR as a platform for an ulterior purpose will be published. Letters are subject to space limitations and are not guaranteed to be published. The AR editorial volunteer and staff team reserves the right to edit any submitted letter so that it conforms to this policy. Decisions to publish letters and make changes to submissions shall be made at the discretion of the AR Working Group and CAS staff.*

For more information on AR editorial policies, visit [https://ar.casact.org/wp-content/uploads/2023/06/AR\\_Statement\\_of\\_Purpose.pdf](https://ar.casact.org/wp-content/uploads/2023/06/AR_Statement_of_Purpose.pdf)

## COMINGS AND GOINGS

**Russ Buckley, FCAS**, has been appointed chief risk officer at Hamilton Insurance Group, Ltd. In his new role, Buckley will oversee Hamilton's risk and actuarial function. Buckley has over 30 years of insurance industry experience across global public reinsurance companies. He joins Hamilton from Old Republic Specialty Insurance Underwriters, Inc., where he served as senior vice president and chief actuarial officer since 2020. Prior to that, Buckley was chief actuary in the Global Specialty division at The Hartford. Additionally, Buckley has held leadership positions with AIG, XL, and Munich Reinsurance Group.

**Stephanie Rabin, ACAS**, has been promoted to chief operating officer (COO) at Holborn Corporation. Stephanie has more than 30 years of industry experience. Prior to joining Holborn in 2016, she held leadership roles at Aon, where she was a partner in their M&A and Business Transformation Advisory Solutions Group, and at Guy Carpenter. Most recently before joining Holborn, she served in a COO capacity, leading operations at Aspen Insurance U.S.

**Maheswaran Sudagar, FCAS**, has been appointed chief actuary at Paragon Insurance. In this new role, Sudagar will oversee all actuarial functions across the organization and collaborate closely with underwriting, finance, product, and analytics teams to enhance Paragon's competitive edge. Additionally, he will guide the broader actuarial team and provide strategic insights to drive Paragon's innovation. He brings over two decades of actuarial experience with leading insurers and reinsurers across

North America, Europe, Australia, and the Asia-Pacific region, most recently serving as senior vice president and lead actuary at Crum & Forster.

**Charlie Lei, FCAS, MAAA**, has been appointed vice president actuary, head of U.S. pricing at Ascot Group. Previously he served as Ascot's vice president actuary, head of reserving. Beginning in 2021, Lei became the president of Abacus Actuaries, an organization focused on supporting and empowering Asian actuaries to succeed in their careers. He previously held actuarial positions at Tokio Millennium Re AG, AIG, and Ernst & Young.

**Ben Ng, FCAS, FSA**, has been appointed group chief risk officer designate and group executive committee member at AIA Group. Ng will assume the role of group chief risk officer from January 1, 2026, subject to regulatory approvals. He joined AIA in 2011 and has held a range of senior executive roles across Hong Kong, Indonesia, Malaysia, Singapore, and Taiwan, including as chief executive officer of Malaysia, Indonesia, and group corporate solutions. Ng has championed innovation, strengthened governance, and steered AIA Malaysia's digital transformation. He was elected president of the Life Insurance Association of Malaysia, where he continued to advance the industry agenda through regulatory engagement covering agent professionalism, risk management, and sustainability. ●

EMAIL "COMINGS AND GOINGS"  
ITEMS TO [AR@CASACT.ORG](mailto:AR@CASACT.ORG).

## CALENDAR OF EVENTS

**March 16–18, 2026**

2026 Ratemaking, Product  
Management, and Modeling  
Chicago, IL

**May 3–6, 2026**

2026 CAS Spring Meeting  
New York, NY

**May 31–June 2, 2026**

2026 CAS Seminar  
on Reinsurance  
Philadelphia, PA

**September 14–16, 2026**

2026 Casualty Loss  
Reserve Seminar  
Las Vegas, NV

Visit [casact.org](https://casact.org) for updates on meeting locations.

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## Certify Compliance with the CAS Continuing Education Policy

All Fellows and Associates should certify their compliance with the [CAS Continuing Education \(CE\) Policy](#) requirements by **December 31, 2025** for attestation year 2026.

Members must certify compliance at the end of each calendar year, as compliance with the CAS CE Policy allows members to provide actuarial services in the year immediately following certification of compliance.

If a member is a practicing actuary, the member should indicate the proper attestation year as the year during which they are able to practice after having met the prior years' necessary CE/Continuing Professional Development (CPD) requirements. For example, members

who completed their required CE/CPD requirements during 2025 will be able to provide actuarial services in 2026.

Note that even members who are **not** in actuarial roles should review the requirements, as CE compliance may still be required.

If members are not providing actuarial services, they must still submit their attestation using the “not providing actuarial services” attestation option. Members who do not provide actuarial services do not have to earn CE or meet the CAS CE Policy. The CAS CE Policy defines “Actuarial Services” as “Professional Services provided to a Principal by an individual acting in the capacity of an actuary. Such services include the rendering of advice, recommendations,

findings, or opinions based upon actuarial considerations.”

Members who do not certify their compliance or who do not indicate they are not providing actuarial services by **January 1, 2026**, will be shown as non-compliant under the Continuing Education heading of the membership directory on the CAS website. Please note that there is no longer a February 1 extension to submit CE attestations. Members who are listed as non-compliant may be subject to further administrative penalties as determined by the CAS Board.



### Should you certify compliance if ...

| Circumstance                                                                                                    | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| You recently became a new ACAS/FCAS member and live/work in the U.S.                                            | <b>YES</b> , the USQS allows time spent in independent study for exams to be counted toward the CE requirement. Courses that were mandatory for the ACAS credential such as the Course on Professionalism (COP) can be counted towards CE.                                                                                                                                                                                            |
| You are an actuary working in a non-traditional area of practice (e.g., underwriter, risk manager, CEO)         | <b>YES</b> , actuaries in non-traditional areas may still be providing “actuarial services” as defined above.                                                                                                                                                                                                                                                                                                                         |
| You did not complete the relevant amount of CE/CPD needed for your chosen Qualification Standard or Requirement | <b>YES</b> , even if members have not yet met their CE/CPD needed for their chosen qualification standard or requirement, they must still attest.<br><br>If actuaries attest as non-compliant, they may not provide actuarial services until they become compliant with their chosen Recognized National Standard. Actuaries may update their attestation at any time of the year to “compliant” once they have met the requirements. |
| You are no longer providing actuarial services                                                                  | <b>YES</b> , if you recently stopped providing actuarial services, you must attest this year.<br><br>Members who attested “not providing actuarial services” last year and plan to continue not providing actuarial services in 2026 will not be required to attest again unless their statuses change.                                                                                                                               |
| You are retired                                                                                                 | <b>YES</b> , members who are retired may still be subject to CE Policy. Only if you are not currently providing actuarial services are you exempt from attesting on an annual basis and exempt from meeting the CE requirements.<br><br>If you are retired but continue to provide actuarial services from time to time, you should attest appropriately and meet CE requirements.                                                    |
| You are an Affiliate Member of the CAS                                                                          | <b>NO</b> , you do not need to attest because Affiliates are not subject to the CAS CE Policy.                                                                                                                                                                                                                                                                                                                                        |

### How to certify compliance

To certify compliance, members should attest for 2026 by December 31, 2025, by following these steps:

1. Go to [casact.org](https://casact.org).
2. Sign into your CAS member account by clicking on the “Login” tab at the top of the page.
3. Click on the “My Account” tab.
4. Click on the “My Attestation” button listed under your name and address.

5. Click the “Add” button at the bottom of the page.
6. The attestation year should default to “2026”.
7. Under the “Attestation Compliance” field, select which statement applies to you.
8. Under the “Attestation Method” field, select the Recognized National Standard with which you are complying.

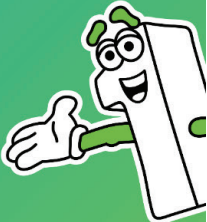
For more information visit our CE

related webpages:

- [Continuing Education Policy](#)
- [New ACAS Members – Attestation & CE Requirements](#)
- [U.S. Qualification Standards Overview](#)
- [CAS Continuing Education Frequently Asked Questions](#)

If you have any questions, please email [ce-review@casact.org](mailto:ce-review@casact.org).

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## All for Math

The campaign for math proficiency

## IN REMEMBRANCE

*In Remembrance is an occasional column featuring short obituaries of CAS members who have recently passed away. These obituaries and sometimes longer versions are posted on the CAS website; search for “[Obituaries](#).”*

### The Musical Sportsman

#### Jamison Joel Ihrke (FCAS 2001)

1971–2025

Jamison Joel “JJ” Ihrke, 54, of Edina, Minnesota, passed away peacefully in July 2025. Born in New Prague, Minnesota, Ihrke’s life was defined by dedication to family, professional excellence, and a passion for sports, travel, and good company. Ihrke is survived by his loving wife of 27 years, Regina Anne Ihrke; sons, Gavin and Nolan, whom he proudly guided through life’s milestones and with whom he shared many adventures; mother Carole Ihrke; and brother Andy Ihrke, with sister-in-law Erica, and nieces, Bella and Bryn. He was preceded in death by his father Gene Ihrke and father-in-law Raymond Bacci. A 1993 graduate of Drake University with a

bachelor’s degree in actuarial science, Ihrke went on to become a Fellow of the CAS and a Member of the American Academy of Actuaries. He was always there for his boys — whether teaching life lessons, attending school events, or sharing their mutual love for sports, music, and especially golf.

### The Humorous Author

#### Charles McClenahan (FCAS 1971)

1945–2025

Charles Leo McClenahan (Chuck), age 80, passed away in September 2025, leaving behind a legacy of dedication and excellence. He is survived by his beloved wife Debra and three children, Kelly, Scott, and Edie (Jason) Britton. McClenahan is also survived by his three grandsons, Connor, Cameron, and

Dylan. McClenahan was a prominent figure in the insurance industry. He was known for his insightful contributions and served on the CAS Board of Directors from 1988 to 1990. McClenahan was a frequent speaker at industry events and authored numerous papers and articles that enriched the field of actuarial science. His passion for his work was matched only by his love for his family. McClenahan will be remembered not only for his professional accomplishments, but also for the sense of humor he shared with his family and friends. McClenahan’s quiet strength and enduring love leaves an indelible mark on those whose lives he touched that will never fade. He lives on in the way his children carry themselves and in the values they hold close. ●



# 2025 ELECTION RESULTS



Left to right: President-Elect Kathleen C. Odomirok, Board Members Shane Barnes, Kim Guerriero, Jamie Mills, and Sharon K. Robinson.

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## VOLUNTEERS MAKE THINGS HAPPEN

## Sometimes Bite-Sized Is Better: Microlearning with the CAS

By SARAH SAPP AND SARA CHEN

*The Making Things Happen column features CAS and iCAS members who serve the associations in many capacities and enrich the volunteer experience for all.*

When it comes to continuing education, actuarial professionals know that staying current is a lifelong commitment. Yet traditional formats — conferences, day-long seminars, and long-form online modules — can sometimes feel daunting in an era when information is consumed in short bursts. The Microlearning Working Group, a volunteer-driven initiative of the CAS, was created to explore new approaches to professional learning that are more flexible, accessible, and responsive to actuaries' needs.

Keith Quigley is volunteer chair of the group. In his role, Quigley is helping shape the group's mission and guide its early initiatives. "This is my third year being part of the Microlearning Working Group," says Quigley. "I've only worked in a small slice of actuarial work, and I've always been curious about what all the profession offers. It made sense to me to volunteer with a Professional Education working group, and I liked the idea of the microlearning course structure."

"Even during exam crunch time, I was never someone able to buckle down for a marathon study session to prepare for an exam," says Quigley. "It always worked better for me to split my studying into shorter segments, so I could fo-



Keith Quigley (left) and CAS Board Chair Frank Chang.

cus better. Microlearning brings this idea into the learning material itself, covering a bigger concept with short, bite-sized chunks of content. Research has shown this approach helps to increase attention and improve retention of the material."

The Microlearning Working Group is focused on delivering education in short, targeted formats that can be consumed in just a few minutes at a time. These "bite-sized," 8- to 10-minute learning experiences — whether videos, podcasts, or interactive exercises — are designed to fit seamlessly into an actuary's day. "We reach out to subject-matter experts knowledgeable in an area we want to create a course for and work with them to create the course materials," says Quigley.

The group's overarching goal is to make learning more approachable and immediately applicable. Rather than

replacing traditional conferences and seminars, microlearning is intended to complement them by offering ongoing, accessible opportunities for professional growth.

As volunteer chair, Quigley plays a central role in defining priorities and coordinating the efforts of a team of volunteers. He emphasizes alignment with the CAS's broader mission of advancing knowledge and supporting members' development, while also encouraging experimentation with new formats and technologies.

"Keith is an outstanding volunteer chair whose vision for microlearning has helped shape and guide our efforts in meaningful ways," says Kris Colvin, CAS instructional designer and staff chair of the working group. "His leadership is both inspiring and collaborative, making him an absolute joy to work with. I truly

couldn't ask for a better volunteer chair."

The group has some exciting new courses on the horizon, including one about synthetic data. "Synthetic data can be fully synthetic, meaning the data is generated based on assumptions and patterns but isn't using any real data directly," says Quigley. "Another way to use synthetic data is by applying statistical techniques to real data, resulting in a dataset with all the same properties, but it is much more anonymized. The hacking incidents over the summer show the benefit this could have in reducing access to sensitive data, while still allowing actuarial techniques."

The Microlearning Working Group is positioned to expand its efforts and create a growing library of resources that actuaries can access anytime, and

quickly connect with the material in a way that's flexible and effective.

"Our Microlearning Working Group has built an engaging portfolio of courses that cover a wide spectrum of actuarial practice and professional development," says Colvin. "Recent offerings include IFRS-17, Excel Ninja Moves, Emerging Risk Survey, Accounting Systems for Actuaries, Catastrophe (CAT) Modeling, and a course on specialty coverages such as surety, marine insurance, as well as modules on unconscious bias. We're also developing new content on ASOP 23, explaining large language models, Power Query, and communication skills for actuaries."

Quigley has enjoyed a wide variety of courses himself. "The unconscious bias course is a good example of a high-

**"Our Microlearning Working Group has built an engaging portfolio of courses that cover a wide spectrum of actuarial practice and professional development."**

**—Kris Colvin**

the vision is to make learning a continuous process rather than an occasional event. CAS Microlearning is now using Articulate Rise to make its courses more engaging and interactive. Articulate Rise is an easy-to-use online tool that lets the CAS design modern, mobile-friendly lessons that combine short readings, videos, and activities. This helps learners

quality course, and it has the added bonus of showing off what the new e-learning authoring tool is capable of," says Quigley. "It also counts for bias CE for anyone scrambling to fill that requirement. I like how it gives examples of when different biases might come into play and a case study to show how they can have a real impact."

### Featured Microlearning Courses

- [Catastrophe Modeling Microlearning Series](#)
- [Specialty Coverages Microlearning Series](#)
- [Unconscious Bias Microlearning Series](#)
- [Excel Ninja Moves: Functions, APIs & Hidden Shortcuts](#)
- [Accounting Systems for Actuaries](#)

Quigley also enjoyed the CAT modeling series that CoreLogic produced. It covers hurricanes but also other catastrophic perils like flood and earthquake. "Hurricane modeling is mature, but watching wildfire modeling become more common in the industry makes me curious about the other perils highlighted in the course and what modeling might end up looking like for those," says Quigley.

The way the CAS delivers courses is as important as the content itself. "The Working Group is always looking to innovate and experiment with new techniques to make learning interactive and engaging," says Colvin. "Our goal is to provide CAS members with accessible, forward-looking learning opportunities that fit seamlessly into their busy schedules and help them stay ahead in a changing profession." ●

# CAS Research: Strategic Expansion

By CAS RESEARCH AND PUBLICATIONS STAFF

Fiscal Year 2025 was pivotal for CAS Research, defined by a renewed strategic focus, fresh data assets, and expanded working-group activity. Under the leadership of Morgan Bugbee, CAS vice president of research and practice advancement, the organization reinforced its commitment to innovation and thought leadership for P&C actuaries.

Bugbee challenged the research teams to think beyond traditional actuarial channels, issuing Requests for Proposals (RFPs) that solicited perspectives from adjacent disciplines. The aim: to explore where actuarial skills intersect with other professional fields such as engineering, economics, and climate science, thereby sparking fresh ideas, broadening the knowledge base, and enabling CAS to lead in emerging domains outside the traditional actuarial space.

## Data investments: A foundation for innovation

Central to the FY 2025 strategy was acquiring and upgrading data assets to underpin actuarial research. The CAS secured a license to the VerdictSearch database, covering U.S. litigation verdicts and settlements from 2010 to 2024 — a rich source for studying social inflation and legal system risk. In parallel, the Society licensed parcel-level property and land-attribute data via Regrid, supporting climate and catastrophe risk modeling.

We also launched an initiative to update the Schedule P datasets (Meyers/Shi) by year's end. In FY 2026 we will promote broad member access to these data sources, enabling them to work with these powerful empirical tools.

## Working groups: New topics, growing activity

In response to member feedback from the 2023 Quinquennial Survey, CAS Research instituted two working groups: Artificial Intelligence and Climate & Sustainability. A third, Open-Source Projects Working Group, was added in the last weeks of FY25. The addition of these new working groups marks a significant expansion of the Society's research interests.

The Climate & Sustainability Working Group issued two RFPs: one on "Innovative Pricing Models for Flood Exposure" and another on "Hurricane Mitigation Premium Credits." They also approved two Quick-Start grants on climate topics.

The AI Working Group produced an RFP on leveraging large language models (LLMs) for unstructured claims-data analysis and is working with the winning proposal researcher.

The Open-Source Projects Working Group is building its membership to develop infrastructure and governance for open-source actuarial tools, and maintaining and promoting the CAS GitHub site.

The Ratemaking, Reinsurance, Reserves, and Risk Working Groups continued their core programs seeking to fill the latest knowledge gaps of concern to members:

- Ratemaking presented a Research Paper on severe convective-storm pricing.
- Ratemaking and Reserving Call Paper programs posted six papers in [E-Forum](#).
- Reinsurance is working with researchers to develop projects on social inflation and casualty catastrophe models.
- Reserves issued an RFP on longitudinal studies and anticipates an update of the Schedule P data.
- Risk published a report on [correlation studies](#) and moved forward with a project generated from the RFP on AI Tools for Actuarial Work. This RFP garnered several proposals, two of which were taken up by the Reserves and Ratemaking Working Groups.

## Research output and publishing: Advancing knowledge

Over the year, the CAS research engine remained active with approximately 48 research projects underway, supported by eight working groups and two task forces. Of these, 11 CAS-funded projects culminated in publication during FY 2025.

Key outputs included:

- The Research Paper Series on Race & Insurance Pricing (Phase II) added five reports, supplementing the two published in FY 2024.
- Individual research grants awarded over the past few years resulted in approximately 21 articles published in *Variance*.
- Co-sponsored two research projects each with the Society of Actuaries and the Insurance Information Institute.

## Strategic initiatives for FY 2026 and beyond

Looking ahead, CAS Research will direct the expansion of funded research projects while scaling up data-acquisition and tooling support. For instance, we will provide pilot licenses for AI-coding agents to the AI and Open-Source Working Groups to strengthen members' modeling and code-development skills.

Core strategic research goals for FY 2026 include:

- Maintain priority focus on artificial intelligence and climate risk.
- Increase the number of members who update their “professional expertise” field in their member profile to reflect AI and climate-risk competencies.
- Grow page-views and downloads of research outputs by 4% in FY 2026 (using FY 2025 as a benchmarking year).
- Establish a strategic communications framework to guide all CAS stakeholders engaged in the Society’s strategic focus topics.
- Promote open-source code and model sharing via the CAS GitHub site, enabling reproducibility and practitioner access.

### Engagement, communication, and outreach

FY 2025 also saw an increase in research communications and engagement. The CAS Research team updated publishing standards, refined production systems, and began tracking engagement metrics more formally. Outreach included presentations at CAS meetings and at the 60th Annual Actuarial Research Conference hosted at Canada’s York University, where CAS leadership presented and met with attendees, grant recipients, and academics.

### Organizational change: Strengthening the team

To further our strategic goals, the CAS Research Team initiated several organizational changes. Heather Davis joined the CAS as Research Manager and will oversee staff research management and collaborate with the Communications team to disseminate CAS research. A new cross-functional coordinator, Delilah Barrow, joined CAS to work with Publications, Research, Meetings, and Professional Education.

On the volunteer side, CAS Research recruited Paul Donnelly to serve as volunteer GitHub manager operating the CAS GitHub site and supporting the launch of the Open-Source Projects Working Group (chaired by Kenneth Hsu). CAS Publications hired Greg Guthrie as managing editor to oversee production and quality assurance for *Variance*, *E-Forum*, and *CAS Monographs*. Research & Publications Director Elizabeth Smith and Chief Communications Officer Mike Boa continue to provide senior oversight.

### Read All About It! A CAS Publications Update

- [AR](#) provided deep coverage of technology and climate topics and expanded its writing team to deliver diverse perspectives on developments in actuarial practice.
- [Variance](#) published a record number of 21 articles in FY25.
- [E-Forum](#) published six papers from the Ratemaking and Reserving Call Paper programs.
- [CAS Monographs](#) published one monograph, “Practical Mixed Models for Actuaries,” by Ernesto Schirmacher. Three monographs are currently in development, with two in response to calls: one for game theory and another for extreme value theory.
- Working Papers continued to provide an outlet for exposing early research to the actuarial science community, and two papers were [posted online](#) in 2025.

### Conclusion

For CAS Research, FY 2025 has been a significant year of expansion and change. In addition to maintaining a strong pipeline of ongoing research, CAS Research is positioning itself for the future with the establishment of new working groups, the acquisition of new datasets, improvements to research infrastructure, and an enhanced communications program.

As technology, climate, cyber risk, and social inflation dynamics continue to evolve, the CAS remains committed to equipping P&C actuaries with the tools, insights, and collaborative platforms they need to stay ahead. For FY 2026, CAS plans a moderate increase in funded research activity and a more significant expansion of data asset acquisition and AI-tool licenses, reflecting the Society’s belief in data and tooling as amplifiers of innovation.

For members and practitioners alike, the message is clear: The actuarial profession is changing, and by strengthening data capacity, broadening disciplinary engagement, and making research more accessible, the CAS is rising to that challenge. ●



# VOLUNTEERS MAKE THINGS HAPPEN:

## *Candidate Advocate Working Group Enhances Experience for Aspiring Actuaries*

By SARAH SAPP

Imagine a young man named Aiden. Aiden had always loved numbers. As a boy, he filled notebooks with puzzles and probability games, and in college, he found himself drawn to courses in math and statistics. When a professor mentioned actuarial science, the idea clicked—here was a career built on logic, analysis, and problem-solving. But as Aiden dug deeper, his excitement was quickly shadowed by doubt. The list of exams looked endless. Completing them all would demand years of time, energy, and money. He wondered if he was ready to risk so much on an uncertain path. Does Aiden’s story sound familiar?

Now, picture Sally, who never imagined herself in insurance. Her career path had taken her through project management, where she sharpened her analytical and communication skills but always felt something was missing. A chance conversation with a former classmate introduced her to actuarial science, and suddenly the pieces fit—here was a profession that valued data-driven strategic thinking, a skill she had been honing for years. But Sally faced challenges unique to career changers: she didn’t have a traditional insurance background, she was balancing exams with a full-time job and family responsibilities, and she sometimes felt unsure where to turn for guidance. If you are or know a career changer, is

Sally’s story ringing a bell?

Whether you are a current exam taker or a past exam taker, a “traditional” actuary or a career changer, you can probably relate to the doubt, stress, and demands of the exams. The CAS has always recognized the journey to earning your designation as an arduous one—one that requires support and guidance throughout the entire process from friends, family, and the CAS itself. In 2025, the organization took the next step in making the road to Fellowship as smooth as possible, officially adding “Enhancing the Candidate Experience” as a pillar in its strategic plan. Students like Aiden and Sally can be reassured that Candidate Advocate Working Group (CAWG) members would represent the candidate voice, helping ensure that insights from the candidate experience are heard and considered across CAS initiatives, no matter when a candidate enters the CAS pathway. These members help identify opportunities to improve the exam journey, promote awareness of available resources, and support efforts to enhance the overall candidate development.

In each November/December issue of *Actuarial Review*, we recognize a working group that has gone above and beyond the call of duty to improve the outcomes for the organization and its members with the utmost care, consideration, commitment, and dedication. With a reinvigorated and reimagined approach to enhancing the candidate experience, the CAWG

is the perfect candidate for such a feature.

The CAWG began as the Candidate Liaison Committee (CLC), which for many years served as the voice of exam candidates within the CAS by collecting feedback, publishing the *Future Fellows* newsletter, and ensuring that candidate perspectives were represented. As the CAS transitioned to a new Volunteer-Staff Model, committees below the Board level were restructured as working groups, leading to the CLC's evolution into the CAWG. This change not only updated the name but also signaled a shift from simply serving as a liaison for candidates to taking a more active role in representing their perspectives and shaping the future candidate experience.

The group's leadership structure was also formalized with a volunteer chair and a staff chair, and its placement within CAS moved from Exams and Admissions to Engagement (formerly known as Marketing and Communications), recognizing that its scope extends beyond exams to incorporate the full candidate experience. Today, the CAWG continues its core responsibilities while expanding its focus to include career development and collaborations with other CAS groups, ensuring that candidate voices are consistently represented throughout the organization with a goal to drive consistent change. The CAWG serves as a direct point of contact for candidates to engage with the CAS and admissions working groups by sharing their thoughts and feedback.

"Over the past year, the Candidate Advocate Working Group has evolved by aligning more closely with the CAS Strategic Plan and strengthening our connection with the Syllabus and Examination Committee (SECOM), which has given us greater influence in the ideation, design, and decision-making of initiatives that impact candidates," says Stephanie Litrenta, director of candidate and employer engagement. "We have continued to produce the *Future Fellows* newsletter as a resource for candidates while also adjusting the cadence of the Candidate Survey from every other year to every three years to give us more time to act on the feedback received and ensure it generates meaningful recommendations and priorities while continuing to drive clear actions. In addition, with Mindy Moss, CAWG chair, now serving on the Admissions Governance Committee (AGC), we've deepened our integration with CAS Leadership, further ensuring that candidate perspectives are represented at critical levels of discussion and planning."

The CAWG has worked in concert with SECOM to enhance the candidate experience, according to Art Zaremba,

SECOM chair. "In my opinion, there is more collaboration between SECOM and CAWG than ever before," says Zaremba. "Both are included on each group's recurring meetings. CAWG leadership also attended an annual in-person Admissions Council meeting this year and played a key role at that meeting."

There are initiatives happening in SECOM as a direct result of their collaboration with the CAWG, like looking for ways to enhance candidates' score reports, as well as publishing more sample and/or previously used questions.

"With 'enhancing the candidate experience' now a key pillar of the new Strategic Plan, our work is more directly leveraged to influence initiatives that shape and improve the candidate journey," says Litrenta. "A clear example of this is our work around score reports, where our goal is to identify opportunities to enhance the clarity and usefulness of the information provided to candidates. This initiative reflects how our goals align with the strategic plan by ensuring that candidate needs and perspectives are built into improvements that directly impact their journey."

As chair of the CAWG, Moss offers words of encouragement to those members considering a volunteer role. "Now is a great time to join the CAWG," says Moss. "We have a great deal on our plate and could use more volunteers to help us. With an entire pillar on the Strategic Plan dedicated to the candidate experience, you'll have a unique opportunity to really drive change in this working group. Volunteering with the CAWG has not only introduced me to some wonderful people, but it's also given me an opportunity develop skills that I don't normally get to hone at work (like writing short articles or leading a group of volunteers)."

Discovering actuarial science is both exhilarating and intimidating. Thanks to the work of the CAWG, students like Aiden and aspiring career-changers like Sally should realize they aren't alone. Every new resource, every improvement to the exam process, and every effort to listen to candidate voices makes the path feel less daunting.

The fictional stories of Aiden and Sally mirror the very real experiences of thousands of candidates who dream of joining the actuarial profession. The CAWG exists for them—amplifying their concerns, easing their challenges, and ensuring their perspectives shape the future of the CAS. Because of their dedication, more students like Aiden and Sally can take that first step with confidence, knowing the Society is walking alongside them every step of the way. ●



# Beyond the Policy:

## Exploring the Landscape of Trust in Insurance

By KOBE BALSON, TRAVIS PERALTA, AND HONGGEOL JUN

*Explore how transparency, communication, and emerging technologies can help rebuild trust and strengthen the insurer–insured relationship.*

*The following article is solely the opinion of the authors and does not necessarily reflect the views of their employer or school.*

**T**he modern word “insurance” comes from “enseurance,” a word from Old French meaning assurance or pledge. Insurance is a pledge of financial protection from an insurer to an insured in times of need. In exchange for that promise, the insured provides a premium and disclosure of necessary information for the insurer to make a proper risk assessment. In essence, the parties rely on each other to be honest and upfront to create the best outcomes for both.

In recent years, public trust in the insurance industry has become a pressing concern. In the media, the attacks on insurance company CEOs in late 2024 and early 2025 highlight rising tensions. Further, billboards along American roads and mass tort advertisements conspicuously encourage litigation against insurance companies. Meanwhile, schemes attempting to defraud insurance companies have become just short of commonplace. These developments warrant a closer look at the mutual pledge that defines the insurance industry.

Why should insurance companies care about trust? A strong foundation of trust not only promotes customer loyalty but strengthens the industry’s reputa-

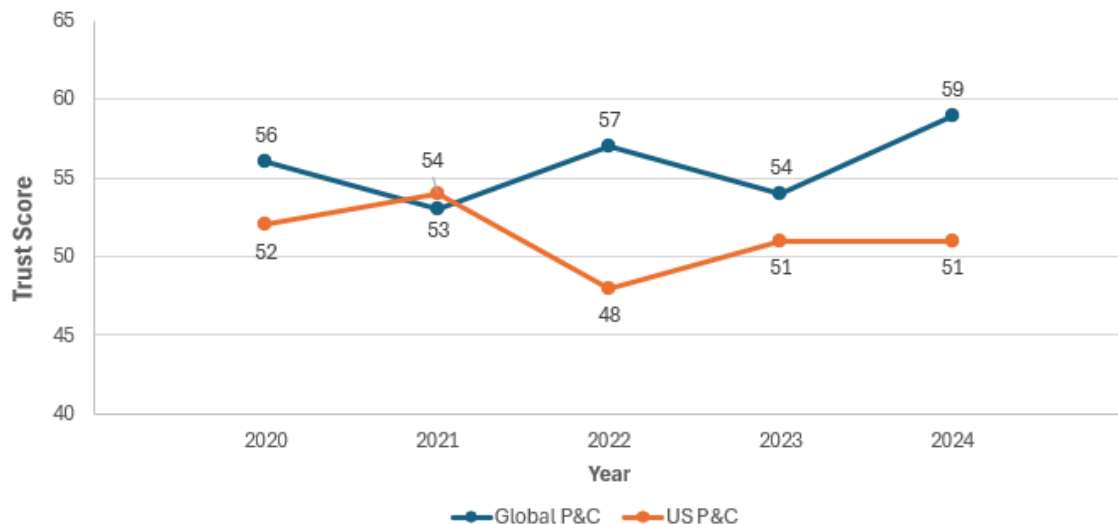
tion and perpetuates stability in the marketplace. According to [J.D. Power’s 2024 Auto Insurance study](#), “90% of auto insurance customers in the high-trust category say they are likely to renew their policy with the same insurer versus just 30% in the low-trust category.” In the same study, “the average trust score among customers who experience an insurer-initiated increase — but who fully understand the reasons for that increase and expect the increase — is the same as the average trust score among customers who experienced an insurer-initiated decrease.” It is clear that trust can go a long way in building a relationship between the insurer and the insured.

This article explores how the insurance industry fares in terms of trust, examines the role both the insurer and the insured play when trust breaks down, and offers actionable steps to bridge the gap to build a more trustworthy future.

### **The state of trust in the insurance industry**

Each year, Edelman, a global communications firm that has studied the topic of consumer trust for more than 25 years, publishes an annual report of their findings across various sectors and countries. According to the [2024 Edelman Trust Barometer study](#), over the past five years the global property and casualty (P&C) insurance industry was given a score that fluctuated between 53 and 59. For the Edelman measure, a score of 1–49 indicates distrust, 50–59 is neutral,

**Figure 1: Edelman Trust Barometer of the Insurance Industry, 2020–2024.**



and 60–100 indicates a trusted industry. The global P&C insurance industry has stayed consistently in the neutral category but has improved on this measure from 2023 to 2024.

The score for U.S. companies, however, stayed flat or decreased over the same years. Although the American P&C industry lags the global P&C industry in terms of consumer trust, it still outperforms other financial services sectors in the U.S., such as financial advisory, investment management, financial technology, and cryptocurrency.

To understand the dynamics behind these scores, it is helpful to explore trust from the perspectives of both the insured and the insurer.

## Trust: The insured’s perspective

### Rejection rates

The claims process is typically the key moment when an insurer’s promise of financial protection is tested in practice. If policyholders are met with longer-than-expected processing times or with rejection of their claims, they may feel abandoned and frustrated, and their trust in their insurance company may erode. Mark Garrett, director at J.D. Power, [says](#) “80% of insurance customers who have poor claims experiences have already left or say they plan to leave that carrier.”

Claim denial rates, as measured by claims closed without payment as a percentage of total claims closed, have seen a slight increase in both the private passenger auto and home-

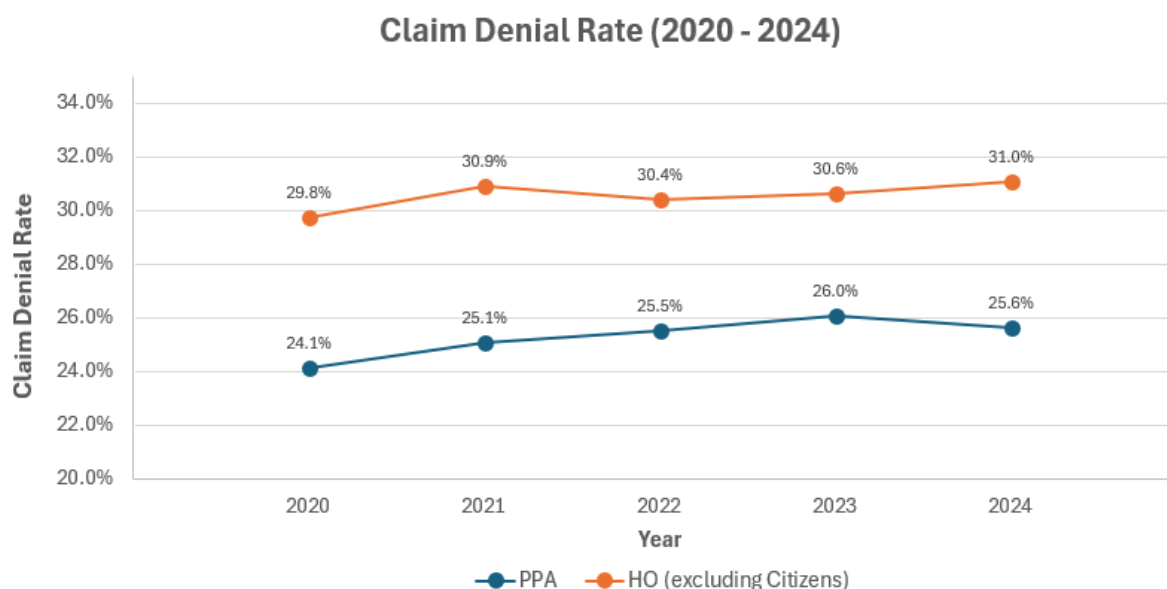
owners’ lines over the last five years. Data from the NAIC’s [Market Conduct Annual Statement \(MCAS\) Scorecard](#) offers a view into the claim denial rate. The authors’ inferences from the scorecard show that the estimated claim denial rate in the U.S. increased from 24.1% in 2020 to 25.6% in 2024 for private passenger auto (PPA) and from 29.8% to 31.0% for homeowners’ (HO), excluding Citizens Property Insurance Corporation.

What may not be clear to the claimants, though, is that the likely cause of the increase in claim denials extends far beyond the individual claim level. In this time period of the last five years, the insurance industry saw a general increase in the cost of claims, driven by an increase in frequency and severity of natural disasters and inflation, according to [Risk & Insurance](#). This has prompted insurers to respond by raising deductibles and imposing more coverage restrictions and higher scrutiny of complex claims.

### Policy language

The other point of contact and opportunity to build trust between the insured and insurer is during the binding of the insurance policy. However, important policy details, such as price adjustments, limitations, and exclusions, can sometimes be lost in the legal jargon and fine print, leaving customers unaware of exactly what coverage they are purchasing. According to a 2024 survey by [Trusted Choice](#), the national consumer brand representing the members of the Independent Insurance Agents & Brokers of America (the Big “I”), while 86% of

**Figure 2: Claim Denial Rate based on Ratio 1 of the NAIC Market Conduct Annual Statement (MCAS) Scorecard.**



respondents said they had a strong understanding of what their policies covered, the survey revealed that many were incorrect or unsure about coverages' specifics. Some findings from the survey include:

- **Flood Damage:** 56% of Americans are unaware that a standard homeowner's policy does not cover flood damage.
- **Business Use of Vehicle:** 55% are unaware that a standard auto policy does not cover business use of the vehicle.
- **Items Stolen from Vehicle:** 44% incorrectly believe that personal items stolen from their car are covered by a standard auto insurance policy, though it is in fact a standard home or renters insurance policy that typically covers such theft.

When policy terms and conditions are not clear, it can undermine trust in the insurer and leave the policyholder confused and feeling unable to make informed decisions about their coverage.

### **Delay, deny, defend**

One of the most damaging developments of trust in insurance was the spate of lawsuits in the 1990s. Several insurers hired McKinsey & Company (McKinsey) to help with their business practices. Claims handling practices like the ones McKinsey allegedly advised were later the subject of a 2010

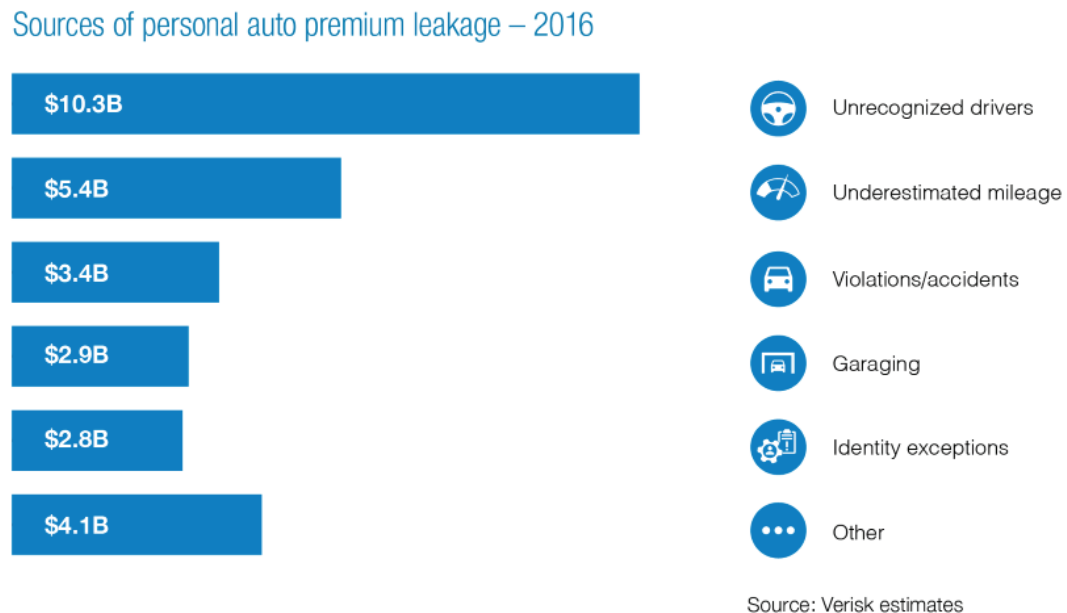
book called ["Delay, Deny, Defend,"](#) by Rutgers Law Professor Jay Feinman. The book portrayed a system aimed at reducing claim payments and boosting profits through more aggressive tactics, such as slowing down claim payments, denying legitimate claims, and aggressively fighting against claimants in court. McKinsey's advice was ultimately mentioned in several bad-faith lawsuits and public backlash, contributing in part to the erosion of public trust in insurers. Allstate released internal materials referred to as the [McKinsey Documents](#) in 2008 to clarify what it described as inaccuracies in the public portrayals, claiming snippets from documents were taken out of context and that it was in good standing with respect to state market conduct regulation. However, the public perception of profit-first claims handling practices lingers to this day.

Whether it's news stories of lawsuits, firsthand frustrations with denied claims, or opaque policy language, these experiences can potentially perpetuate a public distrust of insurance companies.

### **Trust: The insurer's perspective**

Trust is not a one-sided relationship. Insureds also contribute to trust challenges, whether it be intentionally through fraudulent claims or misrepresentations on applications, or through much harder-to-detect issues, such as moral hazard.

**Figure 3: Types of application misrepresentation, leading to "premium leakage" in auto insurance.**  
**Source: Verisk, 2017.**



### Verisk estimates peg leakage at 14% of premium.

#### Fraud

While most Americans view insurance fraud as a crime, [Verisk's 2023 survey](#) of 1,500 adults who were responsible for purchasing insurance for themselves or their households revealed that a non-negligible minority felt differently. Sixteen percent of respondents did not consider insurance fraud wrong. The leading response at nearly 9% justified fraud by saying "insurance companies rip people off." Another 3% said, "I pay them enough, it is my money I am getting back." A further 3.7% expressed the uncompromising belief that stealing insurance money is never wrong. These findings highlight that a sizable portion of insureds rationalize or tolerate fraudulent behavior and reveal underlying attitudes that insurers must navigate.

While individual survey responses provide insight into attitudes toward fraud, the actual number of fraudulent acts highlight the broader scale and persistence of the problem across the insurance industry. Looking at the numbers on a broader scale, a [meta-study](#) conducted by the Coalition Against Insurance Fraud (CAIF) indicated that insurance fraud can cost U.S. consumers more than \$300 billion yearly. The three largest prone to fraud are life insurance (\$74.7 billion), Medicare and Medicaid (\$68.7 billion), and P&C (\$45

billion). With 340 million people in the U.S., this amounts to slightly over \$900 per person.

#### Application misrepresentations

Another form of insurance fraud involves application misrepresentations, in which an applicant misleads, fails to disclose, or misstates information used for pricing in hopes of securing a better rate. Verisk's 2017 Innovation Paper "[Auto insurance premium leakage: A \\$29B problem for the industry](#)" estimated that U.S. personal auto insurers lose approximately \$29 billion annually in "premium leakage" arising from missing or inaccurate underwriting data, such as unrecognized drivers or misstated mileage. The study identified unrecognized drivers as the largest contributor to this leakage (\$10 billion per year), underreported mileage as the next largest contributor at roughly \$5 billion each year, followed by misreporting of violations and accidents accounting for approximately \$3 billion annually. By analyzing these sources of misrepresentation and extrapolating across the industry, Verisk concluded that such forms of fraud represent a significant financial drain on insurers.

When fraud or application misrepresentations occur, it not only affects the parties directly involved but also has an

impact on rates across the industry. Since insurers use risk pooling to spread their risk, the implications can be massive and far reaching.

### Moral hazard

Moral hazard is when an insured takes less care to prevent losses because they know insurance will cover them. For example, a company may reduce the frequency of its safety inspections after purchasing liability coverage, not out of negligence but due to a shift in perceived urgency or a budget adjustment. While such behavior may seem harmless in the short term, consequences will eventually surface that may lead to larger issues not covered under the agreed upon insurance terms. Yet, as human beings, we often prioritize immediate convenience over long-term well-being, even at our own expense.

When activities of fraud, misrepresentation, and moral hazard occur, those risks have profound effects on the trust between an insurer and an insured. Both must work together and hold each other accountable. By understanding and doing what is in the other's best interests, they are also doing what is in their own best interest.

### Strengthening trust

With a clearer view of the potential sources of mistrust, we now focus on ways to restore confidence between insurers and insureds. For the insured, it is a straightforward task: be honest. If the insured is honest, the insurer can properly classify risk and price products accordingly. The insurer, conversely, can build trust in a multitude of ways, including, but not limited to, increasing transparency and leveraging technology.

### Transparency

Transparency is the key to building stronger relationships in many facets of our daily lives, including work, politics, relationships, and the business of insurance. What are some ways that insurers can build trust?

### Terms and conditions

One of the most effective ways an insurer can increase transparency is to make policy terms and conditions concise and digestible. Using plain language and limiting legal jargon makes it easier for consumers to understand what they are signing and can offer companies a competitive advantage.

[Lemonade's open-source policy](#) is an example. From the market introduction of the policy, Lemonade has offered a "Squeezed Version" that is reader-friendly and provides only the necessary details to the policyholder — the policy number, the premium, and who and what is covered. The full policy terms and conditions are not hidden, however, and are still covered following the "Squeezed Version."

As noted in the aforementioned J.D. Power auto insurance [study](#), "ensuring customers completely understand the policy and what it covers" is one of the top four key performance indicators (KPIs) that impacts the level of trust a policyholder has in their insurer. Legal jargon is necessary for many reasons, but a concise summary with key points, paired with a competent agent or broker to help navigate nuances that may be needed on an individual basis, can help put customers at ease.

### Premium breakdown

In addition to providing more con-

**When activities of fraud, misrepresentation, and moral hazard occur, those risks have profound effects on the trust between an insurer and an insured.**



## Transparency in this regard can be very beneficial to the trust relationship.

cise terms and conditions, insurers can help build trust by breaking down premiums and demonstrating and justifying their pricing as reasonably as possible. The ability to show the policyholder why rates rise and fall can be a huge factor in consumer retention. When an insurer raises rates at renewal time without clear communication on the drivers of the increase, the insured may conclude that the insurance company is trying to artificially increase its profit, which could negatively impact customer satisfaction.

Alternatively, the insurance company could instead list the factors contributing to the increase, such as inflation or changes in the insured's exposures. That may decrease the chance the customer feels that they are being dismissed or "left in the dark," and [the customer will likely appreciate the communication](#), even if they're unhappy with the rate increase. Transparency in this regard can be very beneficial to the trust relationship.

### Leveraging technology

Customer acquisition can be difficult in the insurance industry, but attaining a customer is only half of the battle for insurers; retaining them at policy renewal is the other half. Technology can be leveraged to aid in building trust and increase the policyholder retention rate.

### Apps

In a continually evolving technological landscape, mobile app usage for business is growing. [J.D. Power's 2024 U.S. Insurance Digital Experience Study](#) shows 74% of insurance customers have their carrier's app installed, and 69% use it monthly and report higher customer satisfaction rates than those who don't.

By creating user-friendly portals and mobile apps, consumers can access their policy details, review coverage, track claims, and ask questions at their convenience. This empowers consumers to make informed decisions and feel more in control of the premiums they pay by building transparency and trust.

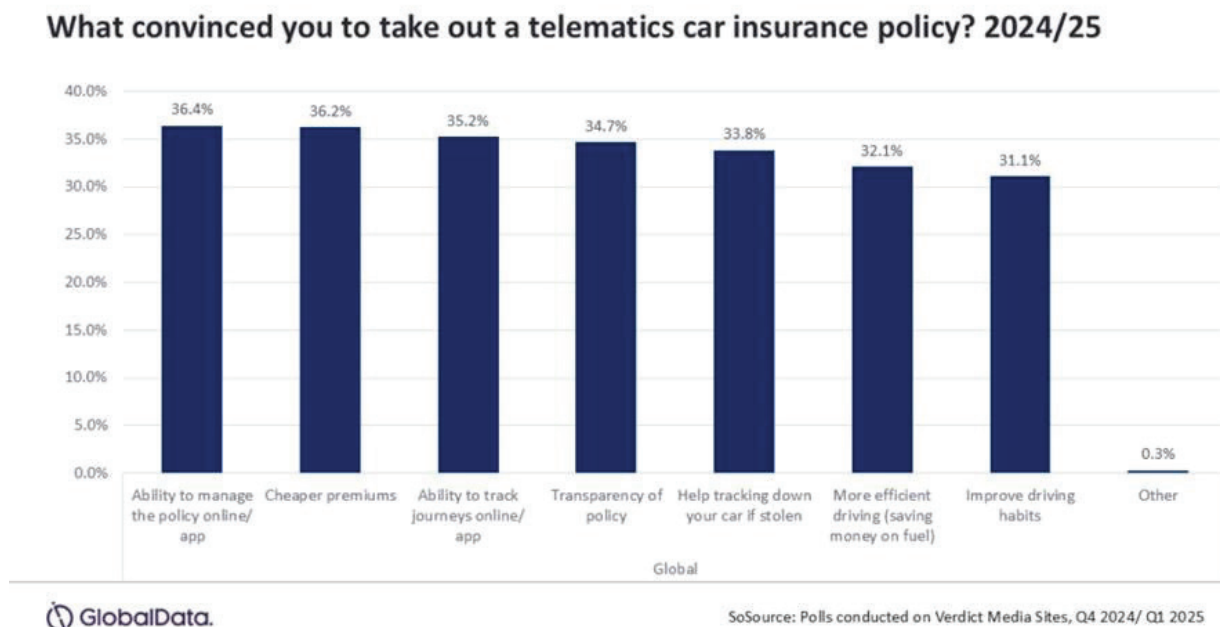
### Blockchain

Implementing blockchain technology to create tamper-proof records for claims and policy transactions is another way to ensure the integrity of claims and provide customers with confidence that their claims are being handled fairly and securely. This can be done through smart contracts, digitally encoded agreements residing on a blockchain that enforces itself automatically. The blockchain carries out and records actions based on established rules without requiring third-party involvement.

However, the path to implementing blockchain has seen obstacles. In 2016, the Blockchain Insurance Industry Initiative (B3i) was formed to explore the use of blockchain in the insurance industry and was backed by leading insurers and reinsurers. Despite early success, it ultimately failed after struggling to secure new capital and maintain industry support.

Additionally, blockchain's most famous application — cryptocurrency — remains nebulous in consumer adoption and application to the insurance industry. According to the Edelman Trust Barometer, cryptocurrency's global trust score has been between 33 and 38 in the last four years, firmly in the "Distrust" category and lowest among the financial services sector. With these challenges in mind, it is even more paramount for

**Figure 4: Reasons why people may opt for car insurance policies with telematics. Source: Insurance Business, 2025.**



insurers considering blockchain technology to be transparent and clearly communicate its use to consumers.

### Telematics

Telematics is the use of technology to collect, transmit, and analyze data from vehicles and devices to monitor behaviors. It allows insurers to price based on real behavior rather than relying on broad generalizations across large groups of consumers.

That approach helps address a common frustration among policyholders who feel they are being charged unfairly despite driving less often or more safely than others. Fortunately, many automobile insurers already offer telematics programs that provide a more personalized and transparent pricing model, helping to correct these perceived imbalances. The chart above from [Insurance Business](#) outlines some key reasons why people may opt for car insurance policies with telematics.

For the insurer, telematics aid in determining fault in an accident, understanding how an accident occurred, or reducing the time and cost to resolve disputes. It also reduces the uncertainty involved in classifying customers as low- or high-risk in terms of pricing. Furthermore, transparency (and therefore, trust) may be improved through telematics. With telematics, a customer can see a direct connection between

driving behavior and premiums. That may empower drivers to adopt behaviors that can have a tangible impact on future premiums and help decrease the risk of moral hazard.

Telematics usage has been slow to be adopted, however. Despite the upsides telematics offers consumers, *Actuarial Review's* [Bumps in the Telematics Road: Privacy and Transparency](#) states one of the reasons for the slow adoption is that most insurers only offer telematics-based pricing to new business customers. Another barrier to adoption is the concern around the “sheer amount of information collected by companies and the lack of transparency.”

### Artificial intelligence (AI)

AI is rapidly transforming many industries, including insurance. When implemented thoughtfully, AI can offer significant advantages. It can streamline a wide range of processes. AI-powered chatbots help customers access services quickly, efficiently, and more accurately, which reduces the need for manual intervention.

In one instance, a user who submitted a [claim](#) for \$979 on Lemonade’s mobile app had their claim reviewed, verified against their policy, checked for fraud, approved, and paid via wire transfer in just three seconds. While this is an exceptional instance, it illustrates the broader trend toward automated claims processing. More generally, AI paired with telemat-

ics can enable faster and more accurate assessments. And in fraud detection, AI excels at recognizing patterns across vast datasets that would be impossible for human investigators to detect in a timely fashion.

It's important to remember, however, that AI also has the potential to erode trust. Automated systems can sometimes overlook human nuance. They may lack empathy in decision-making. These are two key building blocks of trust. There is also the risk of biases embedded in AI's data or design that can lead to unfair outcomes for certain groups. The insurance industry is focused on research, and studies are underway with regard to [AI regulation in insurance](#) that will help understand and lessen such risks.

Ultimately, no matter the technology or tool being implemented, trust can only be built when it is used responsibly and the customer's needs and experiences are at the forefront.

### Summary

The insurance industry is built on a foundation of trust and a mutual pledge: the insurer provides financial protection, and the insured provides transparency and payment. We have seen, however, that this trust is often put under duress from both sides. From the insured's perspective, trust in insurance companies can be marred by claim rejections, unclear policy language, and high-profile lawsuits. At the same time, insurers face issues such as fraud, misrepresentation, and moral hazard.

However, stronger communication and transparency can help restore confidence. Through thoughtful policy design and deployment of technology such as mobile apps, telematics, blockchain, and artificial intelligence, the insurance industry has reached an important moment, one with real opportunities to build trust and create a satisfactory experience for everyone involved.

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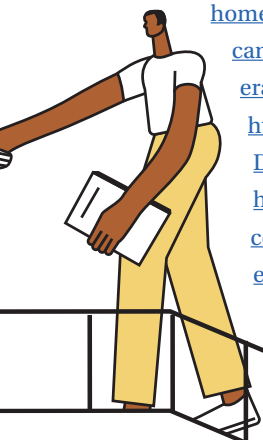
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## DEVELOPING NEWS

# CEO Conduct — Considered or Careless? By ERIN LACHEN

*The following article is solely the opinion of the author and does not necessarily reflect the views of their employer.*

The CEO of Farmers Insurance has a new incentive for his sales force: if they beat the goals laid out for policies in force (PIF), he will show up at internal and agent-facing events wearing “...some of the most unconventional suits you have ever seen. The farther we go above the line, the bolder it gets.”

The CEO of Allianz has been spotted in a ‘Wanted’ poster from the set of the latest “Spider-Man” movie, shot in Glasgow. While some fans speculated he was Bruce Banner, in reality, the poster was created by an activist group protesting the CEO’s alleged ties to an Israeli arms firm. Searches for the CEO himself spiked after fans realized he was not, in fact, Professor Hulk.

Finally, the CEO of data firm Astronomer was met with scandal when caught in an apparent affair on the jumbotron at a Coldplay concert. Beyond the ensuing viral firestorm, an official company investigation followed, leading to his resignation.

While only the last of these examples has led to apparent repercussions, all three demonstrate the visibility of the CEO and the perception that the

CEO is the embodiment of their company. In our world today, we are all increasingly at risk of being captured on camera. Because of the unique position of CEOs, there is an increased risk of damage to their reputation, which can lead directly to litigation. Further, shareholders can (and do) interpret some CEOs’ decision-making to be creating a fiduciary risk, putting their stock prices at risk. Their poor decision-making can challenge the duty of care required of C-suite executives.

### What this means for actuaries:

Directors and officers (D&O) insurance is a product designed to protect the personal assets of the directors and officers of a company in the event they are sued for wrongful acts in their roles as executives. As the world becomes increasingly surveilled, CEOs’ decisions may increase the frequency of D&O losses. CEOs’ actions serve as an extension of and a reflection on their company. Severity of D&O loss could also increase given the speed and span of these viral moments, reaching a broader group of people than was previously possible.



While these examples span the spectrum of personal to professional, CEO conduct is a meaningful input when considering the insurability of a particular D&O risk. In the Astronomer example, the very public personal scandal can affect investor sentiment, thus calling into question whether the CEO was meeting his fiduciary duty. The Allianz and Farmers examples, meanwhile, seem less likely to draw the ire of potential litigants, though their personal profiles and decisions are very much under the microscope. ●

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# Middle East Tensions: Impact of Geopolitics on Marine Commercial Insurance

By SANDRA MARIA NAWAR

In June, Israel launched waves of strikes on Iranian military infrastructure, to which Iran responded with missile attacks on Israel. The tension between these two countries has rocked several industries that depend on the major maritime routes in the Middle East region. The strategic location of the Middle East, connecting the east with the west, makes it one of the busiest shipping routes and a critical choke point for global oil and gas transportation. According to the International Energy Agency (IEA), in 2023, 30% of the global oil trade and 20% of all liquefied natural gas were transported through the Strait of Hormuz.

The conflict poses underwriting and investment risks for global insurers and reinsurers. Marine insurance typically covers physical loss or damage to

sea cargo, ranging from basic damages to all-risk policies, including war and terrorism risks. With the heightened Israel-Iran conflict, the capacity to provide reinsurance is further restricted, adding pressure and increasing charges for primary carriers. For the short term, insurers are reverting to premium increases as a temporary relief and to boost underwriting profit. War risk underwriters are reverting to tighter policy wording, repricing and adding exclusions for conflict zones. The issue, however, is prolonged. The accumulation of war, terrorism, and geopolitical uncertainty puts pressure not just on underwriting results, but also on investment income, where volatile investment portfolio returns can limit capital buffers and solvency margins further.

impact of the conflict may also have a cascading effect on other lines of business. For example, contingent business interruption coverage is triggered if global supply chains are disrupted. The concentration of risk may also be problematic due to high correlations between perils such as war and terrorism.

Pricing perils such as war risk and terrorism is extremely difficult, given their low frequency and high severity nature. With limited loss experience, actuaries will need to rely on techniques beyond traditional classification methods and instead rely more on exposure-based methods. Marine insurance is known to be the first P&C line of business to react to a geopolitical crisis; this situation is not an exception. The broader Middle East region has undergone a major risk repricing as a reaction to the latest escalation of events. Given how fast things can develop further, actuaries need to put forth a contingency plan allowing for a quick repricing of imminent risks. Rapidly rising premiums can provide some relief, yet in the longer term — and in the case of a protracted conflict — actuaries will need to use their expertise to advise their companies of ways to reallocate their portfolios to other areas and industries to avoid concentration risk in high conflict zones. ●

## What this means for actuaries:

As of June 2025, ships passing through the Strait of Hormuz and the Persian Gulf have seen marine insurance premium increases of 60% compared to Q1 2025 rates. The



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## DEVELOPING NEWS

# Caught in the Web: Targeted Cyber Attacks on Insurers By FERAS SAMAIN

Insurance companies continue to be targeted in increasingly sophisticated cyberattacks. In June 2025, Aflac, Philadelphia Insurance, and Erie Insurance were all struck by attacks that disrupted their networks and systems. The following month, Allianz Life suffered an attack involving a third-party vendor where hackers used social engineering to access a cloud-based customer relationship management (CRM) system, putting millions of sensitive personal records at risk. Google's Threat Intelligence Group suspects that Scattered Spider is behind these attacks, and, while investigations are still ongoing, several multimillion-dollar class actions have been launched against the affected insurance companies.

### What this means for actuaries:

Like other cyber incidents, these attacks are complex and costly. According to IBM's 2025 Cost of a Data Breach Report, the global average cost of a data breach is about \$4.4 million. It typically takes several years to determine ultimate losses, which could include investigation costs, restoration of operations, new security investments, lawsuits, settlements, heightened regulatory scrutiny, and reputational damage that is hard to quantify.

These events show that the insurance industry remains a prime target for cyberattacks. Insurers hold vast and rich databases that are goldmines of personal information for malicious actors. They are also highly liquid entities with large cash reserves. Therefore, insurers must remain vigilant and continue to invest in and refine internal protective measures.

Actuaries are uniquely positioned to not only help reduce the risk of cyberattacks, but also to assess and quantify cyber risk. They have access to, and handle, sensitive data that feeds their analyses and models. Taking precaution-

ary steps such as anonymizing personally identifiable information, or using synthetic data, can help reduce the risk of exposure. Actuaries are also advancing the modelling of cyber risk through cutting edge research. A recent CAS paper published in June 2025, "[Cyber Risk: Quantification, Stress Scenarios, Mitigation, and Insurance](#)," builds on prior work to create a framework for pricing cyber risk. This critical research will play an important role in growing and enabling a healthy cyber insurance space. ●



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## ETHICAL ISSUES

# Mission Impossible: Becoming a CAS Member

By JOHN POTTER, KENNETH HSU, AND

MIKE SPEEDLING, MEMBERS OF THE CAS PROFESSIONALISM EDUCATION WORKING GROUP AND NEW MEMBERS WORKING GROUP

*The Professionalism Education Working Group is frequently asked to publish articles on topics related to actuarial professionalism, including clarifying how the Code of Professional Conduct and the Actuarial Standards of Practice (ASOPs) apply in various scenarios. Our work explores key aspects of professionalism, focusing on the importance of integrity, accountability, and adherence to professional standards in all areas of actuarial practice. If you need additional counseling resources, the Actuarial Board for Counseling and Discipline is available at [abcdboard.org](http://abcdboard.org). To make this truly a learning and professionalism experience, we want your feedback. You can send your comments and questions to [ar@casact.org](mailto:ar@casact.org).*

In this article, we ask you to put yourself in the shoes of an actuarial student, Ethan Hunt, who's been working at Duck & Cover Insurance Company for four years since graduating from university. Last year, he passed Exam 5 and took the Course on Professionalism (COP) in August. He just recently passed the PCPA exam and project. He's hoping to keep up the momentum this spring by passing Exam 6, the final exam he needs to become an ACAS. For the past two years, he's been working with the Appointed Actuary in preparing the NAIC Statement of Actuarial Opinion ("SAO"), so he feels confident in knowing a good portion of the material.

June rolls around and he receives

the great news from the CAS that he passed! But now what? He calls his boss.

"Hey Sam, I just wanted to let you know that I passed Exam 6, but I'm not really sure what to do now."

"Ethan, that's great news, congratulations! The next step is to go to the CAS website and apply for membership as an Associate. I know you've passed all your ACAS exams, so you have met the basic education requirements to apply. But have you been keeping track of your continuing education credits?"

"Oh no, I haven't. I thought I only needed to meet them if I'm issuing an SAO, and we won't be putting that together until early next year."

"Well, that's a common misconception. When the U.S. Qualification Standards, or USQS, refers to an SAO, it has a different meaning than the NAIC SAO that we work on. A statement of actuarial opinion refers to an opinion expressed while performing Actuarial Services, which are professional services provided to a Principal by an individual acting in the capacity of an actuary. So when you send me your methods and assumptions that back up your actuarial analyses, that's a statement of actuarial opinion."

"Wow, I wasn't aware of that. I'll look into those continuing education requirements and apply for membership."

Ethan hangs up and navigates to the CAS website and applies through the CAS Portal.

In four weeks, Ethan is admitted

as a member and cannot wait to be celebrated. However, instead of being celebrated at the upcoming CAS Annual Meeting in his hometown, he wants to defer his celebration to the CAS Spring Meeting at a remote island in the Caribbean. While the CAS has its own celebration deferral rules, deferring your new member celebration does not change your continuing education (CE) requirements in any way. In fact, Ethan needs to have sufficient CE credits when applying to the CAS as a new member and must continue to meet the CE requirements beginning on the date of his admission. Deferring his celebration will not change any of the requirements that he must meet as a new member.

One of the most exciting things about getting your ACAS or FCAS designation is that you can finally use these prestigious initials behind your name, and the most popular place to do that is, of course, your email signature. As you begin to use your actuarial credentials, all SAOs that you issue to your Principal are assumed to be SAOs as defined by the USQS. This is not to be confused with Specific SAOs, which are different from General SAOs. A Specific SAO refers to the formal statement an Appointed Actuary provides to an insurance company and relevant regulatory authorities; it expresses the actuary's professional opinion on the adequacy and appropriateness of the company's actuarial reserves and related liabilities. Some

examples of General SAOs could include Ethan reviewing the data and stating that it appears reasonable or performing an analysis and concluding that the indicated rate change is 5%. As you begin to use your designations, remember that you are issuing SAOs.

In addition to the basic education requirements (e.g. the exams) and the continuing education requirements, the USQS also require that members meet the experience requirement before being able to issue an SAO. The experience requirement from the USQS states that to issue an SAO, you must have at least three years of experience, and those three years must be under review by an actuary qualified to issue the same SAO. This could be a challenge for members

additional fees. Depending on when you are admitted as a CAS member, your dues may be prorated. It's important that you declare your membership affiliation with other organizations correctly so that the right dues are applied to you. There are also some special dues rules. For special dues rules, please visit [www.casact.org/cas-membership-dues](https://www.casact.org/cas-membership-dues) for more details on those.

Another thing that new members like Ethan need to be aware of is keeping a log of CE credits as they accumulate them. The USQS requires that you complete and document at least 30 relevant CE hours per calendar year. There is no required format for documenting your CE, but there is some recommended information that should be included. A

should also indicate if the CE qualifies as an organized activity (six hours minimum), professionalism session (three hours minimum), bias-related topic (one hour minimum), or general business skills course (e.g., software training, three hours maximum). New members like Ethan will probably have enough credits after attending the COP and exam study time.

If you are attesting to complying with USQS Specific Qualification Standards because you issue an NAIC SAO, you must indicate which CE hours support those standards (15 hours minimum, of which six are organized). You might also include the area and sub-area of practice (e.g., pricing, CAT modeling), and the names of presenters. The CAS CE policy requires the annual review of CE records for a portion of its membership.

Your year-end attestation allows you to provide actuarial services in the following year. For example, if you attest compliance during the 2025 calendar year, you will be able to provide actuarial services in 2026. Refer to the CAS website for full details (<https://www.casact.org/article/certify-compliance-cas-continuing-education-policy>).

Your mission, should you choose to accept it, is to complete the above requirements. Do you have any additional questions about your mission? We want to hear your thoughts at [ar@casact.org](mailto:ar@casact.org). This article will self-destruct in five seconds. ●

## Your year-end attestation allows you to provide actuarial services in the following year.

who progressed very quickly through the exams, such as Ethan, and might not have accumulated enough experience to issue an SAO, as he does not have the relevant three years of experience on the relevant subject area. To get around this, the inexperienced credentialed actuary may consider co-issuing the SAO with an otherwise qualified actuary, and that could be your peer or your manager.

Dues are also one of the things that you need to watch out for as a new member. The fiscal years run from October 1st of each year to September 30th of the following year. Also, CAS members who are not members of the American Academy of Actuaries are subject to

sample log can be downloaded from the CAS website (<https://www.casact.org/professional-education/continuing-education-policy/cas-continuing-education-record-review>). Each year end, you will be required to certify compliance with the CAS CE Policy's requirements (i.e., attestation).

For each individual article you read, each meeting session you participate in, or each webinar you attend, you need to record the date the CE is earned, the name of the sponsor (e.g., CAS, self-study, regional affiliate), the subject matter or name of the session, and how many CE hours you are claiming (one CE hour = 50 minutes of clock time). You



# Behind the Scenes at the CAS Artificial Intelligence Working Group

By JIM WEISS

The refresh of the CAS Strategic Plan adopted by the Board in October 2024 recommitted to an Envisioned Future of members being sought after globally for their insights and ability to apply analytics to solve insurance and risk management problems. This vision was initially adopted in the 2020 CAS Strategic Plan, but the workplace looks much different now than it did back then. Many actuaries adopted new modes of working during the global pandemic, U.S. cyber [insurance premiums](#) tripled, and a handy new sidekick named ChatGPT emerged to make actuaries (and policyholders) drastically more efficient. This rapidly technologizing ecosystem further increased the CAS's urgency around building skills for the future, one of the plan's strategic pillars. One desired outcome within said pillar is for more actuaries to learn artificial intelligence, data science, and machine learning skills and their practical application to actuarial work. An early realization of this outcome was the inception of the Artificial Intelligence Working Group (AIWG), which is led by Mario DiCaro, FCAS, VP of Capital Modeling & Analytics at Tokio Marine. I jumped on a Zoom with DiCaro recently to learn more about his background, how he stood up the AIWG, what the group has been up to, and what success looks like three years from now.

## **AR: When did you first become aware of generative AI (GenAI)?**

**DiCaro:** Sometime before ChatGPT was released [in late 2022], my colleague

Patrick Gallic at Tokio Marine asked, "Have you seen this thing called jasper.ai?" I had not. He said, "You should check it out. It's kind of weird, kind of interesting." It was basically an LLM that would generate stories. You would put in a prompt about the story you want written, and it would write the story. I had never seen anything like that. I didn't even know people were building stuff like that. I remember thinking, "I wonder what would happen if they made it talk to itself," and now I do know how to do that. I said, "This is fascinating. I have no clue how to use it in our work, but it is one of the neatest things I've seen in a long time."

## **AR: Did you ever figure it out what to do with it?**

**DiCaro:** We did. A few months later, Tokio Marine joined a Microsoft hackathon. It was basically a high-speed boot camp. I've never seen our IT department spin up resources as fast as they did. They had three or four days to get an environment set up where we could have storage and a private OpenAI endpoint we could call securely from within our company. One of the teams pursued a use case where they downloaded a ton of product recall notices from the federal government — [the notices] described the product, its distribution, the damage, and so on. It was very free-form — text, images, all different kinds of stuff.

At first the team used GenAI to pull out specific pieces of information — company, what happened, etc. — and supplied categorical variables for the AI to choose from to populate a table. The

problems that came up were fascinating. It didn't always pick from the 10 categories they gave it, but the team learned how to prompt it to create a structured response that could be appended in a tabular format. Once they started building tables with the responses, then my brain finally started kicking on: "Oh, now I see what we can do with this stuff." At first, I thought all it could do was write, but it turns out it's extremely good at reading. Unfortunately, when it doesn't find what it's looking for, it would make stuff up.

Then the team asked, on a scale of one to five, how bad was this recall? That was it: no examples, zero-shot. Most cases it rated as one or two, maybe some threes, and then there were a few recalls that were fours or fives. We dug in, and these were either extremely expensive or resulted in deaths. What was interesting was, in any given prompt, the GenAI only had the context of one product recall. It wasn't looking across all the files like a person would. The AI only knew what was sent in the prompt in any given call. That whole context window thing has just been fascinating to me from the beginning.

## **AR: How did this fascination lead you to the forefront of a CAS working group?**

**DiCaro:** Around that same time, I got a call from [CAS Director of Publications and Research] Elizabeth Smith. The CAS was running a call for essays at the time. I have no idea why she contacted me! But I said, "Sure, I'll write an essay, that would be fun. I happen to be doing a lot

of AI stuff anyway.” So I wrote the essay, sent it in, got it cleaned up, and by that time ChatGPT was available. I even put one paragraph in there that I had ChatGPT write, and I pointed it out — “written by GPT.” Sometime later, CAS sent me an email: “It’s too bad your paper was not selected as a winner.” I didn’t even know it was a competition! But they said, “However, we did like your article and want to publish it in [Actuarial Review](#).”

### **AR: A worthy publication!**

**DiCaro:** Of course — and one that [CAS Vice President of Research and Practice Advancement] Morgan Bugbee, FCAS reads! After reading my essay, he asked if I’d be the AI working group chair. I think he was using the call for essays to source candidates! Just by the way people write, you can tell where their interests and passions lie. For whatever reason, when I wrote that essay, I just decided to pour a little heart and silliness into it, and it resonated. The main thing I remember when I first talked to Morgan about this was that the CAS needed to get a Request for Proposal (RFP) done around GenAI, as many working groups do. He told me about plans and budgeting. But he also said, “We’re trying to do this one differently.” He tried to instill in me how fast we want to get stuff done — faster than normal — to mirror AI’s rate of progress.

### **AR: How has it all come together?**

**DiCaro:** [Once we started soliciting volunteers], 25 or 30 people signed up. It is a big mix — from recent grads to retirees. One member is based in Africa; a couple are in Asia. At the beginning, I called pretty much everybody individually to get a feel for what they knew

about this. I did this last time I was involved in CAS research as well. I call people individually because I want to find out how passionate they are, what they know, what they are hoping to get and give. Once I understand what they are trying to achieve, I am able to start lining people up. The thing I need most is for people to take ownership of one of the work streams. Then we can get a lot more done, and I think people have a lot more fun that way.

In our first call, I had a feeling people were signing up for different reasons, which helped align volunteers with the work streams. For the RFPs, we had a lot of first-time volunteers, many of whom had little experience running an RFP process! So we went through a couple of rounds of that, but we hit our stride and already have narrowed the proposals down to two finalists. There are also two other work streams that we spun up. About half the people who joined wanted to use their working group connections as an opportunity to build something as a learning exercise. The other thing we have going on is what we’re now calling the “AI Primer.” At the Spring Meeting, the number one thing people asked for [during a Town Hall on AI] was educational materials. I was a bit skeptical initially — the internet is full of educational materials. Any qualified actuary or someone working in insurance can look at that and figure out how it applies to insurance. But there are tons of tutorials, and sometimes people get worried they’re going to commit to the wrong ones. We can help them distill what is most relevant to their roles.

**AR: What kind of shelf life do you think that will have, at the current**

### **pace of progress?**

**DiCaro:** I am optimistic it will remain relevant because learning is more than just about what the latest GPT can do. For example, working with GenAI at Tokio Marine has taken me pretty far out of my actuarial sandbox. Some of our initial explorations on feature engineering helped illustrate broader use cases — structuring nonstructured data, report generation, narrowing down relevant information quickly. These are not typically the types of things I would get involved in, but it just so happens that the GenAI work already required a lot of the skills to connect disparate systems, use APIs, authenticate, send data, modify it, pull it back, and so on. Actuaries also know the language of insurance. Max Martinelli [of Akur8], who leads the CAS AI Fast Track boot camp, always points out that actuaries are in a perfect position to get involved. I can’t agree more—for insurance companies, actuaries have a very good balance of technical skills and domain knowledge to plug AI into a lot of different workflows.

### **AR: Two or three years from now, what does success look like for you?**

**DiCaro:** If I look back in three years, I would be ecstatic if it is an active community where people are staying connected with each other and learning from the work done by the group. And if anyone else wants to join, the more the merrier! If there is something you want to help with, raise your hand. ●

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*Jim Weiss, FCAS, CSPA, is divisional chief risk officer for commercial and executive at Crum & Forster and is editor in chief for Actuarial Review.*

# Navigating the Impact of Vehicle Automation on Commercial Auto Reserving

By IAN WINOGRAD

The annual Casualty Loss Reserve Seminar (CLRS) was held September 8–10 in Philadelphia and drew over 350 attendees. Brekk Hayward and Melissa Huenefeldt of Milliman presented the session, “Navigating the Impact of Vehicle Automation on Commercial Auto Reserving,” which focused on advances in commercial vehicle technology, especially autonomous vehicles (AVs), and the implications for loss reserving.

## Industry context and challenges

The presenters opened by noting persistent industry pressure, including combined ratios which exceeded 100% every year from 2011–2024 (except for 2021 due to COVID-19). Contributing factors include adverse prior-year reserve development (relative to the broader P&C industry), third-party litigation funding, lawsuit abuse concerns, and historically insufficient pricing despite double-digit rate increases in many states.

## Autonomous trucking: promise and caveats

Autonomous trucking is expected to cut costs for trucking companies by roughly 30% — not only from lower driver costs, but also because trips will be quicker due to fewer mandated breaks and shift changes. Safety gains are also anticipated due to the removal of driver error, and AVs could help address current driver shortages. Claims such as Peter Vaughan Schmidt’s, CEO of Torc Robotics, that driverless trucking technology

is “solved” reflect progress but may be overly optimistic as current AV deployments are concentrated in cities with stable weather and little snow (e.g., Atlanta, Austin, Los Angeles, Phoenix, San Francisco).

## Quantifying AV risk

The presenters discussed three approaches for quantifying AV risk:

- Infer from human data: adjust accident causes that AVs eliminate (cell-phone use, fatigue, impairment, inattention), yielding an estimated 45% reduction in driver-related accidents. Even further reductions could come from eliminating driver speeding and misjudgment, while weather and mechanical failures remain relevant.
- Compare AV to human crash data: The American autonomous driving technology company Waymo reports a 78% reduction in injury-causing crashes versus conventional vehicles, though the under-reporting of minor human crashes complicates comparisons.
- Expert/engineering assessment: use engineering risk assessments where historical data is insufficient.

## Reserving and underwriting implications

As AVs proliferate, traditional reserving tools and segmentation may lose relevance. As an actuary, we can expect:

- Fewer minor claims but increased potential for large, complex claims

# CLRS

(systemic or software failures).

- Longer reporting and settlement timelines due to technical investigations and liability determination.
- New claim types, including cyber-related and product-defect claims.
- Liability shifting from individual drivers to manufacturers, software providers, and fleet operators, bringing new risk factors: software reliability, sensor accuracy, cybersecurity, update protocols, and systemic failure risk.
- Underwriters needing to evaluate technology providers’ risk management and engineering standards.

## Recommended reserving response

Historical loss triangles will be less predictive. Reserving actuaries should broaden techniques to include scenario analysis, stochastic modeling, engineering input, frequent assumption reviews, and new AV-specific data sources. Segmentation may need to move from driver and geographical groupings to manufacturer, software developer, or fleet operator groups. More proactive monitoring and closer collaboration with safety engineers and developers will be required.

## Illustrative scenario

The presenters gave a hypothetical situation where a simultaneous software update that causes malfunctions

across hundreds of AVs would produce multistate, concurrent claims. Reserving would need to account for exposure segmentation by software or fleet, treat losses as product defects or cyber events, and anticipate extended development patterns.

## Conclusion

AVs have reached an inflection point: technology availability is rising, but safety and insurance issues remain central. Insurers and reserving actuaries must adopt dynamic, data-driven, multidimensional practices and expand

underwriting scrutiny of technology providers. ●

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*Ian Winograd, ACAS, is an assistant actuary at Liberty International Underwriters and is a member of the Actuarial Review Working Group.*

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## Schedule F: What the F Is in There?

By BRIAN CHIARELLA

*This article is based on a presentation by Lynne Bloom and Dawn Fowle at the Casualty Loss Reserving Seminar in Philadelphia, Pennsylvania on Tuesday, September 9th, 2025.*

**T**imes have changed. It was just a few years back when copy editors replaced a picture of Lassie in our pet insurance presentation with a picture of an owl, because “you don’t own Lassie!”

Fast forward to 2025, when Lynne Bloom and Dawn Fowle have used the F letter 190 times in a professional presentation. 190 times!

If they don’t own the letter F, they certainly appear to like it a lot!

But don’t get too excited about the irreverence of these presenters, because in statutory financial reporting, F stands for Reinsurance.

Schedule F is a transparent risk monitoring framework that provides consistent statutory reporting for regulatory oversight, actuarial evaluation, market stability, and protection of

**Schedule F is a transparent risk monitoring framework that provides consistent statutory reporting for regulatory oversight, actuarial evaluation, market stability, and protection of policyholders.**

policyholders.

It was introduced in 1988 to standardize and improve reinsurance reporting. Schedule F has been changed over the years in line with the evolution of the reinsurance regulatory framework. Here are two examples of such changes:

- In 2011, the concept of certified re-



- insurer was introduced. This change allowed non-U.S. reinsurers to post reduced collateral based on their financial strength ratings. Previously, unauthorized reinsurers were required to post 100% collateral.
- In 2019, the definition of reciprocal jurisdiction was introduced. This change allowed domestic insurers

to take statutory credit for reinsurance ceded to reciprocal jurisdictions without posting collateral.

Reinsurers qualify for reciprocal jurisdiction status if they are from specified geographies such as the EU and U.K. and meet certain financial standards.

There have been additional changes and improvements to Schedule F, which are discussed below.

There are currently six parts to Schedule F:

- Assumed reinsurance — reports the underwriting results of reinsur-

fied that loss corridors economically act like sliding scale commissions.

This presentation was a refreshing tour through a destination that many actuaries only visit annually and briefly. It was like a newly published travel guide for a place we thought we already knew.

It turns out that there have been many significant improvements to Schedule F over the years.

Did you know that Column 34 of Part 3 (Ceded Reinsurance) contains the AM Best ratings? That is like finding my keys in the key bowl. Why would I have looked there?

## Did you know that Column 34 of Part 3 (Ceded Reinsurance) contains the AM Best ratings?

ance assumed from other insurance companies.

- Portfolio reinsurance — reports on portfolio transfers, including amounts transferred and counterparty details.
- Ceded reinsurance — this critical section provides analysis of reinsurers, reinsurance classifications, collateral, disputed recoverables, and penalties for unsecured balances.
- Issuing/confirming banks for letters of credit — enhances transparency of collateral arrangements.
- Interrogatories — helps regulators assess concentration risk and affiliate relationships.
- Restated balance sheet for net credit — summarizes ceded reinsurance balances by reinsurer type.

Though there are many very useful and informative entries across the six parts, Lynne said that Schedule F not reporting on loss corridors is a gap. I thought that was a pun, but Lynne clari-

I won't name any names, but I wasn't the only one in attendance who gasped upon learning this.

The standardization of Column 34 was introduced in 2021 to align Schedule F to the Risk Based Capital framework. More recently in 2024, the accurate classification of reinsurers as authorized, certified, reciprocal jurisdiction, or unauthorized was reinforced.

These more recent changes to Schedule F were all subsequent to the 2008 adoption of the NAIC Reinsurance Regulatory Modernization Framework Proposal that laid the groundwork for future changes to Schedule F and broader reinsurance regulation.

Lynne and Dawn emphasized the Schedule F learning materials with a fun game of "Filing Feud"!

I didn't realize that Family Feud was a game of individual contributions, so my career strategy of hanging around Morgan Butz, FCAS, MAAA, didn't help me in this situation.

Here are the things you should know (that I didn't) if you'd like to play along with your friends:

- Survey: Name a reinsurer classification.
- Answer: Authorized, certified, reciprocal jurisdiction, slow paying, unauthorized.
- Survey: Name something that triggers a provision for reinsurance.
- Answer: Overdue recoverables, insufficient collateral, unauthorized reinsurer, disputed balances, uncollectible recoverables.
- Survey: Name a type of collateral used to support unauthorized reinsurance.
- Answer: Letters of credit, funds held, trust accounts, cash deposits, securities.
- Survey: Name a place in the Annual Statement where Schedule F data flows through.
- Answer: Page 3 — Liabilities, Page 2 — Assets, Underwriting & Investment Exhibit, Notes to Financials, General Interrogatories.
- Survey: Name a reason why a reinsurer might be considered "Secure."
- Answer: High financial strength rating, certified reinsurer status, reciprocal jurisdiction, adequate collateral, NAIC designation of Secure 1-5.

Thank you to Lynne Bloom and Dawn Fowle for reminding us that learning can be fun! Thank you to YiFan Zhou for skillfully moderating the presentation. Thank you to the CAS for another amazing Casualty Loss Reserving Seminar. ●

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*Brian Chiarella, FCAS, is a vice president and principal at Lewis & Ellis-Actuaries and Consultants.*

# Is It Time to Supplement Your Prior Approach to Reserving with the Prior Approach? By RACHEL HUNTER

I'm using a punny title to draw attention to an exploration of the value of using Bayesian MCMC (Markov chain Monte Carlo) in the reserving process. It's been just over 10 years since the publication of the inaugural CAS monograph, "Stochastic Loss Reserving Using Bayesian MCMC Models," by Glenn Meyers. Since then, we have seen enhanced availability and ease of use of open-source tools for Bayesian MCMC. While the creation of Stan was a major leap forward for Bayesian MCMC modeling, for most of us, it is far more practical today with open-source packages such as tidybayes, ShinyStan, and ggdist, improving the ease of use and reducing the need to write as much code. Meyers' monograph is now included in the CAS Exam 7 content outline and general concepts of Bayesian MCMC were included on the MAS-II exam syllabus from 2018 to 2022. Monograph No. 1 has recently been revised and updated as [CAS Monograph No. 8](#).

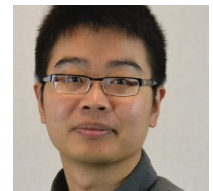
To get some input on why practitioners should consider supplementing their existing reserving approaches with Bayesian MCMC, I reached out to Maochao Xu and Michael Larsen, who each recently published papers highlighting the benefits of using Bayesian MCMC instead of other methods in reserve and IBNR estimation.

First, a brief very nontechnical description of what is happening in Bayesian MCMC techniques. Actuaries are generally familiar with the basics of Bayes' Theorem and its relationship to credibility (see *Actuarial Review* article "[Imaginary Balls](#)" by Dave Clark). In

an extremely nontechnical way, it is restated in words like "If I believe X and I see Y, what's the probability that Z is true?" When we iterate through all the possible Zs we could believe and consider our prior beliefs that comprise X with our observed data Y, we end up with a probability distribution known as the posterior distribution. Many are familiar with the concept of conjugate pairs for prior distribution and likelihood functions, however a key benefit of the algorithms behind Bayesian MCMC is using simulation for iterative exploration of the solution space, thereby relaxing the need for mathematically tractable conjugate pairs of prior distributions and likelihood functions. We now get to combine the brute force of modern computer processing with the actuarially appealing aspect of Bayesian modeling: the more credible the observed data Y is, the less the posterior result will resemble the prior beliefs of X and the more it will resemble what we observed. In Bayesian MCMC, the prior distribution is usually describing a distribution of some parameter within an assumed stochastic distribution, and it is possible to establish a "flat prior," which is essentially setting an initial belief of a uniform distribution of the parameter in question. A model might use a flat prior distribution to represent that there is no preexisting knowledge about the parameter in question. With that brief reminder, we can start looking at recent research papers and asking the authors why they think there is great value in exploring Bayesian MCMC for reserve estimation.

Maochao Xu is a cyber insurance advisor and professor at Illinois State University. He and his coauthors used Bayesian MCMC to estimate unreported or undiscovered cyber breach incidents in their *Variance* paper "[Bayesian Now-casting Data Breach IBNR Incidents](#)."

The paper keeps things fairly simple by looking at estimation of unreported counts of events after arranging the data in the familiar age-to-age development structure used for loss reserving triangles. Techniques are first refined through a study using synthetic data and then tested on empirical data compiled from data collected by the Identity Theft Resource Center. Testing demonstrates that Bayesian MCMC has higher predictive accuracy than six alternate methods, including the Mack chain-ladder model and the England and Verrall bootstrap chain-ladder model. The values calculated for RMSE (root-mean square error) and MAE (mean absolute error) metrics on the testing dataset for the next best performing models were more than double those of the Bayesian MCMC model and for the worst performing model the metrics were at least six times as high. When asked about other benefits of Bayesian MCMC, Xu pointed out that "Bayesian MCMC, in fact, provides a full distribution that can be used for tail risk assessment and solvency capital requirements" while providing flexibility "to handle hierarchical models and



Maochao Xu

dependence across accident years or lines.” This sort of model structure can help when data is sparse.

Michael Larsen’s “[Handling Sparse Data for Reserving Using Bayesian MCMC](#)” was published in the CAS E-Forum. He began exploring Bayesian MCMC toward the end of his career and continues to explore it in retirement, including partnering with Tom Struppeck to offer a work-



*Michael Larsen*

shop session on Bayesian MCMC for reserving at the 2025 CLRS. Larsen’s paper explores the impact of different choices for prior distribution (from flat priors which equate to no prior belief to priors setting tight bounds on expected results) on a series of simulated general liability reserve development datasets. By testing models with different prior distribution assumptions and testing simulated datasets with more or less observed data points, Larsen demonstrated two actuarially appealing aspects of Bayesian MCMC: the model places less reliance on prior assumptions when there is “enough” data, and it shows the importance of using a good prior assumption when there is less data. Asked to look back at where Bayesian MCMC would have helped earlier in his career, Larsen echoed the value of the model flexibility and included two specific examples. “It would have been useful to test the hypothesis that claim operations or underwriting operations has changed in a given time period and what is a reliable estimate of the effect of that change on development patterns (the same is true for loss costs/inflation). Also, when one is doing state level ratemaking, the

Bayesian MCMC environment lets one bring in the reserving model results in the form of a prior set of distributions for the regression parameters, but the state level loss estimates will respond to state level results to the extent they are credible.”

Initial exploration of Bayesian MCMC could be a bit baffling if you haven’t spent time with it before, and both authors highlight the value of spending hands-on time to get comfortable with the process. Larsen reflected that setting up priors became less mysterious when he realized that all one is doing is providing a sensible starting point for the reserving model for a given pass through the Bayesian MCMC modeling tool. “Once I realized that I am just putting in guard rails to tell the MCMC machinery that it’s not necessary to search the entire real number line for the optimal parameter and I can do a reality check by putting some choices into Excel and seeing some graphs ... software exists today that will let you directly

familiarity with that tool. Bootstrapping paid link ratios failed to provide reliable estimates of the distribution for the longer tailed lines, as well as failing to allow one to pull out the effect of varying inflation on development patterns or test for the effect of correlation on the estimates. Bootstrapping paid link ratios is the easiest approach to implement, but if one puts in the criterion that the results have to be realistic, it can fail badly. Mixed models can work for large datasets where one only needs to institute a form of least squares credibility weighting between groups (like accident years), check for and maybe account for correlation, and model the variance independent of the mean, but one has to bootstrap the parameters to get to the distribution and one cannot carry forward the parameter estimates to ensure that the change in the distribution results is well controlled.”

What are some things to watch out for once you’ve decided to explore Bayesian MCMC for reserving? “A com-

## **And the benefits of getting comfortable with it, especially when you need to model reserve ranges, can be well worth it.**

see what the end result of your selected prior distributions are without being modified by any data,” said Larsen. And the benefits of getting comfortable with it, especially when you need to model reserve ranges, can be well worth it.

When asked to compare Bayesian MCMC to other tools for estimating reserve ranges, Larsen said, “In my experience for reserving, it is the best tool, although mixed models can work in some cases and the LASSO approach merits further review by someone with more

mon trap is to make the model structure more complex than necessary, given that the Bayesian MCMC can accommodate very flexible structures,” said Xu. “This can increase the risk of overfitting and pure prediction performance. Practitioners may need to pay attention to the prior choices and model assumptions.” Larsen pointed out, “It’s possible to get too hung up on reviewing individual parameters rather than looking at graphs of the overall results for reasonability and/or fail to compare the reliability of

diagnostics to compare the reliability of different models.”

This last point is well demonstrated in Larsen’s paper when he shows that even when posterior distribution parameters are somewhat different between models which differ in prior assumptions, the cumulative distribution of estimated total reserves can end up being quite close.

Key concerns when changing from a simple chain-ladder link ratio selection process to using a stochastic model may include that the model may be complex and nonintuitive and that there may be challenges in explaining results to others. Xu spoke to this when he said, “In my opinion, the model is much easier to interpret once you are familiar with Bayesian methods, and the posterior results tend to feel quite intuitive in that context. For colleagues without a Bayesian background, it can take more effort to explain. However, it is much easier to talk about the probability of reserves falling below a certain threshold or showing the range of likely outcomes instead of focusing on the technical details of priors and MCMC.” We can see in Larsen’s paper that it’s possible to create outputs summarizing the assumptions of the prior and the results of the posterior under different assumptions in a graphical way.

Larsen added that, “Once you have a working model, you have documented your choices in a format that can be audited. Your prior distributions identify your starting assumptions for the different lines in a format that an outside actuary or auditor can review for reason-ability. Your workflow will identify the

dataset and the change in distribution to the parameters can be replicated (assuming you set a simulation seed) which provides an audit trail for someone else to review and verify that the results do start with a sensible set of assumptions and the data does influence the reserve

## We can see in Larsen’s paper that it’s possible to create outputs summarizing the assumptions of the prior and the results of the posterior under different assumptions in a graphical way.

estimates to the degree it’s credible. You are set up to start for the next reserving cycle in a format that lets one objectively test the following:

- Should last quarter’s model be modified?
- Was there a change in company operations that affected the development patterns?

The last reserve analysis’s posterior distribution provides the means to compare actual to observed activity. Those tests can help reassure the business unit or general company management that you have made a good faith effort to respond to questions.”

If you’re still waffling over whether moving to a Bayesian MCMC model approach might work for your reserve process, Larsen pointed out the natural fit of this approach with traditional actuarial analysis. “Most practicing reserving actuaries are at heart Bayesians who look at the model results as being plausible rather than precisely accurate, with the prior distributions providing the means to let them explicitly recognize that point of view.”

If you’re ready to get started or just want to learn more about Bayesian MCMC, Larsen and Xu suggested some additional resources beyond the monograph and papers cited here (which include sample code). In addition to helping you learn about Bayesian

modeling, these works give insight into tuning the Bayesian MCMC algorithm and using relevant open source software tools.

1. <https://mc-stan.org/>.
2. “Bayesian Data Analysis,” by Gelman et al.
3. [Statistical rethinking with brms, ggplot2, and the tidyverse](#): Second edition bookdown version.
4. “Statistical Rethinking,” by Richard McElreath.
5. “brms: An R Package for Bayesian Multilevel Models using Stan,” Paul-Christian Bürkner, Journal of Statistical Software 2017. <https://doi.org/10.18637/jss.v080.i01>.
6. “Advanced Bayesian Multilevel Modeling with the R Package brms,” Paul-Christian Bürkner, The R Journal 2018. <https://doi.org/10.32614/RJ-2018-017>.
7. Vignettes included in the tidybayes, ShinyStan, and ggdist2 packages. ●

*Rachel Hunter, FCAS, is a member of the AR Working Group and Writing Subgroup.*



# RPM

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# IT'S A PUZZLEMENT By JON EVANS

## To Freeze or Not to Freeze?

**T**his is a completely true story that I personally experienced a long time ago as an undergraduate living in a dormitory where we had a soda vending machine

To the great disappointment of some students, their cans of soda would come out frozen — when they pulled the tab and opened it, they got an explosion of carbonated fizz. What remained would be a big chunk of ice inside the can. However, other students who selected a different button on the machine would receive a perfectly satisfactory cold can of liquid soda. I figured out exactly and unambiguously why this was happening based on a specific principle from a science class I had taken. What do you think the difference was between the soda cans that were frozen and those that were not?



### An Algorithmic Cooperation Dilemma

The following solution was submitted by Jordan Bonner:

- 1) Define assumptions for both Claire and David:
  - a. They have the same estimate of  $p$ .
  - b. They are rational, will act optimally, and act at the same time.
  - c. They both assume the other will act optimally.

2) Define expected payoffs:

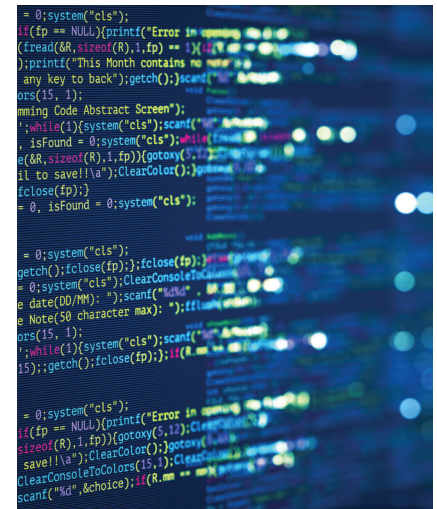
| Claire's Decision | David's Decision | Claire's E(Profit), in \$Bn               | David's E(Profit), in \$Bn                |
|-------------------|------------------|-------------------------------------------|-------------------------------------------|
| Share             | Share            | $p \times 6 + (1 - p) \times 3 = 3p + 3$  | $p \times 6 + (1 - p) \times 3 = 3p + 3$  |
| Share             | Keep             | $p \times 2 + (1 - p) \times 1 = p + 1$   | $p \times 8 + (1 - p) \times 0 = 8p$      |
| Keep              | Share            | $p \times 8 + (1 - p) \times 0 = 8p$      | $p \times 2 + (1 - p) \times 1 = p + 1$   |
| Keep              | Keep             | $p \times 4 + (1 - p) \times -2 = 6p - 2$ | $p \times 4 + (1 - p) \times -2 = 6p - 2$ |

3) Determine Nash equilibrium:

If Claire will share, David's payoff is  $3p + 3$  if he shares, and  $8p$  if he keeps.

David would prefer to keep if  $p > 0.60$ .

If Claire will keep, David's payoff is  $p + 1$  if he shares, and  $6p - 2$  if he keeps.



David would prefer to keep if  $p > 0.60$ .

In both cases, David prefers to keep if  $p > 0.60$ .

Same logic applies to Claire.

4) Result:

Both Claire and David are incentivized to keep if  $p$  (tech boom probability) is greater than 0.60.

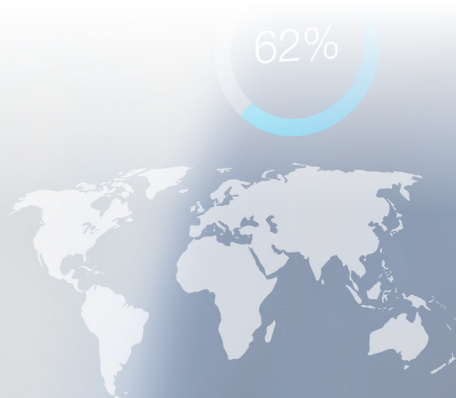
They are incentivized to share if  $p$  is less than 0.60. If  $p = 0.60$ , they are indifferent to sharing or keeping.

Solutions were received from Jordan Bonner, Bob Conger, Jerry Miccolis, Jim Muza, and Sean Porreca. ●

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The CAS Institute's Certified Specialist in Predictive Analytics (CSPA) credential offers analytics professionals and their employers the opportunity to certify the analytics skills specifically as applied to property-casualty insurance. The program focuses on insurance as well as technical knowledge and includes a hands-on modeling project that challenges candidates to apply what they have learned throughout their studies to address a real-world scenario.

Required assessments and courses for earning the CSPA include:

- Property-Casualty Insurance Fundamentals
- Data Concepts and Visualization
- Predictive Modeling — Methods and Techniques
- Case Study Project
- Online Course on Ethics and Professionalism

Some exam waivers are available for specific prior courses and exams.

For more information,  
visit [TheCASInstitute.org](http://TheCASInstitute.org).



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